

1938.
NEW ZEALAND.

NEW ZEALAND STANDARDS INSTITUTE.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

(ANNUAL REPORT FOR THE YEAR 1937-38.)

Presented to both Houses of the General Assembly by Leave.

The Hon. D. G. SULLIVAN, Minister of Scientific and Industrial Research.

SIR,—

I have the honour to submit herewith the annual report of the New Zealand Standards Institute for the year ended 31st March, 1938.

I have, &c.,
E. MARSDEN,
Secretary.

REPORