COMMERCIAL STANDARDS MONTHLY

A Review of Progress in Commercial Standardization and Simplification



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UNITED STATES DEPARTMENT OF COMMERCE

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DIVISIONS OF THE COMMERCIAL STANDARDIZATION GROUP

DIVISION OF SIMPLIFIED PRACTICE, EDWIN W. ELY.

The division of simplified practice was formed in November, 1921, to provide a clearing house or centralizing agency through which the manufacturer, distributor, and consumer groups could meet to discuss their common problems and decide upon eliminations which would prove of mutual benefit to all concerned. The activities of the division are purely cooperative in character. It orders nothing; it dictates nothing; the initiative must come from business itself. It has no regulatory nor police powers to enforce adherence to the simplified-practice recommendations that industry develops under the auspices of the United States Department of Commerce. Its chief function is to serve as a neutral meeting ground for the purpose of bringing together producers, distributors, and consumers, whose aims are sometimes divergent and possibly antagonistic, and who would be unwilling to cooperate, except through some unbiased central agency. Following the approval of the tentative simplified-practice recommendation by a general conference of all interested elements thereof, the project is then presented to the entire industry by letter referendum for its approval and written acceptance, the publication and indorsement of the recommendation on the part of the Department of Commerce being dependent upon acceptance of the program by at least 80 per cent, by volume, of the manufacturers, distributors, and users concerned.

AMERICAN MARINE STANDARDS COM'TEE, A.V. BOUILLON.

The American Marine Standards Committee was organized to promote simplification of practice and elimination of waste in the marine and allied industries. It is composed of individuals, corporations, societies, Government departments, public bodies, or other organizations or groups engaged in building or operating ships, port facilities, and related activities. It works in close cooperation with official agencies, but its activities are controlled by an executive board elected annually by and from the membership. For further information, write direct to the secretary, A. V. Bouillon, Room 713, Department of Commerce, Washington, D. C.

DIVISION OF TRADE STANDARDS, I. J. FAIRCHILD.

The commercial standards unit, now known as division of trade standards, was created on October 1, 1927, for the purpose of aiding those industrial and commercial groups desiring to establish standards of grades, quality, or measurements for their products or their purchases on a purely voluntary basis.

The division functions only at the direct request of the industry concerned. Its procedure is similar to that of the division of simplified practice, except that at least 65 per cent of the industry, by volume of annual production, must accept the commercial standard in writing before it is published by the Department of Commerce. A certification plan is applied

DIVISION OF TRADE STANDARDS-Continued.

on request as a means of increasing the effectiveness of such standards. 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.

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 ageneies; producers, distributors, and consumers; and testing and research The cooperation with technical societies and laboratories. trade associations includes ascertaining the standardization and specification promoting activities of these organizations, and bringing to their attention the work being done by the commercial standardization group. The cooperation with producers involves the compilation of lists of manufacturers who have expressed their willingness to certify to purchasers, upon request, that material supplied by them on contracts based on certain Federal specifications or commercial standards eomply with the requirements thereof. The division prepares the directories of governmental and nongovernmental testing laboratories; the Directory of Specifications; and is working on an encyclopedia of specifications, the first volume of which, Standards and Specifications in the Wood-Using Industries, has been issued. It also aids in preparing the Standards Yearbook.

BUILDING AND HOUSING DIVISION, J. S. TAYLOR.

The division of building and housing cooperates with business, technical, and professional groups in practically all its undertakings on building and housing. Its work to modernize building codes and to encourage improved standards for the quality of building construction promotes the praetical application of the latest development in design and use of building materials. This division was also formed in 1921.

In furthering home ownership, an effort is made to develop an enlarged, steadier, more intelligent, and more discriminating demand for soundly built dwellings, the largest single class of buildings which the construction industries provide. The division also cooperates with many 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 in mind the broad objective of buildings made more useful because well located with respect to other buildings, a well-coordinated street system, and appropriate public works. Good city planning and zoning likewise eneourages stability in land values and property uses, and thereby contributes to the demand for durable structures.

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COMMERCIAL STANDARDS MONTHLY

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AN INVITATION TO VISIT THE BUREAU OF STANDARDS

An interesting fact in the growth of the bureau is the steady increase in the number of visitors. From all over the world experts come to see the work in progress in many specialties. Not alone the experts but in growing numbers many of our people visit the bureau from a public-spirited desire to acquaint themselves with its research work. All visitors, from the newspapermen, who have called the bureau a "house of wonders," to the specialists, who use its services, are welcome, for it is their bureau in a very real sense. They are the owners of the business and its beneficiaries. The annual per capita cost of 2 cents which the average citizen pays toward the operation of the bureau yields returns sometimes a hundredfold or a thousandfold. How science turns wastes into profits, increases the useful life of materials, adds new efficiencies to industry, advances new arts, such as aviation and radio, by research and discovery—these are to be seen first hand in the scientific and technical laboratories of the bureau. A cordial invitation is extended to all citizens interested in scientific progress to visit the laboratories of the Bureau of Standards when in Washington. A personally conducted trip is organized at 2.15 p. m.

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

GEORGE K. BURGESS, Director.

MATERIALS FOR CONSTRUCTION OF AIRCRAFT TESTED AND IMPROVED IN GOVERNMENT LABORATORIES

Congress Made Bureau of Standards the Aeronautics Testing and Research Arm of Department of Commerce; in Planning Research Programs the Motor and Fuel Industries Cooperate With Bureau

Air flight, like other new arts—radio, "movies," television, motor transport—owes its origin to inventive skill but its far-reaching development depends upon research. Modern aviation came from a long line of ingenious and daring dreamers. Its recent advance is by laboratory experiment. The place of the Bureau of Standards in this aviation progress is well known to experts. A list of its researches alone fills 60 pages. Its full story has not been written.

Results are of vital importance.

The results are vital in aeronautic science and practice to-day. On the supercharger (forced air feed) the bureau's data were basic in putting this device into use.

Congress made the Bureau of Standards the aeronautics testing and research arm of the Department of Commerce. An important present enterprise is



The bureau's work on aircraft motors began with the 50-hour continuity run of the first Liberty motor near the bureau's acoustical laboratory. The motor then went to Pike's Peak for a performance test at altitudes up to 7 miles. Meanwhile the bureau designed and built an altitude laboratory—the first of its kind—in which are reproduced air pressures, temperatures, and wind speeds found at altitudes up to 6 miles. Here the bureau has studied carburetion, ignition, combustion, and lubrication, and how they affect power and performance at ground level and at altitudes up to 6 miles.

type testing new motors for use in licensed planes. If they fail in a 50-hour endurance test, the bureau points out the probable cause, and the maker may submit a revised motor. Hazard is filtered out, but the door is open to mend flaws of design or construction to perfect the motors for safe and efficient flight.

Almost every item of the art and science of flight is studied experimentally. The behavior of air traversed by moving objects as a basis of the design of anything which must encounter the air with accuracy, efficiency, or speed; motor performance and how gas may be turned into power with minimum loss of potential energy; the materials used in aircraft and their useful properties; the instrumentation of flight, the basic controls of aviation which make it safe, swift, and sure; the airways and airway beacon and the lights and telephony which aid the flier; and finally, the code of good practice of flight in all its phases. In all of these the bureau has aided fundamentally in the evolution of aviation as it is to-day.

Research program planned jointly.

For motor designers, the researches cover fuel-air ratios, volatility factors, starting, etc., the research programs being planned jointly with the motor and fuel industries. For aircraft designers volumes of useful data flow from the bureau's wind tunnels. Air streams are produced here ranging from the highspeed air jets to those of the giant 10-foot tunnel. In these air streams the behavior of aircraft parts are studied at rest in the moving air (giving the same effect as if they moved through still air). Windtunnel researches on aircraft radiators form a classic bureau monograph for the designer. Small models of planes and plane parts are studied in wind streams to give designers the basis for effective design to promote speed, accuracy, and efficient flight. Aircraft materials are studied from various angles.

Aircraft materials are studied from various angles. The corrosion of duralumin was a menace to its uses in aircraft. The bureau showed that the corrosion might be controlled by a thin coat of aluminum. Tests of duralumin are most ingenious. Strips vibrate hundreds of times a second actuated and supported wholly by fine air jets, until some half-billion vibrations are completed. This simulates the alternating stresses encountered in the aircraft where varying stresses cause strain, which gradually breaks down the internal structure of the metal. Airplane wing dopes, metal coatings for propellers, wing cloth, balloon fabrics, cord, and struts—aircraft materials in great variety—have had intensive investigation in the bureau's laboratories.

New porcelain developed for spark plugs.

A new porcelain was developed for spark plugs, having a suitable expansion under the high explosion temperatures developed in the motor cylinders. When linen sources failed, there was devised as a possible substitute manila paper 50 per cent stronger than any known. The bureau was represented on the international aircraft materials specifications board and contributed notably to the formulation of these basic documents.

An extraordinary discovery of basic importance to airships was the bureau's new "gold-beater's skin," an essential as gas-bag material. The natural source had been the outer coating of the large intestines of cattle—the only known impermeable membrane suitable for the purpose. Hundreds of thousands of cattle were used to build the gas bags for a single airship of the Shenandoah type. The synthetic membrane developed in the Bureau of Standards research had distinct advantages over the natural product. It was one-half as permeable, twice as durable, half as expensive, and could be made in any desired length—a striking advantage since the small natural pieces (taken from cattle) had to be pieced together and the seams made gas and water tight.

Research on the structural elements of aircraft was most prolific. For airships the triangular sections built up of duralumin were developed in the light of bureau tests and successive redesign. A structural girder built of trussed duralumin strips was finally developed so light that a 16-foot length could be held by the little finger, and so strong that it would support 16 men without collapse.

STANDARDIZATION WITH RESPECT TO OIL ENGINES

The Standardization Idea in This Direction is Developing Among Foreign Countries, Says Editorial Writer in the Motor Ship, London, in a Discussion of the Subject

"The idea of standardization in Diesel machinery is developing," says an editorial writer in the Motor Ship, London, adding that "although there has apparently been greatest opportunity for it in Sweden and Denmark, owing to the willingness of Scandinavian owners to adopt completely standardized plant, there are indications of progress in this country (England). For instance, there are eight ships being built all to have Kincaid B. and W. machinery with cylinder dimensions 630 mm bore and 1,500 mm stroke. In all, there are 16 such engines, representing 100 cylinders similar in every respect. Incidentally, according to our records, this firm appears to have 31 Diesel engines under construction for installation in 17 ships."

The Evening News, London, tells of efforts made in Germany to obtain cheaper oil engines by means of standardization. "A German company, whose head is one of the foremost Diesel engineers in the country," says the article, "has had an idea which may lead to a considerable reduction in costs. The makers of Diesel engines must do their own fine work, but according to his theory, it is not at all necessary for them to trouble themselves about the host of small parts which are inseparable from every Diesel, and which cost a lot of money when they are made in small quantities.

"Such things as silencers, oil reservoirs, purifiers, starting reservoirs, valves and fuel pumps are worked on the same principle in scores of different types of Diesel engines, and the German engineer's idea is to form a central factory at Stuttgart and turn out these things in large numbers at a very much lower price than the big engineers can contrive at their own works. Two years' experience in making standardized parts for one particular type of Diesel engine has convinced him that he is on the right road, and he is now prepared to make numerous parts for Diesels of all sorts.

"In some of the types which are now at sea this will mean a slight alteration in their design, but nothing that is material either to cost or efficiency. The German engineer is prepared to do this not only for German engineers who are taking to the Diesel engines with enthusiasm, but for those in any other country where the import duty is not prohibitive, and he is convinced he can save money even in the face of high tariff."

APPLICATION OF THE CERTIFICATION PLAN (Division of Specifications)

There have been compiled by the National Bureau of Standards 267 lists of such firms as have expressed to the bureau their desire to have their names placed on the lists of manufacturers, willing, when requested to do so, to certify to purchasers that material supplied in accordance with the designated 267 Federal specifications complies with the requirements and tests of these specifications, and is so guaranteed by them. These lists represent more than 7,800 requests for listing from more than 2,000 firms.

The groups of commodities covered by the specifications to which the certification plan has been applied, the number of Federal specifications in each group, the number of requests for listing, and the number of firms requesting listing in each group, are shown in the accompanying table.

Statistical summary of willing-to-certify lists

		Total number of-		
Commodity groups	Specifi- cations	Listings	Firms	
A brasives and polishing materials. Brushes and brooms Builders' hardware Cement, Portland Electrical supplies Fire extinguishers and liquids. Glass. Heat insulating materials Inks Leather goods Lime and plaster. Linoleum. Liquid measuring devices. Packing and gaskets. Padotoks. Palotes. Palotes. Paints and paint materials. Paper. Pipe and pipe fittings Refractories. Ribbons, typewriter. Road and paving materials. Roofing, bituminous and waterproofing. Roope, wire. Scales, railroad-track Screws, wood Soaps and scouring compounds. Tableware, silver-plated. Textiles. Tubing, metallic.	$\begin{array}{c} 9\\ 48\\ 1\\ 1\\ 11\\ 3\\ 1\\ 8\\ 7\\ 4\\ 4\\ 2\\ 13\\ 10\\ 29\\ 7\\ 3\\ 3\\ 7\\ 16\\ 1\\ 1\\ 1\\ 36\\ 4\\ 4\end{array}$	$\begin{array}{c} 108\\ 944\\ 33\\ 68\\ 176\\ 59\\ 58\\ 126\\ 106\\ 149\\ 10\\ 21\\ 162\\ 17\\ 3,004\\ 459\\ 86\\ 107\\ 94\\ 459\\ 86\\ 107\\ 94\\ 123\\ 571\\ 15\\ 3\\ 7\\ 7\\ 13\\ 563\\ 7\\ 7\\ 598\\ 61\end{array}$	$\begin{array}{c} 50\\ 168\\ 33\\ 68\\ 139\\ 49\\ 59\\ 30\\ 47\\ 78\\ 86\\ 5\\ 21\\ 70\\ 17\\ 305\\ 96\\ 60\\ 57\\ 36\\ 45\\ 105\\ 15\\ 105\\ 15\\ 10\\ 57\\ 7\\ 13\\ 149\\ 7\\ 207\\ 7\\ 207\\ 90\\ -$	
Total	267	7, 826	2,074	

It is to be noted that the average number of manufacturers on the separate "willing-to-certify" lists is 29, and the average number of lists upon which the individual manufacturer's name appears is 3.8. It is noteworthy that the average number of firms on the 30 lists of "willing-to-certify" manufacturers of paint and paint materials is 100. Every one of the "willing-to-certify" lists which exceeds 100 is that of paint manufacturers. The average number of manufacturers on the 15 lists for mixed paints is 148. More than 300 manufacturers expressed their desire to be listed as willing, when requested to do so, to certify to purchasers that paint and paint materials delivered on contracts based on certain designated Federal specifications do actually comply with the specification requirements, as the result of sending to all known American paint manufacturers a single circular letter—without any follow-up. Recent investigations have shown that the Federal specifications for paint and paint materials which have been formulated in thorough cooperation with the interested manufacturers and the agencies authorized to act for the paint industry, are satisfactory to a goodly number of paint and varnish manufacturers desirous of doing some of their business on a specification basis.

Certification plan and trade standards.

The certification plan has also been applied to seven trade standards, 94 firms having expressed their desire for 118 listings among the "willing-to-certify" manufacturers of the commodities covered by trade standards for clinical thermometers, Stoddard solvent, all-clay porcelain plumbing fixtures, brass, steel, and wrought-iron pipe nipples, and regain of mercerized cotton yarns. Application of the certification plan to the above-noted trade standards has been made in accordance with the formal requests of the general conferences of the industries which adopted the standards referred to. Similar formal requests have been made by general conferences relating to trade standards for surgical gauze; standard-weight malleable iron or steel screwed unions; plain and thread plug limit gage blanks; builders' template hardware; dress patterns; boy's blouses, waists, shirts, and junior shirts; men's pajamas; wall paper; and diamond-core drill fittings.

Lists of manufacturers in circular.

The lists of manufacturers willing to certify to compliance with Federal specifications are contained in Bureau of Standards Letter Circular, No. 256, entitled "Sources of Supply of Commodities Covered by United States Government Master Specifications." This circular is not published; its distribution is limited to governmental and institutional purchasers, Federal, State, county, and municipal, and it is sent to others only upon specific request, or to officers of interested associations and societies for comment and criticism.

The lists of manufacturers willing to certify to compliance with commercial standards which have been established by the various industries as the basis for trade throughout the industry as a whole are given the widest possible distribution, use being made of every available channel for such distribution.

ITALY TO STANDARDIZE PAPER WEIGHTS AND MEASURES

Steps are being taken in Italy to effect the standardization of weights and measures throughout the country, according to an announcement by the Fascist Industrial Federation, transmitted from the American consulate in Rome and made public by the Department of Commerce. In accordance with plans recently formulated in Rome, detailed questionnaires have been sent to all paper manufacturers in the country and from the resultant data it is hoped to arrange a definite program for effecting this standardization. The federation is said to be seeking the collaboration of not only the paper manufacturers, but also that of the editorial and printing industries, with a view to organizing the supply of raw materials, unifying sales methods, and increasing paper consumption in Italy.

FOR THE SAKE OF SAFETY WE NEED MORE EDUCATION

Commissioner of Labor Statistics, Ethelbert Stewart, Discusses the Subject of Safety Codes in the United States Construction Quarterly

"As is well known, the responsibility for accidents in all industries is charged to the employers by the employees, and to the employees by the employers," said Commissioner of Labor Statistics Ethelbert Stewart, in discussing the subject of safety codes in the United States Construction Quarterly, noting that "carelessness is the one word that covers all cases of accidents when the employer is talking. 'Speeding up and utter absence of safety facilities, utter neglect of common safety equipment,' is the one answer when workmen are talking.

"To those of us who view the matter entirely from the outside and who are really trying to prevent industrial accidents, the amount of truth, if any, in either one of these stand-pat positions is very difficult to ascertain. When the employer says you can not write into a safety code protection against the human element in accident causation we who view the matter for the most part hold that such agreements written into trade-union and company-union agreements were indicative of the established custom of the industry and were binding upon employers and workmen whether or not there was any agreement.

"In the building trades, where apparently a few individuals, have been able to prevent any agreement as to what shall constitute a building safety code, the matter can be controlled through the architects. The architects' association has a safety code, probably the most perfect one in existence for the construction industry. Why it is kept locked up in their offices it is extremely difficult for a man on the outside to understand. It seems reasonable to believe that this code could be made acceptable and available to all.

"Once this is done, the architect, who after all is the man who writes the contract between the builder and the owner, can write the safety code into the contract

from a purely disinterest point of view known there is just as much human element on the employers' side as on the workers' side.

"No doubt ignorance of what c o n s t i t u t e s safety is a major element in industrial accidents in the case not only of a vast majority of the contractors, particularly the smaller ones, but also of the workers. Carelessness is equally EDUCATING FOR UNIVERSAL SAFETY

With the highly geared industrialization of the future there must be spread throughout the world a new industrial philosophy—the gospel of safety.

The subject is so important, industrially, that the Secretary of Labor, James J. Davis, discussed the subject in the periodical, National Safety News. "Before this movement will become effective, however," said the Secretary of Labor, "public opinion must be educated to the point of branding the nonconforming employer and the habitually careless employee as twin menaces not only to the American civilization but to society as a whole. This educational process might be speeded up by the injection of certain statistics into the public consciousness—figures which tell of 24,000 men needlessly killed in industrial accidents during 1927. Surely in the time to come we can strive to eliminate at least those Jactors which are of a human type, such items as faulty instruction, inattention, unsafe practices, poor discipline, and physical and mental unfitness."

asanintegralpart thereof. And while this does not immediately connect the building contractor up with the workmen, it does give the owner who does not care to have his home or his office building erected at the expense either of making widows or of breaking men's arms and legs, a direct means of attack upon the careless contractor through the con-

divided. It is all right to say that no contractor wants to hurt his men physically, but it is just as apparent to outside observers that no workman wants to get hurt. The real effect of all the charges and countercharges is to delay constructive accident prevention.

"It is here proposed that the recognized national or local safety codes, where there are such, be written into every collective wage agreement as a part of the wage contract. Where there is no national or local safety code, then a safety code which shall be agreed upon between the employer or employers' association and the employees or the employees' association shall be developed and written into the contract. This accomplished, the plea of ignorance can not be made. 'Carelessness' becomes a direct violation of the contract and can be handled as such.

"This is just as applicable to company-union agreements as it is to trade-union agreements; and where there is no agreement at all, the courts would probably tract. Perhaps nothing would so quickly form a foundation for cooperative action on the part of the contractors.

"This method would likewise answer the objection which the building contractors make to a national code, which is that these codes would immediately be written into the statutes of the various States and made a part of the building inspection, possibly administered by trade-unionist appointees. However, it would not be necessary for legislatures to enact building safety codes if such codes were written into every contract, and could be handled by the courts direct.

"One objection—and every man who does not want to pay attention to safety methods will find some objection—is that many of these safety codes are so long that it would be a serious inconvenience to write them into agreements and that this would be particularly true of individual building contracts. The answer to that is that a fairly large percentage of these safety codes can be secured from the Government free of cost and that the contract itself need only refer to them, as, for instance, 'that Bulletin No. 436, Safety Code for the Use, Care, and Protection of Abrasive Wheels, published by the United States Bureau of Labor Statistics,' be made in whole and in detail a part of the contract.

"It would be infinitely cheaper for the State to print and issue free a sufficient number of copies of any code, to be made a part of individual contracts, than would be to enact a State law with the attendant legislative expense. It would be cheaper for the insurance companies and the monopolistic State-fundcompensation States to issue these codes in sufficient numbers than it would be to pay the compensation cost of accidents. Besides, some of us are getting tired of the question of cheapness if deaths or accidents might be avoided.

"As a further step in this direction, if the insurance companies could be induced to write the safety code into the policy issued to every contractor, with the understanding that any flagrant violations of that code or any deliberate ignoring of the code would forfeit the policy, much of the ignorance as to accepted safety methods and safety practices would soon disappear.

"If every agency forming contracts with employers or workers would make reasonable safety codes an essence of that contract—in other words, if everyone would do as well as they know and really make 'safety first' mean something, first in the labor agreement, first in the contract, first in everything, some of us might live to see industrial accidents practically eliminated."

In presenting this story by Doctor Stewart to the readers of the COMMERCIAL STANDARDS MONTHLY, the editor would invite attention to the fact that in our last number (September issue) there appeared an article touching on the work accomplished by the Bureau of Standards in developing the National Electrical Safety Code, Handbook No. 3, of the bureau. Those interested in securing a copy of this handbook, should communicate with the Superintendent of Documents, Government Printing Office, Washington, D. C. The price of the document is \$1 per copy.

A list of other publications of the Bureau of Standards relating to accident prevention and safety may be secured upon request.

VARIOUS TRADE MAGAZINES DISCUSS SIMPLIFICATION

It has often been said that simplification and standardization are possible, to some extent, in every line of manufacture, and that they do not halt progress in the improvement of equipment, since individual initiative is not stifled and the manufacturer is free to develop his product to a maximum degree of performance, durability, and utility.

In this statement there is pointed out the secret of the success of the simplification movement, since it in no way interferes with improvement of the commodity. As a matter of fact, by reducing the variety of the commodity, it affords the manufacturers greater freedom for further research and improvement of their product.

Expressions from trade press of interest.

In urging further simplification of farm equipment parts, the Farm Implement News approaches this subject editorially, with the observation that the standardization and elimination of waste movement is one of the logical and inevitable results of modern production methods. No machine is suitable for assemblyline production methods, if it has, for example, 113 different sizes of nuts and bolts, where only 12 are necessary, standardization junking the redundant 101 sizes and forms.

In a further comment on its own editorial recommendation, the magazine said that, should simplification and standardization be successfully applied, it would make for a new stage in industrial cooperation and mutual understanding, the ultimate results of which would be of tremendous importance.

Support for application of the principles of simplification and standardization in the production of equipment and parts is also discussed by other publications. For example, in a recent number of The National Builders' Magazine, an editorial writer of that publication expressed the belief that dealers would like fewer sizes and types.

Simplifying building materials.

This editorial expression is based on the assumption that "too many variations in commodities involves too much invested capital." It is therefore natural that the editorial writer should add that "the application of simplified practice to the production of building materials might be made to work a tremendous advantage to the distributors and most certainly would be greatly appreciated."

It was the expression of this magazine that "to-day there are altogether too many varieties of several lines of commodities, and to carry them imposes upon the dealers an investment burden out of all proportions to the returns."

After discussing several instances where simplified practice has been applied and favorable results obtained, the editorial writer made the observation that "there is room for considerably more simplification in the building-material field, and the sooner the manufacturers of these materials recognize this and act accordingly, the better pleased the dealers will be, for it will as well reduce their trials and tribulations."

These magazines have presented their respective stories on simplification and standardization. The COMMERCIAL STANDARDS MONTHLY would call attention of its readers to the fact that industry generally has already proposed and adopted many simplified practice recommendations, many of which are in the building materials field. In order to keep industry advised as to these programs, the division of simplified practice issues a monthly list of active simplifications. Complimentary copies of the lists may be secured upon request from the division.

DIVISION OF SIMPLIFIED PRACTICE HAS RECEIVED TWO NEW REQUESTS FOR SIMPLIFICATION PROGRAMS IN PAST MONTH

Suggested Programs Covering Asbestos Pipe Covering and Roofing Material Under Consideration. Division Presents Latest Report on Other Projects

Buffing wheels.

At the request of the simplified practice committee of the industry, the division of simplified practice arranged for a general conference of manufacturers, distributors, and users of buffing wheels to consider the adoption of a simplified practice recommendation for buffing wheel diameters. The investigations of the committee established the fact that the adoption of 4, 5, 6, 7, 8, 11, 14, 17, and 20 inches as standards would greatly reduce the wasteful cutting of sheeting out of which buffs are made, and that the economies thus effected in manufacture and stocking would be applicable to all the grades of buffs required for various buffing operations. The action taken by the conference, which was scheduled to be held at the Department of Commerce on October 7, will be reported in the November issue of the COMMERCIAL STANDARDS MONTHLY.

Luggage.

A preliminary conference of representatives of the luggage industry was held in New York City on August 16, to consider the simplification of luggage sizes. The meeting was held in conjunction with the midsummer convention and exhibition of the National Luggage Dealers' Association and was attended by representatives from the Pullman, express, and railroad companies, as well as the Retail Research Association and National Association of Retail Clothiers and Furnishers.

The list of suggested sizes as proposed by the National Luggage Dealers' Association was discussed and practically all agreed that simplification of sizes of luggage would be beneficial to all concerned. A resolution was unanimously adopted that a joint committee made up of representatives of the manufacturing and luggage retailer groups be appointed to draft a tentative recommendation covering sizes to be submitted as soon as possible to the division of simplified practice, with the request that a general conference of manufacturers, distributors, and users be called to meet in conjunction with the November convention of the Trunk, Luggage, and Leather Goods Manufacturers of America, for the purpose of considering the adoption of a simplified practice recommendation covering standard sizes for wardrobe trunks, dress trunks, steamer trunks, women's suitcases, tourists' cases, Pullman cases, and round-edge hat boxes.

Carbonated beverage bottles.

The members of the joint simplified practice committee, which has been considering the proposed simplification of types and sizes of carbonated beverage bottles, met in Washington on September 16, to review the results of the recent survey to determine the variety in heights, diameters, capacities, etc., of different types of carbonated beverage bottles now being produced. The survey revealed the fact that an excessive variety is being manufactured and used, and the committee has worked out a tentative simplified list of sizes for consideration and adoption at a general conference of manufacturers, distributors, and users to be held in conjunction with the Atlantic City convention of the American Bottlers of Carbonated Beverages next month.

Can sizes (fruit and vegetable).

A tentative simplified-practice recommendation covering sizes of fruit and vegetable cans has been drafted. It is contemplated that a general conference of all interests will be held in Chicago in January. 1930, during the annual convention of the National Canners Association. At this time it will be possible to have a representative attendance from canners and can makers and wholesale, retail, and chain-store grocers.

Masonry opening sizes.

A meeting of the committee on the simplification of masonry opening sizes has been called for this month. This committee, which was authorized at the June 12 preliminary conference on masonry opening sizes, is composed of three representatives of the steel-window industry, one representative of bronze windows, one representative of limestone interests, one representative each of the face brick and common brick interests, a representative of the structural clay tile industry, one representative each of the terra cotta, wood-sash and millwork groups, and one each of the metal-trim and concrete-block industries. The function of this committee will be to act as a coordinating agency in bringing about a simplification of related materials going in and around windows.

Refrigerator ice compartments.

A simplified list of sizes of ice compartments and door openings for domestic refrigerators was adopted at the recent general conference held in Washington. All refrigerator manufacturers, ice manufacturers and dealers, and others interested were furnished with a report of the conference, together with the request of acceptance of the simplified list. Acceptances have been received from the majority of refrigerator manufacturers and are coming in steadily from ice manufacturers and dealers throughout the country. It is believed that the number of acceptances will shortly represent a sufficient percentage of the volume of business to warrant publishing the recommendation in the Elimination of Waste series.

Industrial casters.

Tabulation of sizes of industrial casters was sent out last month to all manufacturers of casters and to a number of large representative users. Suggestions as to suitable variety and dimensions have been received from a considerable number of firms and are being carefully recorded for the purpose of establishing a sound basis for simplification of principal dimensions. Some of the largest users of industrial casters are furnishing detailed figures not only as to their present practices but as to sizes and other figures which in their opinion will be most suitable for their use.

Earphone batteries.

Several months ago a preliminary meeting of manufacturers of earphones and earphone batteries was held in New York City to consider the simplification of batteries used with earphones. At that time a committee consisting of representatives of manufacturers of earphones and earphone batteries was appointed to study the opportunity for simplification of batteries and to prepare definite recommendations for the consideration of all interests. This committee has completed its preliminary work and has developed recommendations covering sizes of batteries and arrangement of battery terminals. A meeting will be held in the near future to consider the report of the simplified-practice committee. Following a meeting of manufacturers, a general conference of all interests will be held to develop the final recommendation based on the committee's tentative recommendation.

Paper shipping tags.

On April 26 a general conference of all interests was held in New York to consider the simplification of paper shipping tags. The simplification program approved at the general conference has since received the required volume of support by manufacturers, distributors, and users, and announcement has been issued to the trade by the Division of Simplified Practice to this effect. The program will be in effect as of September 1, 1929.

Underwear hangers (labels).

The Associated Knit Underwear Manufacturers of America have requested the cooperative services of the division of simplified practice of underwear hangers or labels. According to Roy A. Cheney, secretary of the association, labels of this kind are at present made in a great variety of different sizes, one manufacturer alone is being required to furnish 23 different sizes. In his opinion a reduction in number of sizes of labels would effect a considerable saving to all concerned. the sizes of this commodity which will be satisfactory

to all concerned. Asphalt tiles.

The manufacturers of asphalt tile are considering a simplification program, and have requested the division to cooperate in its development. A representative of the division met with the Asbestos Floor Tile Manufacturers' Association at their meeting, held last month in Baltimore. The purpose of the meeting was to discuss the need for simplification of asbestos floor tile and to explain how the division's services could be utilized in developing a simplified practice recommendation. The association will make a further study of the need for simplification and will request the cooperative services of the division in case they decide to develop a recommendation.

New proposals received.

The division of simplified practice receives many suggestions for simplification. Two of these are listed below. Manufacturers, distributors, and users of these commodities are invited to submit any comments which will be helpful in determining the interested industry's attitude toward these suggestions.

A manufacturer of asbestos pipe covering has advised the division of the need for elimination of certain thicknesses of pipe covering which are not satisfactory for the purpose intended.

A distributor of roofing material directs attention to the need for simplification of this material. There are, he says, about twice as many varieties made to-day as there were a few years ago, and, in his opinion, they are not all necessary.

AMERICAN MARINE STANDARDS COMMITTEE REPORT ON FOUR PROPOSALS

Report for Month Discusses Status of Proposed Marine Standards for Mooring Pipes, Mooring Bitts for Docks, Ship Joiner Hardware, and Hinged Water-Tight Doors

The American Marine Standards Committee is an organization national in scope, and is constituted of representative interests of the marine and allied industries. The Government is prominently identified with it through representatives of the Navy and War Departments, coast guard, and bureaus concerned with shipbuilding and shipping. The committee's work is aided by facilities and services furnished by the Department of Commerce, through the National Bureau of Standards, and by the United States Shipping Board.

The purpose of the organization is to bring about simplified practice and waste elimination in the marine and allied industries through standardization of materials, fittings, and equipment for ships and port facilities, and to enhance safety and effect economies in their operation. It has so far promulgated 102 marine standards which are published in the A. M. S. C. series of publications of the Department of Commerce. A list of these publications is available by request to the secretary of the committee, Room 713, Commerce Building, Washington, D. C. Technical activities are carried on by technical and

Technical activities are carried on by technical and subject committees, which are recruited from the Nation at large in order to secure high qualifications and wide representation. The office of the organization's secretary is the administrative center as well as the clearing house for the technical work. Contact is maintained with other standardizing bodies in order to coordinate projects and avoid duplication of effort.

New publications.

The following publications, which have been in process of printing for some time, are expected to be distributed in the near future, viz, A. M. S. C. 60, Chocks for Ships; A. M. S. C. 61, Rules for Design and Construction of Marine Boilers and Pressure Vessels.

Mooring pipes.

The proposed standard for oval-shaped mooring pipes referred to in a previous issue of the COMMERCIAL STANDARDS MONTHLY, as having been submitted to the membership, has been generally approved, but criticisms have been made that the castings as proposed are unnecessarily heavy and that a standard should be developed also for circular mooring pipes. Sketches of proposed revised standards are in course of preparation for submittal to the Technical Committee on Hull Details for final recommendations to the executive board.

Mooring bitts for docks.

A proposed standard for a type of bitt which is a combination of bitt and cleat, used on the new docks at Mobile, Ala., has been proposed for standardization. A preliminary sketch is being made to cover sizes 8, 10, and 12 inch, for consideration by the Technical Committee on Port Facilities.

Ship joiner hardware.

Proposed standard specifications for door locks, door bolts, and sash hardware have been approved by the Technical Committees on Hull Details and on Ship Operation Details with suggestions for improvements and for additional types. Revised preliminary drafts are in course of preparation for submittal to the membership.

Hinged water-tight doors.

Preliminary drafts of proposed standards for heavy and light service doors are nearing completion. These are to be submitted to the Technical Committee on Hull Details.

UTILIZATION OF SO-CALLED "WASTE WOOD," AIM OF COMMERCE DEPARTMENT COMMITTEE

National Committee on Wood Utilization Discusses Survey Made in North Carolina on Nonutilized Wood

In the elimination of waste and the utilization of waste products the first requisite is to have an accurate report showing where the waste occurs, and the kind, character, and quantity of waste products available for future manufacture.

Heretofore, the lumber and wood working industries have lacked these data, and the National Committee on Wood Utilization is undertaking a series of surveys of wood waste and wood-waste materials, in order to obtain them. The first survey of this kind was made in Virginia. Before it was completed the committee had received applications for similar surveys in seven or eight other States. The report of the survey made in North Carolina has just been released. It shows that 33,000 railroad cars or a train 265 miles long, could be filled with the wood which now goes to waste annually in the sawmills and woodworking plants of North Carolina.

Waste material in North Carolina.

A better conception of what this quantity of waste material available in North Carolina means may be obtained when it is understood that if it were in the form of lumber it would represent the production from about 113,000 acres of standing timber and, if suitable for construction, would build nearly 50,000 average small dwellings.

With the compiling of accurate data as to the quantity of waste wood available in a State, however, the committee's work is only begun. The determination of an outlet for this nonutilized wood is its most important problem, and a large part of the North Carolina survey report is devoted to this subject. As background for the committee's North Carolina report, all of the factors contributing to waste of wood are discussed and measures for the elimination of these factors are suggested. For instance, the report shows that small logs now wasted because of their size may be profitably converted into lumber by the Scandinavian gang saw, which is being tested by the committee in Pacific coast sawmills. Even under the high-wage conditions prevailing in the West these saws have brought about remarkable economies in the cutting of logs.

Defective seasoning causes waste.

Much of the waste in wood occurs, also, as a result of defective seasoning. Therefore, the committee has prepared and published four bulletins which give constructive suggestions on seasoning and handling lumber, and correct information concerning the best woodseasoning methods.

In every sawmill and woodworking plant may be found thousands of pieces of small lumber, useless for most purposes. It was to develop ways by which these odd pieces could be utilized profitably that the committee collected more than 1,200 suggestions showing how they could be transformed into interesting and useful articles, by boys of manual training age. As a part of this project the committee has issued a booklet, You Can Make It, containing 100 of these suggestions, which has been widely distributed to schools, boys' organizations, and industrial concerns interested in the project.

Nonutilized wood.

The most important use to which nonutilized wood developed in the committee's survey may be put, is in the production of pulp and fiber products. In North Carolina mills producing such products are already making good use of waste wood from sawmill and woodworking industries. "One man's meat is another man's poison," and one industry's waste often becomes another industry's raw material. To secure a coordination of the raw material policy of woodworking industries, is one of the principal objects of the committee's work.

The North Carolina nonutilized wood survey was conducted by the committee in cooperation with the industries concerned, and the division of forestry of the North Carolina conservation and development commission. Illustrative of the interest attaching to the survey is the fact that replies were received to 85 per cent of the 1,780 questionnaires sent out in connection with it.

IMPROVED PAPER DEVELOPED AND NEW SOURCES OF FIBER INVESTIGATED THROUGH FEDERAL RESEARCH

Research Developed the Fact That Properties of Paper Are Responsive to Treatment; Bureau Developed Microscopic Methods of Determining Fiber Composition of Paper

That paper making is an industry still in the making may surprise many who recall the ancient papyrus of Egypt, the felted fiber papers of old China, the highly developed Shidzuoka vellum of Japan, and the modern paper-making arts of the western world. Scientific research is re-creating the art of making paper. The Bureau of Standards affords many striking examples to sustain this statement.

Paper strength and other desirable properties depend upon processing the pulp. This is the basis for developing new types of papers. Progress here is not accidental but systematic. Desired results are now sought and found by research as deliberately as we plan and build a house.



The properties of paper are responsive to treatment, and it is the task of the Bureau of Standards experts to find out how to enhance any desirable characteristic of paper. For example, they developed a manila paper of unprecedented strength as a war-time substitute for airplane wing linen. They built high folding endurance into a new type of currency paper. This unique achievement is worth a brief mention.

On request of the Treasury Department and the Bureau of Efficiency, the Bureau of Standards produced by research development a paper for making paper currency of double the strength previously obtained. Requisites for currency paper are good printing quality and the strength required for long life. These were attained in the bureau's paper mill. The research covered all the practical paper-mill operations. The bureau's new paper could be folded double 8,000 times without a break.

High printing quality obtained.

With this superior endurance a high printing quality was obtained. High fiber strength gave long life, and a softness was secured particularly suited to the wet intaglio process of printing our paper currency. Measured control and record throughout, with study of the printing tests, brought the desired result. The bureau's technique was found essential to the production of the best paper. Such technique was shown to be applicable to mill practice without increasing the cost of production. To double the strength of currency paper seems a satisfactory research achievement. This becomes the more surprising when the new technique developed by the Bureau of Standards is found applicable also to the manufacture of commercial bond papers and high-grade ledger papers.

For printing paper currency durability is of notable economic value because of the cost of engraving the bills and safeguarding their issue. To cut this cost in two, therefore, saves more than half of the paper cost. A million dollars a year is the lowest estimated saving resulting from the bureau's currency paper research. The durability of the new currency paper seems adequate at present since surface effacement is the chief cause of withdrawal of used bills.

A second request from the Treasury Department resulted in a research on the improvement of postage stamps, which is now in progress, and in which valuable data have already been obtained.

Bureau studied optical properties.

Of great interest to paper makers and users is the measurement of the optical properties of paper opacity, gloss, and color. The basic instrument is a device for comparing light intensities. The bureau has studied 20 of these for paper testing laboratories, gaining data for suggested improvements. With the advent of super-thin papers to economize paper stock, conserve shelf space, and permit pocket-size editions of books, came the importance of opacity measurements.

The standard device used in the paper industry for measuring opacity was designed by a bureau expert. The trend from gloss to matte surface papers has made gloss measurements of concern as a matter of visual hygiene. Color measurements are of growing importance because color is a rated asset in modern uses of paper, and where colors are significant, as in business forms and art papers, continuity of hue and shade demands reliable measurement to control mill production.

Mechanical paper testers research.

A research study of mechanical paper testers has resulted in suggestions to improve these instruments and the development of special devices for paper testing. These have been embodied in a commercial type of electric tester, making it as satisfactory instrument for paper testing.

Commercial organizations deeply concerned with paper making have made is possible to maintain five research workers investigating the chemical reactions of paper-making fibers to supplement the bureau's extensive researches on the physical aspects of paper and paper making.

To classify paper products and develop specifications for paper quality for the many uses of paper requires dependable test methods. The increase in commercial paper testing since the bureau was established, makes the development of test methods very important. Such standardization of tests is done in close cooperation with the industrial and technical organizations concerned. A leading group is the Technical Association of the Pulp and Paper Industry, known by code name as TAPPI, in which some 800 paper technicians are united to promote progress in the industry.

Methods of determining fiber composition of paper by microscopic methods were developed by the bureau, and its published color atlas of stained specimens of typical fiber compositions has facilitated the introduction of quantitative fiber analysis in the industry.

A chief factor in the bureau's successful paper research has been the unique facilities—an experimental paper mill in which every detail of the paper-making process may be conducted; apparatus controlling the temperature and humidity of the laboratory where tests can be carried out under standard conditions, temperature 70° F., humidity 65 per cent. Testing apparatus has been acquired or designed and made for measuring the physical properties of paper—bursting strength, tensile strength, uniformity of thickness, tearing strength, folding endurance, wear factor, and other significant aspects.

Once a useful property is developed in a paper it may be reproduced under the measured conditions which first produced it. Research production may be made in the experimental paper mill on relatively small quantities of raw materials under conditions measured and recorded throughout.

Standard newsprint paper defined.

For the Treasury Department, standard newsprint paper was defined by specifications to guide the Customs Service in judging what was newsprint paper in pursuance of the law permitting newsprint paper to enter duty free. Specifications and experimental production of metal-free paper for use in electrical condensers constituted another bureau research, valuable because of the importance of this use of paper. The bureau mill technique reduced the metal particles to one-fifth. Aid has been given many specification-pre-

LEARNING FROM THE RAILROADS

"In spite of the fact that the railroads of the country touch industry at a thousand points every day," says an editorial writer in Factory and Industrial Management, "industrial executives have paid too little attention to the intensive campaign carried on by the railroads to cut costs of operation and improve the quality of their service through more intelligent management.

"Speaking before the tenth annual convention of the mechanical division of the American Railway Association in Los Angeles, R. H. Aishton, president of the association, said: To-day, the railroad systems are one gigantic laboratory in which millions of persons are engaged in an intensive war on waste. Practically every phase of railroad operation is being placed under the microscope, in an effort to detect means of bringing about improvements in operation.

"In the past 10 years the railroads have largely concentrated their attention from the extension of paring bodies through advice and data. Quality specifications for paper are no longer guesswork. They sum up paper progress and are controls of industry. They are the users' demand and the producers' promise. They are improved by research upon the criteria by which quality is rated. The bureau is well equipped for its part in such work.

Laboratory research on paper-making materials includes studies of paper filler clays which showed that domestic clays are equal to those imported. Glue was studied to aid makers of coated papers to use glue for casein when market conditions warrant. Waste plant materials have been studied as to paper-making possibilities. The potential use of caroa fiber was found to be full of promise in view of steadily mounting price of paper-making rags. A single study of writing paper made from condemned mail pouches increased the Government's revenue from their sale \$17,000 annually. Old papers and sawdust were found usable for roofing felts, and deinking systems were studied which showed that reuse of certain used papers was technically possible.

Improved paper quality.

Improvements in paper quality and suitability are of great economic importance in view of the extraordinary uses of paper. Its vast use in books and journals for diffusing the world's knowledge and news alone makes it of commanding interest. As a vehicle of communication it serves all human relations. It is the vehicle of the graphic arts, is used as currency, as a universal wrapping and container material, as household articles, such as towels, napkins, dishes, wall paper, wall board, boxes, and roofing paper, and in a thousand forms for objects of art and utility of great diversity.

All these offer unlimited fields for research full of possibilities. For each there is a measurably best composition, texture, and finish—fiber proportions, fiberfelted structure, and surface texture. As a basis for improving paper for its countless uses, it must be possible to measure its desirable characteristics. This the bureau is helping to make possible as a visit to the paper laboratories will make clear to the interested visitor.

their lines to the more intensive utilization of their existing facilities, thereby bringing about increased efficiency and economy in operation. This development has been in line with the increasingly intensive commercial development of this country, especially since the war, and has also resulted from increased operating and construction costs. To meet the changed conditions, science has been recruited in greater degree than ever before.

"Science has been recruited in greater degree than ever before—herein lies the crux of the matter. Experimentation has resulted in better locomotives, rails, and car wheels. Steel cars have replaced wooden cars. Terminals and shops have been rearranged. Standardization and simplification have not only reduced repair costs, but have resulted in lower inventories of materials and supplies. The railroads are not alone in this excellent campaign; many industries have done similar work. There is every reason, however, why each should learn from the other. Science and research are available to both."

SCIENTIFIC MANAGEMENT

Fourth International Congress Held in Paris. General Keynote of Congress Dealt with Balancing Consumption with Production

"We, in France, do not seek to create new wants in order to satisfy them, but to adequately satisfy those which already exist."

The above statement, by M. Charles de Freminville, strikes the keynote of the Fourth International Congress of Scientific Management, which was held in Paris this past summer.

"In scientific management," M. de Freminville continued, "lies the solution of the problem, not alone in the improvement of methods of manufacture and control, but in the balancing of production with distribution."

H. P. Kendall, president of the Taylor Society, expressed much the same thought when he said that scientific management alone can overcome the present to American business will come only if European business is prosperous and economically sound, and if the European-consuming public has sufficient purchasing power to absorb a large part of her own prodducts as well as America's surplus."

The general keynote then seemed to be the balancing of production with distribution and consumption—a very complex problem which the congress sought to attack. The congress opened in the grand amphitheater of the Sorbonne, with great ceremony and under the highest patronage. The president of this session was M. Andre Tardieu, Minister of the Interior, and guests of honor were M. Gaston Doumergue, president of the Republic of France, and M. Raymond Poincare, president of the cabinet. There

This story is a report by W. H. Leffingwell, which appeared in the August issue of System, on the activities of the meeting held this past summer in Paris. The congress gave the leaders in the field of scientific management an opportunity to exchange observations on progress made in other parts of the world. The COMMERCIAL STANDARDS MONTHLY is glad of this opportunity to present Leffingwell's story to its readers.

"profitless prosperity" from which so many businesses seem to be suffering. To-day we have an overproduction of goods, but as wages remain high this gives increased purchasing power to workers and thus sales are stimulated. In referring to Europe's present economic dilemma, the speaker said: "Europe must find a way to higher wages and yet lower costs in industry, or else there is no future."

The general keynote—balanced consumption and production.

William Green, president of the American Federation of Labor, in a letter to the Congress said: "Labor has an interest in increasing production, because only out of increased output can come sustained raises in the standard of living—The American Federation of Labor recognizes that the interests of wage earners are interdependent upon the interests of all other groups associated together in production enterprises and that progress for labor is interrelated with progress for the Nation.

"With industrial progress and technical advances, responsibilities resting upon management grow heavier. Upon management rests the major responsibilities for eliminating wastes in production, for assuring steady employment for those employed, for steadily increasing wages as productivity increases, for planning in advance for workers displaced by machinery and technical changes. Workers also have a responsibility for these problems which they can undertake through their trade unions when the channels of cooperation have been established."

W. J. Donald, secretary of the American Management Association, also said: "The greatest prosperity were between 1,300 and 1,400 delegates present from 36 countries. It would be impossible, of course, in the space available even to catalogue the papers presented which numbered considerably more than 100.

Six sections into which the work of the congress was divided.

The work of the congress was divided into six sections—administration, commerce, industry, agriculture, domestic economy, and education. A short résumé of a few of the outstanding papers from European sources may interest American readers.

M. Chayron, of France, submitted a paper on scientific purchasing methods, the buyer comparing all articles submitted for purchase with standard samples. The author quoted a number of cases where this method is in effect in France and Belgium. Dr. Ludwig Jablonski, of Berlin, described a set of rules drawn up by the commission on conditions of delivery for the leather-belting industry. This commission aimed to standardize this commodity into three main classes, and described the conditions of manufacting, tests that could be made, and so forth. Prices are fixed in accordance with qualities as defined in the manual. This is a remarkable example of cooperation between suppliers and consumers.

European papers of outstanding interest to Americans.

Dr. Raymond Sachot, of France, presented an able paper upon the scientific analysis of markets and the development of sales quotas as practiced by a manufacturer of implements. The necessity for business forecasting was urged by Lucien March, professor of the Institute of Statistics, University of Paris. He stressed its importance as a guide to buying, selling, and publicity. Dr. Heinz Gruenbaum, of Berlin, told of the preparation of adequate business statistics by an association of German merchants. These statistics show (1) sales in different districts, (2) total working expense classified in order of the importance of the firms and districts, (3) number of turnovers obtained, and (4) average sales per sales person. The object of compiling these statistics was to give to smaller stores the advantages now enjoyed by larger ones able to employ their own statistician.

Karl Hackl told of certain psychological tests for determining the adaptability of salesmen, while M. E. Rachinel told how the great department store Printemps, of Paris, recruited and educated its sales staff. Major Urwick, director of the International Management Institute, presented a paper outlining the reorganization of the sales office of Rowntree & Co. (Ltd.), of York, England. The main object of the paper was to point out the pitfalls which must be avoided. Dr. Jean Phillipe Lugrin, of Switzerland, described the principles of the German Industrial Standard (Deutsche Industrie Normung) for the standardization of paper sizes. In this system, which is popularly known as the Din system, the various sizes are multiples of each other, each being one-half of the larger preceding size. The ratio between the side measurements is always 1:2 and the superficial area is a simple fraction of the square meter. Doctor Lugrin's paper was a plea for the international use of this system.

Fifteen papers were contributed by Americans to this large international program. American participation was handled by a joint committee representing the American Management Association, the American Society of Mechanical Engineers, the Society of Industrial Engineers, and the Taylor Society.

M. Charles de Freminville was elected president of the international committee. The next congress will be held at Amsterdam in 1932.

ACTIVITIES IN TRADE STANDARDIZATION

(Division of Trade Standards)

Mirror Manufacturers Association Favors Commercial Standards Covering Quality for Mirrors, Reports the Division of Trade Standards in a Discussion of Activities for Past Month. Manufacturers of Mohair Upholstery Plush Also Propose Commercial Standard. Commercial Standard for Builders' Template Hardware Accepted By Industry

Any analysis of our present economic situation is bound to reveal certain facts and obvious trends in the commerce of to-day. With increased leisure our people are devoting more time and energy to careful and judicious expenditure. There is more shopping around for better values and better bargains not only among the women who buy for the individual family, but among the professional purchasing agents, who contract for the materials used and fabricated by our large industrial organizations and institutions. With more leisure, increased travel, and speedier means of communication, our people are becoming better judges of value, and are demanding higher quality. Every known article possessing outstanding or unusual quality is enjoying a large and highly profitable business.

In the present perplexing market of novelties and color the consumer-buyers, and even the professional purchasing agents are finding it increasingly difficult to distinguish between items of real merit and the "gyp" products built for appearance only. It is natural, therefore, that the buyer and the purchasing agent are both seeking authoritative and dependable criteria of quality, such as commercial standards, and are welcoming certificates from reputable producers that the quality of the goods equals or exceeds the commercial standard specification.

Among the producers, competition was never keener than to-day. In the ever-widening arena of strife for a share of the consumer's dollar, companies are merging and individual producers are forming associations to wage the battle of industry against industry, as being more significant than the private battle of producer against producer. The alert trade association seeks a means of assuring the buyer and the professional purchasing agent alike of the inherent quality of the proffered goods. Individual trademarks and trade-association labels are helpful, but are not sufficient to satisfy the skepticism of the modern purchaser, who demands to be shown with laboratory analyses and tests, sponsored by an unbiased and unquestioned authority, the quality of goods delivered.

The commercial standard, developed and established by industry itself, under the watchful and impartial eye of the Federal Government; accepted in writing by producers, distributors, and consumers alike; printed and promulgated by the Department of Commerce after the most severe scrutiny, satisfies all of the ramifications of the situation, and offers an authoritative and dependable basis for marketing and purchase by all elements directly concerned.

Mirror manufacturers desire quality standards.

To many of us there is not much difference in the quality of mirrors. However, if we reflect a little in the mirror of our minds we recall some of the oldfashioned looking glasses that painlessly put a carbuncle on our head or flattened out our noses according to the way we stood before them. These distortions, of course, were due to gross defects in the glass, such as ripples and bubbles, and although improvements in the art of glass making have greatly reduced these defects, they have never been entirely eliminated in all glass from which mirrors are made.

Under most approved conditions of manufacture there will occur in certain quantities of glass, little bubbles, seeds, scratches, and other defects that are not so apparent on casual inspection, but after silvering will show up very readily in a piece of furniture when scrutinized by the discerning eye of the woman purchaser.

Several designations are used to distinguish the grades of mirrors in use, but unfortunately they are interpreted differently in various parts of the country and by different dealers so that no purchaser is sure just what he will get upon specifying a certain grade. In order to clear up the misunderstanding as to grades, the Mirror Manufacturers Association, at a recent meeting, went on record as favoring commercial standards of quality for several grades of mirrors, and requested the cooperation of the bureau in this progressive undertaking.

Interchangeable joints for glassware.

The manufacturers of laboratory glassware have enlisted the cooperation of the National Bureau of Standards in the establishment of a standard for diameter length and taper for interchangeable ground joints. The use of such joints would greatly facilitate the setting up of complicated pieces of laboratory apparatus and would result in great economies in the event of breakage, since with interchangeable joints one part could be readily substituted for that broken without having to dispose of the entire piece of apparatus.

Mohair upholstery plush.

The manufacturers of mohair upholstery plush, at a conference with representatives of the Bureau of Standards and George T. Willingmyre, of the Department of Agriculture, held at the Pennsylvania Hotel, New York, on September 10, adopted a proposed commercial minimum standard for plain mohair upholstery plush.

The specification establishes a minimum quality to provide satisfactory service based on material, color

SIMPLIFICATION PROGRAM GOVERNING BAL-LOON TIRE SIZES REVIEWED

Because of the great interest taken in the proposal looking to the simplification of balloon tire sizes, on the part of tire manufacturers and dealers, and even tire users, the division of simplified practice has been watching the progress of this program with keen interest. As far back as 1925 extensive surveys were made among passenger-car manufacturers, truck and commercial-car manufacturers, tire makers, wheel and rim manufacturers, a number of tire-accessory manufacturers, interested trade papers, automotive trade associations, etc., to determine the possibilities of applying simplification to this commodity.

Following the completion of this survey, Ray M. Hudson (then chief of the division) stated that there "is in the proposal for fewer tire sizes a further opportunity to demonstrate the tremendous power that is in cooperative action by all interests, for the elimination of waste in typical American industries. It is through the elimination of such wastes, as this example affords, that the automotive and related industries will find their greatest opportunities for future growth and development." fastness, weight of pile, construction of fabric, and treatment to prevent attack by moths, and is designed to apply to mohair fabrics used for furniture upholstery.

The manufacturers have set 0.70 pound of pure mohair, exclusive of seizing, per linear yard of 54 inches fabric as one criterion for minimum quality. They are also recommending that "material which measures not less than $53\frac{1}{2}$ inches nor more than 55 inches wide shall be considered a commercial delivery for 54-inch material."

The proposed commercial minimum standard will be submitted to the furniture manufacturers and other important users and distributors for comment and criticism at a general conference of all interests to be held some time next month. The formulation of a minimum standard was undertaken at the suggestion of the National Association of Furniture Manufacturers.

Builders template hardware.

Announcements have been issued to interested producers, distributors, and users that the recommended commercial standard for builders template hardware has received the necessary acceptances to make the project successful and that the commercial standard will become immediately effective. It covers all the necessary dimensions and tolerances to provide complete interchangeability of template lock fronts and strikes, as well as the leading varieties of template butts, such as full mortise, half surface, full surface, and half mortise.

It also includes standard template identification symbols and minimum allowances on butt hinges designed for painting. It will materially assist the hollow metal door manufacturers and building contractors in obtaining earlier delivery, complete interchangeability and will facilitate replacement of these items regardless of source of manufacturer.

It was not until March, 1928, that success attended the efforts of the various groups that had been working toward the development of the program, when a list of 18 sizes was approved. In August of the same year this list was adopted by the Society of Automotive Engineers, and was later published in their 1929 handbook. The following year the program was revised, at which time two sizes were dropped and one new size added.

The magazine Tires, in editorially discussing the program, said that there were then being manufactured 43 sizes of balloon tires. This standard list, therefore, if followed, would mean the ultimate elimination of at least 26 balloon sizes.

A simplification program based on the present 17 standard balloon tire sizes would, in the short average life of rubber tires, effect a worth-while elimination in excessive size variations, which would be attended by many economies to the manufacturers, distributors, and users.

Complete tables of data pertaining to this subject are included in the mimeographed bulletin of which this story is an abstract. Copies can be secured without cost by addressing the Editor, the COMMERCIAL STANDARDS MONTHLY, National Bureau of Standards, Washington, D. C.

HOW GRADES OF FUEL OIL WERE STANDARDIZED

HARRY H. STEIDLE, Bureau of Standards

The use of fuel oil for domestic and industrial purposes has had a phenomenal increase within the past few years. Engineering development has made possible the use of more efficient oil-burning equipment, and, in fact, the burners have received much more attention than the fuel which they were designed to burn.

Oils were designated almost entirely by their density or heaviness, commonly referred to as "gravity." This, however, is not a true criterion of the qualities of a fuel oil. For one kind of oil, a certain gravity might give entire satisfaction, while another of the same gravity might be unusable in the same burner.

same gravity might be unusable in the same burner. Manufacturers and distributors of oil-burning equipment have encountered numerous complaints which investigation proved to be attributable to the use of oil unsuited to the burner on hand. Color was sometimes referred to in connection with gravity, but this added nothing but confusion to the purchaser's dilemma of securing satisfactory fuel oil.

The situation was somewhat embarrassing for the burner manufacturers and the oil refiners likewise sensed the necessity of assuring satisfactory and efficient service to prospective users of oil as a heating medium.

Under the auspices of the trade standards division, Bureau of Standards, and at the request of the American Oil Burner Association, a general conference was held, which was attended by all branches of the fueloil industry, including refiners, distributors, consumers, and manufacturers of oil-burning equipment. A tentative standard prepared by that association, with the cooperation of the American Society for Testing Materials and the American Petroleum Institute, covering six grades of oil was very carefully considered, and after certain changes, to make it consistent with the best commercial practice, it was approved by the conference and recommended for general adoption as a commercial standard.

Specifications sent out for approval.

To ascertain the attitude of those not represented at the general conference, the specifications were mimeographed and mailed to a large list of refiners, distributors, users, and burner manufacturers with a request for their approval of the standards as their guide for production, sale, or use.

The standard grades met with splendid response, the list of acceptors embracing practically all the oilburner manufacturers, many oil refiners, distributors,

CONCRETE HANDBOOK ISSUED

The Concrete Reinforced Steel Institute, Tribune Tower, Chicago, has recently distributed a handbook on Reinforced Concrete Construction, containing information of value to the architect and engineer. This handbook contains a general chapter on Reinforced Concrete, Code of Standard Practice, chapters on Building Code, Design, and Specifications. and users. The commercial standard grades thus became effective as of July 15, 1929, as the basis for everyday trade in the industry and the specification will shortly be available in printed form as a Government publication entitled "Domestic and Industrial Fuel Oils, Commercial Standard CS12-29."

It may be said that a satisfactory fuel is one which may be conveniently handled and stored, which will ignite readily without being a fire hazard, which will atomize freely, and burn completely without clogging the jets of the burner.

Requirements covered in specifications.

These requirements are covered in the standard specification by limitation of the following characteristics.

Flash point.—Minimum flash point is usually controlled by law to govern fire hazard while the maximum flash point insures ease of ignition.

Viscosity.—A measure of the resistance of oil to flow and the degree to which atomization may be secured.

Distillation.—The 10 per cent point is an index of the ease of ignition while the 90 per cent point and the end point govern the completeness of combustion.

Pour point.—The lowest temperature at which an oil will flow under prescribed conditions, included in order that oil may cause no difficulty in handling or in use at the lowest temperature to which it may be subjected.

Water and sediment.—The impurities that reduce the efficiency of fuel oil, the latter of which may cause serious trouble by clogging the burner.

Six grades provided for in specifications.

Under the commercial standard six grades with numerical designations have been established that will cover the needs of practically all domestic and industrial equipment. Burner manufacturers will designate the grade adopted to their particular equipment and will recommend it for greatest efficiency. The consumer, following the manufacturer's instructions, can secure the most satisfactory oil merely by purchasing according to number. Distributors of fuel oil will find their problems simplified and oil refiners may proceed with confidence knowing there will be a steady demand for the several well-defined grades.

The general adoption of these standards of quality will tend to stabilize the fuel-oil industry and dispel the confusion and misunderstanding that accompanied the vague quality designations of the past.

STORIES IN NOVEMBER MAGAZINE

Believing that the readers of the COMMERCIAL STANDARDS MONTHLY will find much of interest in the several articles by Henry D. Hubbard, assistant to the Director of the Bureau of Standards, we will have several more in the November issue.

DEVELOPMENT OF SKID AND LIFT-TRUCK SIMPLIFICATION

Official of the United States Daily Tells of "How the Simplified Practice Recommendation For Skids and Lift Trucks Was Developed"

A little more than a year ago a small group of men met in a mid-western city to discuss certain significant trends in methods of shipping commodities. Out of this meeting grew a simplified practice recommendation (S. P. R. No. 95) which has already had farreaching effects on the cost of distributing goods throughout the country. This program was based on no new discovery or invention, but on a new use for one of the oldest transportation devices in the world. "The sled, or sledge," declares Victor Whitlock, vice president of the United States Daily in a recent radio address "has been used for thousands of years to

"The sled, or sledge," declares Victor Whitlock, vice president of the United States Daily in a recent radio address, "has been used for thousands of years to transport goods. Essentially it is just a flat platform supported on 'runners,' or legs of some sort. But the usefulness of the old sled was distinctly limited. It took too much muscle power to move it except over snow or ice. About 20 years ago some one conceived the idea of applying a lifting device to the sled to get it on wheels. The necessary device was already at hand, in the lift truck that had been used for some years previous to move heavy objects that had legs or 'runners' under them.

Lift truck resembles garage jack.

"The lift truck resembles the familiar garage jack. It runs on four wheels, can be slipped under one of these sledlike platforms and its platform can be lifted by bearing down on the handle. The skid platform, having thus acquired mobility, found its way into a thousand new uses. It is easy to build, requires practically no repairs, and will carry any kind of objects that are not too large to go on it. Yet with a lift truck available, one man can take it and its load anywhere. Consequently its use has spread until several million skids, as they are commonly called, are doing active service in manufacturing, warehousing, and other establishments, often saving their entire cost in a few months by enabling goods to be handled in bulk.

Lack of recognized standards.

"So long as skid platforms were used only in an individual plant, it did not matter whether they were the same size as those used in other plants. But from the moment when the first skids left one plant to travel by rail, water, or highway to another, differences in size presented an immediate problem. Each user had heretofore selected skids and lift trucks of a size which suited his particular needs. There were no recognized standards, except such as had been developed as a matter of convenience by lift-truck manufacturers, and those were numerous.

"This diversity in size was a most serious handicap to the further spread of the profitable practice of skid shipment. A similar situation would exist in railroad transportation if each railroad had a different track gage. No interline shipments or car exchanges would be possible. The men who met one year ago to discuss this question already recognized the need for basic standards. Each of them had come prepared with specific information as to the possibilities for saving money throughout the whole field of physical distribution of goods. At their request a representative of the division of simplified practice of the Bureau of Standards was in attendance, and he offered the services of the bureau as a centralizing agency to get the project of simplification and standarization under way.

Bureaus' aid accepted.

"Less than three months later, a conference of shippers, carriers, and warehousemen was held in Washington, under the joint auspices of the Bureau of Standards and the Bureau of Foreign and Domestic Commerce. The Bureau of Standards was requested to organize and carry through a definite project for establishing dimensional standards for skid platforms and lift trucks. The following week the manufacturers of the equipment met in Washington and formulated definite recommendations. Two weeks later a general conference of all interested elements of the industry adopted the recommendations. Within a short time the Bureau of Standards had received a sufficient number of signed acceptances to warrant publishing the recommendation.

Interchangeability of equipment sought.

"No attempt was made to standardize details of truck construction. The essential result sought was interchangeability in use, not duplication in details. Again citing railroad practice, lift trucks may be compared to locomotives and skid platforms to railroad cars. Both locomotives and cars differ greatly in design and construction, but any standard locomotive will handle any standard car, of its own or any other railroad.

"With the handicap of diversity removed, skid shipment began to grow and expand at a still faster rate. The surface has hardly been scratched as yet, but shippers of hundreds of different commodities are studying the possibilities. One industry after another has found ways to pack and ship its products on skid platforms. Plain skid platforms are used to carry paper, hides, rubber, machinery, sacked goods, such as coffee, flour, sugar, and cement, boxed, crated and barrelled goods, and numerous other products. Such commodities as glass and ceramic containers, plate glass, machine parts, certain food products, and a great variety of articles in small containers, are carried on skids which have special permanent or removable attachments. These include box sides, racks, shelves, crates, end posts, and various other kinds of bodies put on the skid chassis.

Methods of packing.

"Methods of packing goods for skid shipment vary with different commodities, but handling methods are similar throughout. Flat sheets of paper, for example, are loaded on a skid at the paper mill, covered with waterproof paper, and strapped or clamped in place. One man with a lift truck takes the skid with its load of perhaps 2 tons of paper from the shipping room directly into a freight car and sets it down. From 12 to 18 skid loads are put in one car. When the car reaches its destination, the skids are unloaded by lift paper actually reaches the press is it unstrapped. "Another interesting example in a wholly different field is the handling of brake shoes for railroad cars. A standard brake shoe weighs 23 pounds. One hundred and fifty of them are loaded in a skid box, which is simply a plain skid with box sides on top. They are counted and loaded at the foundry which makes them, put into a car, and taken to the general storebouse of a western railroad. Lift trucks take the 3,500-pound unit load into the storage rooms. When a branch storehouse 1,000 miles away orders some brake shoes, the required units are put on a supply car, from which they are unloaded at the branch store. Finally the skid loads go to the car shops and for the first time since they left the foundry the individual brake shoes are taken out for actual use. From 4 to 10 rehandling and counting operations have been saved, meaning from 50 to 95 per cent of former costs.

Money saved in labor cost.

"The particular railroad which has gone farthest in handling its own stores and supplies on skids is already saving an average of 65 per cent in labor cost, and has saved thousands of cars used in its supply service. Other railroads have shown similar savings by this method of handling hundreds of the different items used daily. In many cases the manufacturers of these goods have been taught by the railroads how to save themselves money by shipping on skids, and are applying the lessons to shipments for other customers. Wherever skid shipment is feasible it has resulted in savings out of all proportion to the cost of the equipment.

"Furthermore, every dollar thus saved is clear gain. Unnecessary handling of material adds to its cost, but adds nothing to its value."

A. S. T. M. REPORT DISCUSSES NEW STANDARDS ADOPTED

June Meeting of American Society for Testing Materials Adopted 32 New Standards and 19 Revisions of Standards Already in Effect—Adoptions Will Be Issued as a Supplement to the 1927 Book of the A. S. T. M. Standards, Which is Issued Triennially

At the annual meeting of the American Society for Testing Materials, held in June, a number of actions were taken relative to the adoption of new standards and the revision of existing standards. According to the society's standardization procedure such actions must be referred to letter ballot vote of the society, and this has since been taken, resulting in the adoption as of September 3, 1929, of 32 new standards advanced from a tentative status and the adoption of 19 revisions of existing standards, as indicated below.

The standards specifications for structural steel for bridges (A7-29) and specifications for structural steel for buildings (A9-29) were revised by the addition of a requirement for copper when copper steel is specified. The standard specifications for structural nickel steel (A8-29) and structural silicon steel (A94-29) were also revised and continued as standard. The specifications for structural steel for locomotives and cars (A113-29), consisting of a complete revision and combination of the former specifications for structural steel for locomotives and structural steel for cars was adopted as standard.

As a result of an extensive investigation on the necessary reduction from ingot to bloom, the standard specifications for carbon-steel and alloy-steel blooms, billets, and slabs for forgings (A17-29) were revised by requiring that billets be made from ingots of at least three times the cross-sectional area of the billet instead of four times as heretofore.

The standard specifications for wrought solid carbon-steel wheels for steam railway service (A57-29) were slightly revised in order to bring them into agreement with the specifications of the A. R. A.

As a result of careful consideration during the past two years of the requirements in the specifications for carbon-steel castings for valves, flanges, and fittings for high-temperature service (A95-29) relating to process of manufacture and chemical composition, the society adopted certain modifications in these specifications and adopted them as standard. The revised specifications require the steel to be made by the electric-furnace, open-hearth, or other process approved by the purchaser and the chemical composition requirements are rejection limits.

The specifications for lap-welded and seamless steel pipe for high-temperature service (A106–29) were adopted as standard.

The specifications for the arbitration test-bar and tension-test specimen for cast iron (A124-29) were adopted as standard. These specifications were originally developed as a result of a long-felt desire on the part of those who test cast iron that the arbitration test bar should be more sensitive to deflection. With the adoption of the new arbitration bar, corresponding revisions in the standard specifications for gray-iron castings (A48-29), high-test gray-iron castings (A48-29) and cast-iron soil pipe and fittings (A74-29) were necessary.

The specifications for bronze trolley wire (B9-29) developed in cooperation with the American Electric Railway Association were adopted as standard. Specifications for rolled zinc (B69-29), aluminum ingots for remelting (B24-29), aluminum sheet (B25-29), silver solders (B73-29), and nonferrous insect screen cloth (B50-29) were also adopted.

Revisions in the standard specifications for freecutting brass rod for use in screw machines (B16—29), cartridge brass (B19—29), cartridge brass disks (B20—29) naval brass rods for structural purposes (B21—29) and seamless admiralty condenser tubes and ferrule stock (B44—29) were adopted and the specifications continued as standard. The test for resistivity of metallic materials for resistors (B63-29) was adopted as standard as well as the recommended practice for radiographic testing of metal castings (E15-29).

In the field of nonmetallic materials, specifications for building brick (made from clay or shale) (C62— 29), gypsum molding plaster (C59—29), and gypsum pottery plaster (C60—29) were advanced to standard and methods of chemical analysis of limestone, quicklime, and hydrated lime (C25—29) were adopted.

Standards in road-materials field cited.

Of interest in the road materials field are the specifications for sand for sheet asphalt and bituminous concrete pavements (D162-29), broken stone for water-bound macadam surface course (D191-29), broken stone for bituminous macadam (D192-29) and broken stone for bituminous concrete surface (D194-29) which were advanced to standard.

Slight revisions in the specifications for asphaltroll roofing and asphalt shingles surfaced with mineral granules (D225-29) were adopted in order to make these specifications conform more closely to present practice.

A completely revised test for coarse particles in dry pigments and coarse particles and skins in mixtures of pigments and vehicles (D185—29) was adopted. Revisions were adopted in the routine analysis of titanium pigments (D186—29) in order to make these methods applicable to titanium-calcium pigments. The standard methods of routine analysis of dry red lead (D49—29) were revised and continued as standard. Routine analysis of dry cuprous oxide (D283—29) and dry mercuric oxide (D284—29) were adopted as standard.

A revision in the form of separate methods for the determination of sulphur in coal and coke by the bombwashing and sodium-peroxide fusion methods (D271— 27T) was added to the standard methods of laboratory sampling and analysis of coal and coke (D271—29) and the methods continued as standard. The recently developed methods of test for cubic foot weight of crushed bituminous coal (D291—29), test for cubic foot weight of coke (D292—29) test for sieve analysis of coke (D293—29) and tumbler test for coke (D294—29) were adopted as standard.

The standard methods of testing molded insulating materials (D48—29) were completely revised and continued as standard.

Standards of interest in textile field.

Of interest to the textile field are the tolerances and test methods for certain light and medium cotton fabrics (D274-29), specifications and tolerances for 23/5/3 carded American tire cord (D298-29), and tolerances and test methods for asbestos yarns (D299-29) which were adopted as standard.

These newly adopted standards are being issued as a supplement to the 1927 book of A. S. T. M. standards. The Book of Standards is issued triennially, and standards adopted in the intervening years are published as a supplement to the Book of Standards.

WORLD CLOCK DESIGNED BY BUREAU OF STANDARDS MAN ATTRACTING ATTENTION AT IBERO-AMERICAN EXPOSITION AT SEVILLE, SPAIN

That the "world clock," designed by R. E. Gould, of the bureau, is attracting unusual attention at the Ibero-American Exposition at Seville, Spain, is the report of Capt. Sidney Morgan, in charge of the Commerce Department's section at the exhibition. The timepiece, constructed by a large international clock company in this country, is the source of numerous favorable comments from the heads of the visiting school delegations, as well as from officials of the Spanish Government, continental tourists, and all of the exposition visitors who see it, Captain Morgan stated in his report.

stated in his report. Standing nearly 7 feet high in one of the most prominent parts of the Commerce Department exhibition, the clock itself, of mahogany, is supported by a huge mahogany table, thus enabling the crowds to see the entire face of its handless dial, set flush in the large, close-fitting circular frame, and bearing the 24 hours of the day on its rim. The circular frame, painted flat white like the face of a clock, bears on its inner rim the world's longitudinal subdivisions.

inner rim the world's longitudinal subdivisions. The normal "12 o'clock" position on this frame is not the usually recognized 12 o'clock, but is the reference point for the time in Seville, and incidentally, Greenwich. When the moving inner dial brings the figure 1 to the vertical position, or 12 o'clock on the ordinary timepiece, it is 1 o'clock in the morning in Seville. At the same moment the other 24 hours spaced around the dial in their relative positions show the places of exact hourly variations of their time with that of Seville and Greenwich. The time of any of the various countries may be seen by glancing at the longitude that governs their time, and by reading the scale of the hours on the inner dial as it matches against the scale of longitude on the frame.

A clock that rewards one glance with so much information naturally attracts great attention, Captain Morgan reported. The numerous schools that visit the exposition get a better idea of how the hours of the day are distributed around the globe. Tourists are immediately concerned with what the time is "back home." The dignified Spanish visitors read the label slowly, check their watches and then explain the machine at great length to their accompanying families. An interesting moment to all visitors is the checking of the huge clock for accuracy by radio signals from the well-known Big Ben, in London, at midnight.

QUALITIES OF RUBBER ARE STUDIED TO IMPROVE EFFICIENCY AND LENGTH OF SERVICE OF PRODUCTS

Rubber Used in Countless Forms and Utility, Forming the Basis of Many Industries; Many Specifications Are Based Largely on Bureau Investigations

Rubber with amazing versatility enters into countless articles of the most diverse form and utility. On these uses many industries are based. The properties of rubber are so responsive to measured processing milling, chemicals, solvents, shaping devices, and heat—that industrial research finds in the uses of rubber a fertile field.

The Bureau of Standards is concerned with research in this field, relating, for example, to composition, analysis, test methods, testing devices, specifications, composition, aging, wear endurance, electrical properties, deterioration, storage, and performance characteristics.

Published researches include such subjects as endurance tests of tires, puncture-sealing compounds for measured tests which insure the wearing qualities or behavior desired. In its experimental rubber mill almost all kinds of rubber products may be made. Its experts experiment and test, and develop new knowledge of wear and how to measure the useful properties of rubber.

Many specifications of direct interest to all who buy and sell rubber products are based largely upon bureau investigations, comprising, for example, such varied articles as rubber gloves, aprons, bandages, tape, hot-water bottles, packing, pillowcases, ring cushions, sheeting tubing, tires, and the like. These itemize what the buyer wants, what the maker is to deliver, and form a common meeting ground as to their useful characteristics.



pneumatic tires, aging of soft rubber goods, density and electrical properties of rubber-sulphur compounds, temperature and humidity control in rubber testing, measurement of tread movement of tires, methods of physical tests and chemical analysis of rubber goods, and numerous technical specifications for rubber goods.

Gas tubing studied.

Flexible gas tubing was studied as to effectiveness and safety. Methods were devised to measure the sulphur, barium sulphate, barium carbonate, free carbon, cellulose, glue, antimony, and other ingredients in rubber and rubber goods.

The Bureau of Standards is especially concerned with the behavior of rubber in service and with the

Have many uses for rubber.

The uses of rubber are manifold. The world rides on rubber. It softens the impact of walking and stops the jar of the motor. It makes balloons possible. Its properties may be molded almost at will by the technical expert. Its electrical insulating power as measured in bureau research may be made a maximum by mixing in 10.5 per cent of sulphur. The bureau found it most useful for making cores for metal castings.

Being impervious to moisture it has a host of uses. It may be made softer than a sponge, lighter than cork, harder than wood. The measured control of its properties and uses is a fertile field for research.

A bureau study of rubber sources and a test of rubber from the Guayule shrub showed that, properly processed this rubber compares favorably with plantation Hevea rubber and suggests this shrub as a potential source of commercial rubber. Other researches cover rubber stretching properties permeability, oxidation, and suitability of rubber soles and heels for shoes.

The flying time of high-flying balloons, used to study winds and air currents at high altitudes, was found to be limited by the permeability. Experiments disclosed that if dipped in a solution of glue and glycerin these balloons remained afloat several times longer than when undipped.

The deterioration rate of rubber was found to be decidedly reduced by commercial antioxidants and the life of thin rubber goods increased on dipping in antioxidant solutions.

Tire-endurance machine devised.

A tire-endurance machine was devised, built, and put into service in the bureau laboratories. Checked against road service, it afforded a method of testing tires cheaper and quicker than actual road test. The conditions of the test may be accurately reproduced. The test is now part of the Federal specification for tires.

Delivery tests of automobile tires for the Government involve a laboratory run of 1,300 miles in the Bureau of Standards tire laboratory, the tire running on a flywheel turning at a rim speed of 30 miles an hour, encountering three bumps at each turn—two and a quarter million in all. This severe test must not cause any sign of weakness in the tire. It is a tribute to tire-making enterprise that practically all tire makers are now able to make a grade of tire meeting Federal requirements.

In another laboratory research it was found that rubber hydrocarbons of diverse origin possess the same properties. Rubber mixtures in various proportions are being studied to correlate composition and temperature with behavior. A bureau investigation on the effect of reclaimed rubber on the wearing quality of tire treads showed that the loss in resistance to abrasion is roughly proportional to the per cent reclaimed rubber used. This fact is available for tire experts who wish to use reclaimed rubber in making tires without undue impairment of the tires.

BUREAU REPORTS ON A STUDY MADE OF FIBER WALL BOARDS

Report Describes Fiber Wall Boards and Their Strength; Test Methods Are Explained for Benefit of Public; Manufactured Products From Ten Different Domestic Concerns Used in Test

A study of fiber wall boards, undertaken by the paper section of the Bureau of Standards, has revealed information that will assist in the formulation of purchase specifications for this product. The study was conducted by two members of the bureau staff, B. W. Scribner, technologist, and F. T. Carson, associate scientist.

The information was desired for fiber boards used as interior finish only, therefore other classes of structural boards, used primarily for insulating or other purposes, were not considered in these tests. The term "fiber," as applied to wall boards, embraces vegetable fibers only.

Description of fiber wall boards.

Of the two general types of wall boards, termed laminated and homogeneous, the former consists of boards made up of several sheets of thin fiber board bound together with an adhesive, such as sodium silicate. The latter are boards made in one piece either on a cylinder-board machine or by molding in steamheated platens.

The lower grades of vegetable fibers, wood fibers for the most part, compose all or the greater part of the boards. Of recent years waste fibrous materials from the production of cane sugar and licorice have been extensively used, especially in the homogeneous type of boards.

In common with all vegetable-fiber materials, the tendency of the fibers of wall boards to absorb moisture and thus cause the board to warp is one of the most exacting problems with which the manufacturer has to contend. The force exerted by the expansion of a heavy piece of fibrous material such as this, unless the expansion is largely prevented by specific treatment of the material, is almost unbelieveable. Untreated board might warp enough to pull away from its fastenings. All wall boards are affected more or less in this respect by changes in moisture content brought about by changes in atmospheric humidity from day to day and from season to season. The extent of these changes depends upon climatic conditions and upon the degree of resistance of the board to these conditions.

Fortunately wall-board manufacturers fully appreciate the importance of adequate water resistance in relation to minimizing warping of the board after its erection, particular attention is generally given the sizing of the board to give it satisfactory water resistance. The incorporation of rosin sizing throughout the board is considered necessary. In some cases the resins and gums contained in the fibrous raw material assist in making the fibers water repellent. Experience has shown that no difficulty is ordinarily occasioned by loss of moisture from the board after its erection. For this reason effort is made in the manufacture of the board to finish it with a fairly high content of moisture-around 10 per cent. Of course, an excessive amount of moisture left in the board would no doubt be harmful. A certain amount of contraction is beneficial, however, as this causes the board to draw tightly to its support.

Strength of boards.

The strength of wall boards is important mainly in relation to the handling of them. If they are strong enough to withstand the handling incident to their finishing, shipment, and erection, no doubt they will be strong enough to endure the service strains to which they are exposed after being secured in position. In the laminated boards there is a distinct grain, as is the case with most paper products formed on a paper machine, which runs in the long direction of the board. This is due to the tendency of fibers on a paper machine to remain parallel to their forward travel on the machine. This effect is generally absent in the homogeneous boards. Naturally, when there is a distinct grain in a board, it has greater strength with the grain than across the grain.

Although fiber wall board has considerable value as insulation as well as serving as finishing material, it was found in the previous study that the insulating value of a given thickness of various kinds of fiber wall boards is much the same. No further study was made of insulating value in the present investigation.

Study of test methods.

A survey of the information available at the time the further development work was undertaken showed that there was considerable question of the suitability of the water-immersion test and the bursting-strength test. Both of these methods of testing were in quite common use. There was doubt, however, as to whether the water-immersion test had a direct relation to the expansion value of a board, and whether the bursting strength actually indicated the probable resistance of a board to service stresses. Further laboratory study of the estimation of these properties were, therefore, made.

Since the water-immersion test does not measure adequately the likelihood of warping, an actual expansion test was developed. The expansion behavior of various wall boards was studied by means of an extensometer, a device for measuring the actual expansion of the boards in per cent when the boards were subjected to the action of a standard moist atmosphere after having been dried to a definite condition. It was found that the shorter direction of all boards expands more than the longer direction. Since trouble

TO MAKE STUDY OF AIR SAFETY

Many scientists of the Government are at work to make commercial aeronautics so safe that the public will gain confidence and like flying. Officials agree that safety is prerequisite to building up commercial aeronautics and they cite the successful round-theworld tour of the *Graf Zeppelin* as an example of what can be accomplished by careful planning and efficient management.

The Bureau of Standards is leading the drive to remove danger hazards. In the use of the visual radiobeacon system scientists believe a long step toward beating hazardous night and fog flying has been taken. This system is not only sufficient to guide a pilot along a given course, by means of the directive beacon; and to inform him how far on a given course he has traveled by means of the marker beacons located along the route, but when specially arranged, it offers possibilities toward assisting a pilot in landing at a given airport during fog. The best arrangement for this purpose has not yet been determined, but several promising methods are being investigated. An installation has been made at College Park, Md., to test their practicability.

To develop methods of landing in a fog.

A cooperative program has also been undertaken with the Guggenheim fund for the promotion of is most likely to arise from warping in this direction the subsequent study of expansion was confined to this direction.

It was found that it is necessary to observe the behavior for two or three days before the different kinds of boards settle down to any constant interrelation. A comparatively simple test was finally determined upon, which consists in measuring the distance on the wall board specimen between two fine marks about 10 inches apart. A measurement is made after the board is dried to a definite state and again after subjecting it to a standard moist atmosphere for a period of 72 hours.

Bursting test.

The bursting test is generally used to measure the strength of fiber wall boards. This test is made with an instrument in which the board is clamped against a rubber diaphragm through which pressure is applied to the board. The force required to break a board in this manner is registered on a pressure gauge. A flexural strength test appears to be more in line with the service stresses to which wall boards are normally subjected. Such a test is commonly used for plaster boards, gypsum boards, and heavy boards made for various other purposes. The form of test finally determined upon consists of laying a strip of wall board 3 inches wide flatwise on two metal rods 12 inches apart.

Weights are added to a third metal rod lying across the board halfway between the other two until the board bends down and breaks. The necessary weight to break the board under these conditions is a measure of the relative flexural strength. As a matter of general information and to obtain test values for use in fixing specification requirements, fiber wall boards manufactured by 10 different domestic concerns were used in these tests.

aeronautics, to develop methods of landing in a fog. A low-power visual beacon installation has been made at Mitchel Field, Long Island, where these experiments will be carried out.

A reed-type visual indicator has been developed by the bureau which is intended to keep the pilot on his course. The device is rugged and simple. When beacon signals are received the two reeds vibrate when the two white lines developed on vibration are equal in length the airplane is on its course, a deviation increasing the deflection of one reed and decreasing that of the other.

To render the beacon system more flexible and make it suitable for use at sites located at the junction of a large number of airways, a new type has been developed capable of serving 12 courses simultaneously. A 12-course beacon has been set up at College Park, where it is giving satisfactory results.

The directive beacons successfully guide a pilot along the course, but give him no information as to the distance traversed. This lack has been supplied through the installation of nondirective beacons along the airways at strategic points. These marker beacons will tell the pilot when he is passing over a specified plane, so that he can locate himself and always know his position. In addition, the pilot may gage wind conditions and note changes in wind direction or velocity as he proceeds during the flight.

DEPARTMENT OF COMMERCE AIDS INDUSTRY THROUGH ITS MOTION-PICTURE DIVISION

North, Chief of Motion-Picture Division of Department, Discusses the Service That His Division is Ready to Give Industry

C. J. NORTH, Chief Motion-Picture Division, Bureau of Foreign and Domestic Commerce, Department of Commerce

The American motion-picture industry must keep itself closely informed as to film conditions in every foreign country. This type of information includes all facts relating to foreign production (more than 1,200 feature pictures were made by our competitors abroad in 1928); the type and extent of competition in the distribution of pictures in each foreign market; the number of theaters in each country with seating capacities, admission prices, also new theaters built; the rules and regulations of foreign censorship boards with the number of pictures from each country censored; the volume and value of our film exports to each country; the extent of entertainment taxes and revenues derived therefrom; and much more commercial information of a like nature. In addition to this, however, there are certain special problems of even greater importance which may be described herein.

Industrial education section.

This section is acting as a clearing house for approximately 475 concerns who are actively engaged in the actual production and distribution of nontheatrical films for exhibition before educational, religious, social, commercial, and civic institutions in the United States.

Recognizing the film as a media to promote trade and to increase the consumption of American manufactured products both at home and abroad this section is conducting surveys designed to develop pertinent information which will increase the demand for this product (films), thus assisting both the nontheatrical exhibitors and the producer-distributor at the same time. As an example of this service at the present time more than 65,000 questionnaires are awaiting the opening of schools in the United States. A national survey will be made to develop data which will guide producers in the protection of educational films and will incidentally assist the average school to secure films more adequately adapted for educational purposes, and will, in general, enumerate such facts as to determine the actual value of the motion picture in education.

During the last year 4,000 forms were mailed to schools, more than 30 per cent being returned with

FARMERS INTERESTED IN GRADE-MARKING DATA

Extending its activities in behalf of the grade marking of lumber; that is, the stamping of lumber at the mill with the symbol of its grade and quality—to the farm field, the National Committee on Wood Utilization of the Department of Commerce, is now asking the lecturer of each local grange in the United States to make grade marking the subject for discusrequests for information as to the sources of films on certain subjects. As a result of this service the section has been advised by the trade that numerous requests have been received by them which has resulted in the actual sale and distribution of these films. Many of the requests mentioned were answered by sending out a Composite List of Nontheatrical Film Sources, a publication issued by this section, giving the names of over 425 concerns who are distributing films.

While definite strides are being made in the domestic field to develop this industry, even greater efforts have been made to increase the present exploitation of their films abroad. The first work done in this respect was to issue a trade information bulletin, Markets for Industrial and Educational Films Abroad. Closely following this voluminous correspondence has resulted in our foreign representatives contacting numerous foreign organizations with the view of developing this market. As a result of this effort tangible requests for American films have been received and are now to be issued in a series of trade opportunities. The trade is kept advised as to foreign developments in this industry through the medium of foreign market bulletins and a semimonthly press release on this subject. In addition, the division contributes articles for each number of Commerce Reports, the weekly publication of the Bureau of Foreign and Domestic Commerce. These articles consist of market information of value to the industry. Annual and semiannual statistics of motion-picture exports generally appear in Commerce Reports.

The American-Ibero Exposition.

The section is frequently called upon to render certain special services. At the request of the Spanish Government this section secured more than 100 films and negotiated with the Industrial Motion Picture Producers for the retitling of these pictures for showing at the International American-Ibero Exposition in Seville, Spain. These films were all furnished by large manufacturing companies, and describe their respective plants and manufacturing processes.

sion at grange meetings. L. J. Taber, who is Master of the National Grange and represents that organization on the National Committee on Wood Utilization, says that the "farmers will save millions of dollars annually by insisting upon grade-marked lumber in their purchases." It was Taber who recommended to the committee that lumber grade marking be made a subject for discussion at grange meetings, and who is making arrangements to assure the scheduling of these discussions.

INCREASING NET PROFITS THROUGH SIMPLIFICATION

Simplification, By Reducing or Eliminating Unnecessary Varieties of Staple Products, Reduces Investments as Well as Manufacturing and Distribution Costs, Says Chief of the Division of Simplified Practice

EDWIN W. ELY

In these days of keen competition, rising costs of doing business, and shrinking profit margins, executives in nearly every line of business are searching out every possible avenue or means for strengthening net profits.

Among the several means being employed to this end are simplification and standardization. Though the meaning and application of these terms is widely understood, it is important to note the difference between them. Simplification usually means the elimination of the unnecessary. In the simplified practice program of the Bureau of Standards, it means eliminating superfluous or unnecessary variety in sizes, dimensions, etc., of commonly used commodities, as a means of eliminating waste.

The resulting concentration of manufacturing, selling, or purchasing effort on the varieties remaining after simplification brings economies, such as smaller inventory, less cost to carry or maintain it; less idle investment, and less obsolescence. This same standardization may lead to the adoption of the varieties remaining as "standards." To this extent, simplification is the forerunner of standardization. There are other ways of determining and establishing standards, but simplification affords quicker approach and, therefore, often yields immediate savings and benefits.

Simplification calls for concentration on varieties in most common or general use. This makes it fairly easy for manufacturers, distributors, and consumers; that is, for buyers and sellers to come together and concur upon programs of mutual benefit and saving. Simplification originates sometimes with the manufacturers; sometimes with the distributors; and other times with the purchasers or the consumers of the commodity.

All must cooperate in the program.

No matter at which source the program starts, the best results are gained through the cooperation of all three; and it is in the development of this cooperation that our Bureau of Standards endeavors to be of service. One major advantage of simplification is expressed in the statement "if you can not apply it to things you sell, you can at least apply it to things you buy."

In our eight years' experience with the development of the simplification movement, we have come across many interesting instances of its application in various fields. These examples are furnished by superintendents of stores or supply departments, by purchasing agents; and others cover railroads, public utili-

HIGH PRECISION VOLTMETER DESIGNED

The development of a precision voltmeter, which will measure alternating voltage between 20 and 300 volts with an error of only 0.01 per cent, is announced by the Bureau of Standards. In any ordinary instrument of the deflecting type, a small error is introduced ties, factories, shops, and retail stores. In each case, the program has been definitely linked up with the "service of supply," and the reader of the COMMER-CIAL STANDARDS MONTHLY knows the importance and value of that service or function to the success of a business.

Examples of reduction given.

For example, a well-known eastern railroad cut its list of stores or supply items from 140,000 to 78,000, eliminating 44 per cent of its former variety and reducing the value of its inventory nearly 40 per cent.

A western road cut its supply inventory from \$38,-000,000 to \$20,000,000, thereby releasing \$18,000,000 of otherwise idle capital for production purposes.

Another company reviewed its printed forms, and found it had 16,000. It made changes in color or paper, of 500, discontinued 72, revised 9, consolidated 45 into 22; cut its variety of letterheads from 161 to 27, and so on. This simplification enabled the company to buy fewer varieties in large quantities, at better prices and with improved service.

A typical department store simplified the size variety of its price tickets from 47 to 19, and thereby cut its average cost per thousand by 24 per cent and its inventory or stock of those tickets by $27\frac{1}{2}$ per cent.

Bureau of Standards offers aid.

Those illustrations represent savings that range from hundreds to millions of dollars, show that simplification is being applied with benefit to store supplies. The writer can not tell the practical limits of its application in any one field. He (the reader) must determine that; but it is reasonable to assume that there are opportunities for simplification existing in all fields. The Bureau of Standards is ready to assist industry in gaining the most from its waste elimination efforts.

In conclusion, may the writer again emphasize simplification and standardization as sources of new profit. If one can save \$100 a month for his store, by their use, he will have saved \$1,200 a year, and that is 5 per cent on \$24,000 worth of sales. If one can save \$1,000 a month, or \$12,000 a year, that is 5 per cent net on \$240,000, or nearly one-quarter of a million dollars of sales. The reader knows how hard he has to work to add that much to his present volume of sales, and it is a gamble all the way as to whether or not he will make 5 per cent net when he is through. Savings made from simplification are usually clear net gain. They are a direct contribution to better net profits.

into the readings because the springs used in the mechanism are not perfectly elastic. In the instrument designed by the bureau, this error has been suppressed, and an optical magnifying system used which is equivalent to a pointer more than 60 feet long. Thus, very small deflections are easily read with high precision.

INTERNATIONAL STANDARDIZING BODIES

Bletz, of Commerce Department, Says National Standards Committees of Eighteen Countries Have Made Notable Endeavor to Establish International Standards Organization Upon a Permanent Basis

N. H. BLETZ, Chief Foreign Standards Section, Bureau of Foreign and Domestic Commerce, Department of Commerce

International scientific organizations have given the world most of the existing international standards. These are standards of time, length, weight, color, and temperature, as well as basic standards for chemical, mechanical, physical, and electrical elements. While the exigencies of international commerce required these standards, science or science in industry has usually been a few steps ahead of the demand. On the other hand, competition for world industrial supremacy, or, at least, the desire for leading positions in world commercial or industrial accomplishments, appears to act as a drawback to greater international uniformity in specifications for commodities. Apparently until there is greater equality in the producing methods in the different countries, industrial rivalry between nations will continue to delay a larger development of international commodity standards.

The national standards bodies of 20 countries have made notable endeavor in recent years to establish a permanent international standards organization. As a result of this activity, organizations of 16 European countries now have agreed to the establishment of the International Standards Association and have elected a president and secretary. As there is no limit to national standardization and likewise no limit to the future possibilities for international uniformity, restrictions to the scope of this body have been avoided by the prime movers in this undertaking. Early activities of the association will be directed toward definite cooperation between the separate national bodies, standardization of methods and procedure, comparison of experience and results of investigations, and the coordination of activities wherein possible.

Oldest international standards body.

One of the oldest international standardizing bodies in a specific field is the International Bureau of Weights and Measures whose headquarters are at Sevres, France. This bureau and its international committee were established in 1875 by international treaties, the governments of 31 countries now being parties to the convention. The bureau has custody of the standard meter and kilogram to which all prototypes of the world are referred for verification. General conferences are held each six years. The International Electrotechnical Commission, London, England, was organized in 1906. It has a council of the commission, 26 national committees, and 18 advisory committees. An idea of the scope of its activities in standardization is shown by the studies it has undertaken with respect to rating of electrical machinery, prime movers, voltages, transmission lines, radio communication, rating of rivers, measuring instruments, lamp bases and sockets, symbols, and nomenclature. Plenary meetings of the council are held regularly.

regularly. The International Commission on Illumination, Teddington, England, was formed in 1913. While this body is not a standarizing agency primarily, it is interested in international standardization in the illumination field. The organization has a number of national committees and holds international meetings now, triennially.

now, triennially. The International Union of Pure and Applied Chemistry was organized in 1919 and its headquarters are at Paris, France. Fifteen committees, two permanent commissions, and one bureau carry on the work of the union, the scope of which is too broad to summarize in a short space. Notable accomplishments have been made by this body. The council of the union and the committees hold meetings regularly.

Important bodies.

Three important bodies which are developing standards useful to science, and likewise to commerce, are the International Astronomical Union, the International Geodetic and Geophysical Union, and the Geodesy Section of the International Geodetic and Geophysical Union.

In 1927 representatives from 17 countries participated in a meeting called to reorganize the International Association for Testing Materials. This body had its beginning in 1882, and was organized formally in 1897. Meetings were held regularly up to 1912. Unification of standard methods of testing, examination of technically important properties of materials, and the perfecting of apparatus for testing purposes, are the objects of the body. Questions relating to standardization of materials are regarded as without the scope of the association.

SIMPLIFIED OFFICE PROCEDURE IN THE GOVERNMENT

MAJ. A. H. ERCK, U. S. A., Assistant to the Chief Coordinator, Executive Chairman Interdepartmental Board on Simplified Office Procedure

With a view to promoting economy and efficiency in routine office procedure in departments and establishments of the Federal Government through simplicity and uniformity of practice as to matters not already allocated elsewhere by law or by Executive order, an Interdepartmental Board on Simplified

Office Procedure was created within the Federal Coordinating Service in 1924.

The Federal Government is by far the largest and most intricate organization in the world. Before an interdepartmental standard can be promulgated it has to be made the subject of exhaustive study to prevent injury to any of the multitude of operating units. Each activity must have its day in court in the case of each proposal for standardization and simplification of Government procedure. This requirement makes accomplishment in this important field very slow, but avoids the adoption of any incomplete or defective project.

The interdepartmental board acts as a coordinated investigating agency. Through its subcommittee assignments, its numbered memoranda, and through cooperation and assistance of other coordinating board, the board secures the data on which are based the necessary recommendations to the Chief Coordinator on matters pertaining to the simplification of routine administrative business.

Objectives of board.

At this point it might be well to pause a moment and give the general objectives of this board, which are grouped in the following manner:

(a) To classify, simplify, and standardize routine administrative functions common in two or more departments or establishments.

(b) To develop a standard form to meet the needs of each routine administrative function in two or more executive branches of the Government (except those accounting forms promulgated by the Comptroller General).

(c) To prepare complete, simple, and elastic working methods in such routine matters as preparing, dispatching, and filing correspondence and other papers.

(d) To investigate and recommend a uniform plan for the constant and regular destruction of useless correspondence and other papers.

(e) To standardize in the use of the latest improvements in office materials, supplies and equipment, with special attention to the use of time-saving devices in routine business.

(f) To plan for the efficient and economical management of personnel.

The approved recommendations of the board on matters within the objectives stated are promulgated by the board as United States Government Interdepartmental Standards. They establish the procedure to be followed in matters of routine administration by all activities of the executive branch of the Government. Many very promising studies have been undertaken by the board since its establishment, and these are now in various states of completion. Several are in the final stage of development and a number have already been adopted.

Standard No. 1.—Envelopes.

A special committee of the board cooperated with a committee of the Permanent Conference on Printing, to study the size and quality of envelopes for the various services of the Government other than those purchased by the Public Printer. The standard adopted accomplished the reduction from 116 items heretofore purchased to 64 items, and proposed the general substitution of Kraft envelopes of the same or greater strength for cloth-lined and rope envelopes. A standard pay envelope and a standard window envelope for check payments were provided. This standard for envelopes was instrumental in enabling the Government to purchase more than 5,000,000 more envelopes in 1928 for \$17,000 less money for its total envelope bill than in 1927.

Standard No. 2.—Twine, wrapping.

This standard reduced the varieties of twine purchased from 35 or more items to 15. The effect of this standard is to increase the quality required of each item so that it is sufficiently large to be attractive to bidders and command a better price. Industry has developed two simplified practice recommendations for twine—one, S. P. R. No. 92, for hard-fiber twines (ply and yarn goods) and the other, S. P. R. No. 110, for soft (jute) twine. The Federal specification and the simplified practice recommendation for soft-fiber (jute) twine, are now being brought into agreement by the Federal Specifications Board.

Standard No. 3.—Books (stock), blank and memorandum.

An investigation disclosed that blank books procurable under contracts in effect in 1928 were of 6 different dimensions, 5 different styles of ruling, 3 different styles of indexing or paging, and of various numbering of pages from 150 to 500. In other words, books of 6 different dimensions varied in specifications so as to permit 357 different books to be ordered. The standard adopted carries a listing of 5 general types of books with specified variations in total of 17 books. This permits the Government Printing Office to manufacture or procure each of the 17 kinds of books in quantities large enough to permit standardized operations and low costs.

Telephone listings.

A fourth standard establishing uniformity in the listing of Government activities in commercial telephone directories throughout the country is nearly ready for promulgation. Its principles have already been applied to the commercial telephone directory in Washington, D. C., and are proving very satisfactory in use.

Documents and other proposals.

The board has standardized or proposed for standardization 16 blank forms, which have replaced several hundred individual forms at a considerable reduction in printing costs and increased service efficiency.

The board has provided a clearance for translations of documents written in foreign languages and thus enabled many Federal activities without translators in their own employ to have this work done without expense for commercial translations.

The board has conducted tests of many office appliances—both new, and old ones suggested for new uses—and is taking steps to facilitate the adoption of those deemed meritorious.

After investigation by the board, a system was developed and placed in effect which has been completely successful in safeguarding the delivery of money for Government pay rolls against any attack by bandits.

The committees of the board are actively engaged in the assembling of data relative to the proposals before them, hearing and evaluating every objection raised, and preparing to offer workable solutions of the complicated problems involved. The very vastness and intricacy of the machinery of the Government makes it imperative that the board, in carrying out its mission to simplify Government office procedure, be careful and thorough in its studies and "make haste slowly."

RESULTS AND BENEFITS OF APPLYING SIMPLIFIED PRACTICE TO LOADED PAPER SHOT SHELLS

McNeil, of the Division of Simplified Practice, Discusses the Findings of a Survey Made Among Acceptors of Simplification Program Covering Loaded Paper Shot Shells to Determine the Value of Program

By J. F. McNeil

Five years ago, there were being manufactured 4,067 different loaded paper shot shells. The requirements of the hunter were, no doubt, simple—a few loads to which he was accustomed and had used for many seasons. Perhaps a prescription of his own or one suggested by others. His fellow sportsmen, likewise, were easily satisfied, yet collectively, they were being offered more than 4,000 varieties, from which to meet their individual ideas as to what comprised a good load for the pursuit of various kinds of game.

It is easy to see how such a condition could come about. In the days of the muzzle-loader, a gunner carried two flasks, one for shot and the other for powder. From these flasks, he compounded no end of loads. Every man had his own ideas as to just what was the right charge for any given set of conditions.

Came the center-fire breechloader.

With the introduction of the center-fire breechloader came the forerunner of the modern paper shell and into the paper shell went all the "ideal" loads. At first many gunners loaded their own shells, others had their pet powder and shot prescriptions filled by local loaders who sprang up in many localities. Eventually the local distributor passed most of these combinations on to the loading companies doing a nation-wide business. New powders were developed, the number of loads doubled, tripled, quadrupled, until in 1924, manufacturers, jobbers, and dealers were handling the unnecessary variety named in the first paragraph of this article.

Of course, not many of these loads were widely popular. The majority of them were shelf warmers, and in quite a few cases were produced in a limited quantity to fill some fanciful formula. This meant frequent readjustments of the manufacturer's production schedule. The dealer was burdened with too many slow-moving items, and the low turnover threatened to absorb everybody's profits. The customers were no better off, because no one needed 4,000 loads from which to select a few sizes. In fact, one of the leading companies in summarizing game conditions in the United States showed that every purpose for which a shotgun is used can be adequately provided for by less than 200 loads.

Of course, the customers must have been helping to pay the expense of producing and distributing the shells then being offered for sale. At the request of the National Hardware Associa-

At the request of the National Hardware Association of United States, the Southern Hardware Jobbers' Association, and the National Retail Hardware Association, a preliminary conference of manufacturers of loaded shells was held on June 19, 1924, at the New York office of the United States Department of Commerce, under the auspices of the division of simplified practice.

Representatives from five companies present.

Representatives from five of the six loading companies were present, and after a discussion of the desirability of applying simplified practice to the loaded shell industry, a committee of two was appointed to make a survey covering the sizes and varieties of loaded shells then produced. Five leading manufacturers who attended the meeting of June 19, submitted data from which such a survey was made, and a second meeting of the manufacturers was held at Atlantic City on October 13 and 14, to consider the survey. Representatives of five manufacturers were present and a sixth indicated by letter that his company was wholly in sympathy with the movement and would support the simplified practice recommendation which might be developed by the entire industry.

Out of 4,067 loads 1,747 retained as standard.

At this meeting, the data compiled from the survey were carefully studied, item by item, with the result that out of the 4,067 loads reported, 1,747 were retained on the standard load list. The 2,320 loads (57 per cent of the total), which were eliminated, represented only 5 per cent of the total sales.

The recommendation was adopted and the Department of Commerce was requested to hold a general conference to which the simplification program might be presented. This general conference was held in Atlantic City on October 14, 1924, and the recommendation presented by the manufacturers and representatives of the powder companies was unanimously approved.

Program went into effect on January 1, 1925.

January 1, 1925, was selected as the date upon which the recommendation should become effective, to remain in force for a period of one year. A standing committee was appointed, representing all the interested groups to secure general adherence to the recommendation, to effect a greater degree of contact and cooperation between the Department of Commerce and the various manufacturers and organizations in the industry, and in the light of facts developed by periodic surveys, make constructive revisions or substitutions.

The standing committee met on October 31, 1925, and added 8 loads to the schedule making the new list total 1,755. Another meeting of the standing committee on October 19, 1926, resulted in a further elimination of 996 loads, making the present recommended list 759, the percentage reduction to date being 81 per cent.

Replies received from survey.

The following excerpts are taken from replies to an inquiry recently made by the department to determine the benefits that have accrued to the acceptors of this particular recommendation. One large manufacturer said: finished merchandise and raw materials." "I am unable to express these savings on a dollar and cents basis," he wrote, "but I am positive they

amount to a great many thousands of dollars a year." Another manufacturer wrote: "In so far as savings are concerned, there is no question but that the saving is a factor well worth consideration, for through the plan of simplification we, from the manufacturers standpoint, are enabled to carry less stock than we formerly did and because of this we are able to get a better turnover on our merchandise. However, we can assure you that we are strongly in favor of this simplification program, and, in fact, we are working with a view of another reduction of combinations to take effect in the near future."

The replies which were received from distributors in this field also indicate that they are finding this simplification program to be of real benefit.

UNIFORMITY IN HARDENING METALS IS SOUGHT BY BUREAU

Certain Inexpensive Liquids Suggested for This Purpose

An investigation into the present-day practice of hardening metals is being conducted by the Bureau of Standards in an effort to provide a more closely graded set of the characteristics of coolants for quenching steel and other metals. The results of the experiments will shortly be made public in the BUREAU OF STANDARDS JOURNAL OF RESEARCH.

Present-day practice in hardening metals is based largely upon the use of oils, water, and the aqueous solutions producing the more rapid cooling, such as sodium chloride brines, sodium hydroxide solutions, and water sprays at ordinary temperatures. There is a large gap between the cooling rates obtained in the customary quenching oils and in water, and this is now usually taken care of by tempering subsequent to hardening or by interrupted quenching.

Such procedure is entirely satisfactory for many practical purposes, but simplification and economy, and possibly also technical advantages, would result if coolants were available to provide a more closely graded set of coolant characteristics. For this reason the Bureau of Standards has investigated cooling media for quenching steel and will soon publish its findings in the JOURNAL OF RESEARCH.

To Use Hot Aqueous Solutions.

The practical solution of this problem is not solely one of obtaining certain prescribed cooling rates, but this is one of the important requirements. Study of A hardware jobber, who is located in the state of Iowa, said in his communication: "On loaded paper shot shells alone, our stock has been cut two-thirds and we do just as large a volume of business. We are saving the money that we formerly lost in cleaning up obsolete goods, odds and ends, and remnants at the close of the season. It also results in less confusion to the salesmen and trade, and, therefore, reduces the selling cost."

"We estimate that it has reduced our inventory and capital invested about 50 per cent," wrote another wholesale dealer in hardware, "and has increased our turnover and profit correspondingly. We would like to see the simplified practice extended to many similar styles and numbers."

"We feel," wrote a third distributor of shells, "that we have been greatly benefited by this action. We find that we are now able to carry in our stock without any additional inventory, practically a complete line of loaded shells. We are now getting a faster turnover on our stock."

"One of the most striking examples of simplified lines of goods," wrote another, "is loaded shells and ammunition. We now have our stock made up of this simplified line, and we find that our turnover is much better and we are also able to do the same, or even an increased volume of business with less stock."

the surface and center cooling curves, hardnesses and structures of small high-carbon steel cylinders quenched in water, sodium hydroxide, sodium chloride solutions, and oils at different temperatures suggested the possibility of using some of the hot aqueous solutions to bridge the gap between the cooling rates obtained with water and oils at atmospheric temperatures.

Experiments with carbon and alloy steel tensile-test specimens and gages seemed to justify the view that hot aqueous solutions can provide a useful group of coolants with graded cooling characteristics for the hardening of small steel pieces. Final selection must depend upon additional experimental work, but the most promising of the group already studied are given below in order of decrease in the speeds, or increase in the times, of cooling: 5 per cent caustic soda at 20° C.; 5 per cent salt at 20° C.; water at 20° C.; 5 per cent caustic soda at 60° C.; 5 per cent salt at 60° C.; water at 60° C.; 5 per cent caustic soda at 80° C.; 5 per cent caustic soda at 85° or 90° C.

The difficulty of reproducing results in quenching should increase as the temperature of the aqueous solution approaches the boiling point of water for reasons discussed in the report, but under suitably controlled conditions it should be practicable to make use of hot aqueous solutions in practical heat treatment. There is, however, a possibility of gaining advantages by decreasing the temperature and changing the concentration and rate of circulation of the liquid in individual cases, but evidence has been given of useful properties in a group of liquids which are inexpensive and generally available for the heat treatment of steels.

GANG SAWS INSURE CLOSER STANDARDIZATION AND BIGGER LUMBER SAVINGS, COMMITTEE DECLARES

Wood Utilization Committee Discusses Gang Sawing, as It Relates to Standardization, and the Resultant Savings

As a result of the establishment of American Lumber Standards a few years ago through the efforts of the Department of Commerce, radical changes have taken place in lumber merchandising. A further development of this movement has led to important improvements in the manufacturing, seasoning, and handling of lumber, in order to bring the stocks up to established standards of sizes and grades.

Of late years, increasing quantities of European lumber have entered our eastern markets and American lumbermen have become interested in investigating the European manufacturing practices which saws principally differ from other types of gangs in that they cut round logs of small diameter without previous squaring of the logs.

revious squaring of the logs. A new sawmill, especially designed for these gang saws, was built in Olympia, Wash., and through committee efforts, Scandinavian gang-saw manufacturers were induced to furnish the machines for test purposes. The mill began operation in April, 1929, and the committee has just finished its tests, from which it has been learned that small logs, such as tree tops and timber cut under the thinning process—heretofore considered as waste—can now be cut into lumber at a



evidently enable the European lumbermen to overcome certain difficulties that have hampered the progress of standardization in this country. This European lumber is cut from small trees, but is nevertheless very well manufactured to standard sizes.

Ever since 1916 the Department of Commerce has investigated European sawmilling methods, and has published several technical reports on this subject. As a result of these investigations abroad, the National Committee on Wood Utilization established in 1925 a subcommittee under the chairmanship of A. Trieschmann, a Chicago lumber manufacturer, for the purpose of testing the so-called Scandinavian types of gang saws in this country. The tests were conducted under the direction of Roy F. Morse, lumber manufacturer of Longview, Wash. Scandinavian gang profit. In fact, the Scandinavian gang saws enabled the operator in Olympia to secure a materially increased output from a given quantity of raw material compared with the output of sawing methods heretofore followed. The lumber cut was absolutely true to size and no miscuts occurred. For this reason, an important saving could be effected through the elimination of the so-called sizing process, the process by which sawn lumber is put through a surfacer and one edge and one side planed off to insure uniformity of dimensions.

Gang-sawn lumber valuable.

This gang-sawn lumber has in actual use proved its value; an export market is also being developed for this stock, due to the fact that the foreign consumers are paying more attention to accuracy of manufacture than to freedom from knots.

The committee makes the statement that if this Scandinavian gang-sawing system were applied in the box and crating industry, it would save many than 100,000,000 feet of lumber a year which is now being wasted in the form of planer chips. This manufacturing method constitutes an important aid in the production of standard dimensions, and it appears now that these saws will, to a large extent, replace inefficiently operated circular saws, which usually produce inaccurately cut lumber, and which have hampered the progress of the standardization program. It is a noticeable fact that within a few weeks after the installation of the machines, a company was established in Seattle, Wash., for the purpose of manu-

BUREAU STUDIES EFFICIENCY OF STREET-CAR TRUCKS

Bureau Makes Investigations to Determine the Relative Power Losses Between the Motors and Wheel Rims in Street-Car Trucks

A progress report has recently been presented to the American Electric Railway Engineering Association, on a current investigation at the bureau, the object of which is to determine the relative power losses between the motors and wheel rims in various types of street-car trucks.

In this day of the modern motor car the problem of the transportation engineer has grown to be not only to carry passengers from place to place in a minimum amount of time, but to do it with a minimum of discomfort to all. Following this trend, the past few years have seen the experimental development of several types of electric street-car trucks with the idea of riding comfort as one of the factors of design. However, another phase of the transportation engineer's problem is to do the work with a minimum of waste; thus one of the important factors in the choice of a driving mechanism for a street car is its efficiency.

The test method used is to measure the losses separately in the various parts that make up the truck rather than test the complete truck as a unit. The results reported so far are confined entirely to the reduction gear units. These include determination of losses and efficiencies under various operating conditions for three types of units, a single-reduction, a double-reduction, and a worm-gear type.

OFFICIAL TESTING OF CHINESE EXPORTS AND IMPORTS

In order to increase export trade and to maintain and elevate the credit of Chinese products and to protect the interests of both native and foreign merchants, there has been organized, under the authority of the Ministry of Industry, Commerce and Labor of the National Government of the Republic of China, a bureau known as the Shanghai Bureau of Inspection and Testing of Commercial Commodities.

The purpose of this bureau, and similar bureaus which are now in process of organization at Tientsin, facturing these machines in this country. The committee has, therefore, not only made a valuable contribution toward better manufacturing practices, but it has also been instrumental in developing a new machinery industry. It is reported that several of the largest lumber manufacturers in the country have placed orders for these gang saws, and they will be tested on a large scale by the committee in different parts of the United States within the coming 12 months.

The committee's object is to make reforestation commercially profitable and this, it is believed, can be done only by a closer utilization of the raw material. Both the standardization of lumber and the introduction of Scandinavian gang saws have proved to be material aids in this direction.

Tsingtao, Canton, and other ports, is to make tests and inspection of both imports and exports. Heretofore, goods exported from China to a foreign country without export certificates were subjected to the risk of being confiscated or returned upon arrival at the port of entry. Likewise, goods imported into China were not tested and inspected in order to determine whether or not they were fit for consumption.

To protect interests of Chinese industries.

It is expected that the establishment of Government inspection bureaus in China will have a tendency to extend the market of Chinese products as regards exports by showing that the goods have been inspected before leaving the country, and at the same time protect the interests of the Chinese industries with respect to importation of goods which are both unsatisfactory and harmful.

Several departments of the bureau with a competent personnel are now fully equipped to carry on test and inspection work of ham, lard, casings, canned goods, hair, wool, leather, hide, eggs, and raw milk.

PAPER STANDARDIZATION IN FRANCE

"Much has been heard from time to time about the standardization of paper sizes in Germany. France is about to start a similar war on wasteful fancy sizes," says the Advertisers Weekly of London, noting that "the Association Francaise de Normalisation presided over by M. le general Girardeai has dealt with numerous industrial standardization problems. Its efforts are now being directed toward the printing industries.

"In its first report the difficulty of filing, resulting from too many sizes of letter headings and printed matter, and of making standard desks and cabinets to take these documents, is given as the most important 'secondary' source of waste. Then the International Standards Association issued a request to the French association to accept the normal sizes already agreed to by 11 European countries. A committee and a number of subcommittees are now being organized at the Association Francaise de Normalisation to specialize in printing problems, to inquire about the most efficient standardization and about the means of having these generally adopted by the trade and the public."

DEVELOPMENT OF TEXTILE MILL AND PETROLEUM STANDARDS

Recent Report of the American Standards Association Presents Information Concerning the Development of Two Standards, Covering Textile Safety Code, Petroleum Products, and Lubricants

A final draft of the Textile Safety Code has been submitted for approval as American Tentative Standards by the sponsor, the National Safety Council. Before approval by the sponsor organization, the code was unanimously approved by the technical committee, which included 26 representatives of 20 organizations. Textile manufacturers, finishers, safety organizations, and governmental departments were represented on the committee.

The code covers requirements for plants operating textile machinery and equipment, such as pickers, cards, combing machinery, drawing frames, shrubbers, roving frames, ring spinning frames, spinning mules, spoolers, twisters, warpers, slashers, looms, inspection machines, folding machines, baling presses, sewing machines, cloth singers, washing machines, kiers, mercerizing and tenter frames, mangles, winders, dry cans, dyeing pedders, jigs and vats, color mixers, printing machines, soapers, aging boxes, pasters, dampeners, calendars, hookers, doublers, extractors, bottles and other machinery and equipment used for similar purposes. Charles H. Eames, of the Lowell Textile Institute, is chairman of the committee, and W. Dean Keefer, of the National Safety Council, is secretary.

AN INFORMATIVE DEFINITION OF RATION-ALIZATION

"Perhaps the most informative, and at the same time most widely drawn, definition of rationalization which has yet been formulated is that of Sir Mark Webster Jenkinson, who has been intimately associated with the recent working out of the process in the British heavy steel trades," remarks a writer in The Bankers Magazine.

"In a paper read at Leeds on March 7 last," continues the writer, "Sir Mark declared that 'rationaliization' is the mobilization of the fighting forces of an industry. It is accomplished by the fusion of manufacturing capacity and closing down of redundant units to eliminate waste and loss, production being concentrated in the best-equipped shops, under the most favorable output conditions. It implies not merely a reconstruction of capital, a reorganization of management, a reshuffling of plant, but a revolution in our ideas, in our mentality, in our outlook on the industrial situation."

This statement deserves close examination by all who are interested in one of the most crucial of present-day problems. Its author describes at one and the same time the nature of rationalization, and the means by which it is to be brought about. He insists that its ultimate basis is not technical but psychological; in other words, that its success can not be assured by the taking of formal steps to reorganize an industry, but demands peculiar attitude of mind on the part of all those approaching the question.

These lines or thoughts, indeed, are all important if a true understanding of the problem is to precede ac-

Methods of tests for petroleum products and lubricants.

The American Society for Testing Materials, sponsor for an American Standards Association project for the development of methods of testing for petroleum products and lubricants, has submitted additional methods of test for approval by the A. S. A. Approval as an American Standard, has been requested for "Standard Method of Test for Saponification," and as an American Tentative Standard, for "Method of Test for Detection of Free Sulphur and Corrosive Sulphur Compounds in Gasoline."

Sixty-three members of the sectional committee voted their approval of the standard method of test for saponification, three members of the committee not voting. Sixty-one of the committee members approved the method of test for detection of free sulphur and corrosive sulphur compounds in gasoline, two members casting negative ballots and two not voting. The first of these methods was adopted as standard by the American Society for Testing Materials in 1928. The second was adopted as a tentative standard in 1922, and revised in 1927.

tion on the part of the individuals and interests chiefly concerned. It may be well, therefore, to discuss their implifications more fully before describing what has been accomplished in the United States and certain countries of continental Europe, and tracing recent developments in Great Britain itself.

TELEPHONE INDUSTRY HIGHLY STANDARD-IZED

According to L. L. Elden, of the Edison Electric Illuminating Co., of Boston, in the telephone industry one will find the most highly standardized undertaking in the electric-utility field anywhere in the world. He expresses this view in his article, Practical Aspects of Standardization, which appeared in the Electrical World. He said that this status of the telephone industry had been reached only by successive steps as the result of intensive research and experimentation by a highly trained organization, without which, the present-day perfection of communication facilities could never have been attained.

which, the present-day perfection of communication facilities could never have been attained. Insistence on special designs and failure to adhere to the use of existing standard apparatus have materially retarded efforts toward standardization in many directions, said the writer in his article, adding that the present-day incandescent lamp is perhaps one of the best known examples of accomplishment through standardization. Progress in this work from the days of the carbon lamp has been reflected, in so far as public is concerned, in a steady improvement in efficiency accompanied by heavy reductions in selling prices. Selling prices have been reduced 53 per cent since 1914.

FEDERAL SPECIFICATION FOR LUMBER AND SIMPLIFIED PRAC-TICE RECOMMENDATION FOR LUMBER DO NOT CONFLICT

A recent check of Federal Specification No. 533a, "Softwood lumber," disclosed the fact that there is no conflict existing between the Federal Specification and Simplified Practice Recommendation No. 16, "Lumber." The former provides that lumber bought under the current grading rules of the various lumber associations where such grading rules are approved by the Central Committee on Lumber Standards as in conformance with "American lumber standards." The simplified practice recommendation gives such standards.

The Federal specification also provides that specifications for lumber prepared by the Government shall be based on "American Lumber Standards," and calls attention in a footnote to Simplified Practice Recommendation No. 16.

The Federal Specifications Board has promulgated the following specifications: A revision of Federal Specification No. 107a, for semimetallic packing. This revision is intended to cover a type of packing which will give excellent service, has excellent characteristics, and can be easily obtained. The revision of Federal Specification No. 242a, for wrought-iron pipe, uncoated and zinc coated (galvanized), was

GOVERNMENT, INDUSTRIES, AND COLLEGES FIND "WOOD CONSTRUCTION " VALUABLE

Government departments, industries, and educational institutions are finding Wood Construction, the new handbook of the National Committee on Wood Utilization, of the Department of Commerce, a valuable aid.

Those departments of the Government concerned with the purchasing of supplies are now using this volume as a guide in checking up on their orders and specifications for lumber and also on their ultimate purchases.

A widespread interest in the use of the manual as a reference and textbook was found by Axel H. Oxholm, director of the National Committee on Wood Utilization, during a recent trip to Western States. At least one California municipality plans its use as a basis for building codes. In the words of an authority in the lumber industry, Wood Construction is a work in the preparation of which it would have been impossible for those in the industry to have agreed upon, owing to the difference in the properties of the prospective wood they represent. Only a cooperative organization, such as the National Committee on Wood Utilization, composed of representatives of both Government and industry, could have prepared such a publication.

THE DETAILS THAT COUNT DISCUSSED

"These are days when the head of the business or of a department is digging into details in search of simplifications that will make profits possible under primarily intended to admit either mechanically puddled iron or Aston-process iron as well as hand-puddled iron. It is believed that changes, including also chemical limits for carbon and manganese and other changes, will materially improve the purchase qualities under the specification. The revision of Federal Specification No. 269a, for nonferrous welding rods for gas welding changes the chemical composition of type "e" aluminum alloy. It is believed that this will materially improve this particular type of metal for the purposes intended. The revision of Federal Specifications Nos. 574b, and 576b, for frankfurter-style and Vienna-style canned sausage, respectively, provides for stuffing in artificial casings as well as sheep casings. It is believed this is an improvement and brings the specification abreast progressive changes in the industry.

The other two specifications promulgated are a revision of the jam specification (F. S. No. 635a) and a new Federal specification for crash towels, mixed linen and cotton (F. S. No. 633). Copies may be obtained by addressing the Secretary, Federal Specifications Board, National Bureau of Standards, Washington, D. C.

readjusted conditions," observes one of the editorial writers of the magazine, System, noting that "he is turning into every department his broad viewpoint of the necessities of the business as a whole; in effect he is temporary sitting at the desk of each executive. And if he is wise, he is going about this task thoroughly, keeping at it until even minor executive responsibilities have been given first-hand attention.

"This is to-day a characteristic of good management. Yet with it goes a very real danger, for it is a fundamental concept that the manager should be free from routine concern with departmental details. His should be a detached, supervisory position. If, during the necessary personal scrutiny of every ramification of routine, he so beclouds his vision with detail that he loses sight of this basic principle of good management, he will soon find himself merely picking up pennies with one hand and dropping dollars with the other.

"Let the scrutiny of routine extend to the minutest detail, but give time and thought only to those details which are symptomatic of conditions worth managerial attention. The balanced viewpoint so necessary to executive leadership enables a manager to watch the flow of detail without becoming tangled up in it; this viewpoint permits him to pick the danger signals. Periodic reports, if carefully planned, assist in this direction, also.

"This is one of the sound ways for the business man to prospect for savings—to select these symptomatic happenings and to concentrate on them. Often this is enough; sometimes, of course, thorough reorganization of the work is necessary without waiting for each symptom to appear."

DEPARTMENT OF COMMERCE BUILDING CODE COMMITTEE NOW IN ITS NINTH YEAR

The Building Code Committee of the Department of Commerce has entered upon its ninth year of existence with a record of six completed reports and with a seventh in process. The confidence shown in its recommendations by municipalities throughout the country appears to be due to two reasons. One is the plan of organization of the committee and the other the manner in which its work has been carried on.

OF EXISTENCE

The committee is made up entirely of architects and engineers. In this respect it differs from many other committees composed of representatives of various industries. No member of the committee is under any obligation to any particular industry, so that each is free to exercise his expert professional judgment. The safety of the public is the primary consideration.

The work of the committee proceeds in three stages. The first takes the form of research into all available test data and examination of code requirements in actual use. The second involves preparation of tentative recommendations in which the committee's judgment is brought to bear upon the accumulated research material and interprets it for actual use. The third consists of a widespread invitation to architects, engineers, building-material industries, building officials, and others to criticize the tentative recommendations in the light of their experience. This last process affords an opportunity to test the recommendations in advance of actual use by subjecting them to analysis of those most competent to judge.

Out of this threefold procedure comes a final printed report which is made available at nominal expense through the Government Printing Office.

It is generally conceded that meaningless difference in building codes should be eliminated as soon as possible and that substantial uniformity in regulations will be of much benefit to all concerned. The reports of the Building Code Committee provide a medium for bringing this about.

PURIFIED WOOD FIBERS SUITABLE FOR MAKING HIGH-GRADE PAPERS

As a result of an investigation now in progress at the bureau, it is indicated that certain types of highly purified wood fibers, which are commercially obtainable at the present time, are suitable for conversion into high-grade bond and permanent record papers, as well as any other types of papers where the qualities of durability and permanence are essential. Such papers have hitherto been made only from the best grades of rag fibers, which are considerably more expensive than the purified wood fibers.

Pure cellulose, commonly called alpha cellulose, has a high degree of permanency. The cotton fiber is the purest form of cellulose found in nature. For this reason papers carefully prepared from high-grade cotton rags have hitherto been used exclusively where permanence extending over hundreds of years is desired. The ordinary wood fibers, even those of the best grades, have impurities and degraded forms of cellulose present which seriously affect their permanence. By a series of chemical treatments these objectionable impurities can be removed, leaving a fiber similar in its chemical composition to the cotton fiber and having the desired paper-making characteristics.

In order to find out how the purified wood fibers would endure as compared with other commonly used paper-making fibers, tests are being made at the bureau of the various types of paper-making wood fibers and of several grades of rag fibers. These tests include chemical purity, whiteness, and microscopical structure. A thorough investigation of the strength and durability of a series of representative commercial papers prepared from fibers similar to the above is also being made.

The relative durability of the various paper-making fibers is studied by means of accelerated aging tests, whereby a few hours' treatment simulated the effect of natural aging over a long period of years. The samples are baked in dry form at 212° F., are cooked with steam, and are exposed to intense light rays from an artificial sun. After all these severe treatments, the samples are again subjected to searching tests to find how much they have deteriorated, both chemically and physically.

UNIFORM SHIPS' RIDING LIGHTS ADOPTED

The general direction in which a lightship is heading gives an approaching vessel a good idea of the directional set of the current in the vicinity of the lightship. As most lightships now show but one masthead light, the Lighthouse Service of the Department of Commerce has adopted a uniform system of displaying a fixed white light on the forestay of lightships to assist vessels in determining the direction in which the ship is heading. It is believed this will be of material assistance to navigators as well as to tenders making a lightship after nightfall.

The Lighthouse Service now maintains 37 lightships on the Atlantic, Gulf, and Pacific coasts, 29 of which are equipped with such riding lights, and the work of installation on other ships will continue as occasion requires. Such riding lights, with some variations, have been in service for some years on certain lightships, but only recently has a uniform system been adopted.

MERCHANTS MAKE WOODEN BOXES GOOD-WILL BUILDERS

Capitalizing on the box and crate utilization project of the National Committee on Wood Utilization of the Department of Commerce, department stores, grocery stores and other merchandising establishments which have boxes to dispose of, are building good will by advertising that these boxes may be obtained by those desiring to use them.

Hardware and paint stores, on the other hand, are benefiting by the increased demand on the part of boys and adults who are making the articles described in the committee's booklet, "You Can Make It," for such things as bolts, tools, screws, screen wire, nails, and similar items.

SCIENTIFIC, TECHNICAL, AND COMMERCIAL PERIODICAL PUBLICATIONS ISSUED BY THE NATIONAL BUREAU OF STANDARDS

BUREAU OF STANDARDS JOURNAL OF RESEARCH

The new Journal describes the bureau's research results in science and technology. The union of science and its applications in one journal shortens the lag between discovery and application.

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Early in its first year the Journal developed a list of paid subscribers double the anticipated maximum.

This Journal is full of interest to executives and technicians controlling industries and commercial enterprises. It enables them better to promote efficiency by determining the scientific measured controls of process through experimental and theoretical research.

Issued monthly. . . Price, \$2.75 per year

COMMERCIAL STANDARDS MONTHLY

This new governmental periodical is a review of progress in commercial simplification and standardization. It is the only journal of its kind. It covers the national movement initiated by President Hoover for the reduction of needless sizes and varieties of products and the promotion of voluntary commercial standardization by industry.

The Secretary of Commerce in the first issue of this new journal said: "Certain standards, such as those used for weights and measures, * * * have been fixed by legislative enactment. Mandatory standards of this character, however, are few in number when compared with the large and steadily growing volume of standards developed by industry and commerce and voluntarily maintained. * * * The activities of the Commercial Standardization Group of the Bureau of Standards are concerned with standards adopted by voluntary agreement."

Subscription price, \$1 per year

TECHNICAL NEWS BULLETIN

The Bureau of Standards periodical with a WAR RECORD! Started during the dark days of 1917 to keep the Army and Navy and other branches of the Government informed of progress in scientific war research at the bureau. Upon urgent request this publication was continued and expanded to serve the Government, science, and industry.

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"Standardization is becoming an aspect of all wellordered activity rather than an incidental activity supplemental to others."

To obtain regularly the above-described publications send your order, with remittance, addressed: Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign prices (countries other than the United States, Canada, Mexico, Newfoundland, Cuba, and Republic of Panama) are: Journal, \$3.75; Bulletin, \$0.40; Monthly, \$1.25; Yearbook, \$1.20 "* * * this department * * * is devoted solely to aiding and fostering the development of higher standards of living and comfort of our people * * * its ideals are clear: That by cooperation and not by compulsion it should seek to assist in maintaining and giving the impulse of progress to commerce and industry in a nation whose successful economic life underlies advancement in every other field." —President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.

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THE UNITED STATES DEPARTMENT OF COMMERCE

R. P. LAMONT, Secretary of Commerce

AERONAUTICS BRANCH, CLARENCE M. YOUNG, Assistant Secretary of Commerce for Aeronautics.

Establishment of civil airways and maintenance of aids to air navigation; inspection and registration of aircraft and licensing of pilots; enforcement of air traffic rules; investigation of accidents; encouragement of municipal air ports; fostering of air commerce; scientific research in aeronautics; and dissemination of information relating to commercial acronautics. (Some of these functions are performed by special divisions of the Lighthouse Service, the Bureau of Standards, and the Coast and Geodetic Survey.)

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Taking censuses of population, mines and quarries, water transportation, and religious bodies every 10 years; censuses of agriculture and electrical public utilities every 5 years; and a census of manufactures every 2 years. Compilation of statistics of wealth, public debt and taxation, including financial statistics of local governments, every 10 years; annual compilation of financial statistics of State and municipal governments.

Compilation of statistics of marriage, divorce, births, deaths, and penal and other institutions annually, and of death rates in cities and automobile accidents weekly.

Compilation quarterly or monthly of statistics on cotton, wool, leather, and other industrics; annually of forest products; and publication monthly of Survey of Current Business.

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The compilation and distribution of lists of possible buyers and agents for American products in all parts of the world and publication of weekly lists of specific sales opportunities abroad.

The publicity of statistics on imports and exports. The study of the processes of domestic trade and commerce.

The study of the processes of domestic trade and commerce.

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Establishment of simplified commercial practices through cooperation with business organizations in order to reduce the wastes resulting from excessive variety in commoditics.

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Research on helium and operation of plants producing it.

BUREAU OF MINES—Continued.

Studies in the economics and marketing of minerals and collection of statistics on mineral resources and mine accidents.

The dissemination of results of technical and economic researches in bulletins, technical papers, mineral resources series, miners' circulars, and miscellaneous publications.

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BUREAU OF LIGHTHOUSES, GEORGE R. PUTNAM, Commissioner.

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COAST AND GEODETIC SURVEY, R. S. PATTON, Director.

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BUREAU OF NAVIGATION, ARTHUR J. TYRER, Commissioner.

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Enforcement of the navigation and steamboat inspection laws, including imposition of fees, fines, tonnage taxes, etc.

STEAMBOAT INSPECTION SERVICE, DICKERSON N. HOOVER, Supervising Inspector General.

The inspection of merchant vessels, including boilers, hulls, and life-saving equipment, licensing of officers of vessels, certification of able seamen and lifeboat men, and the investigation of violations of steamboat inspection laws.

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.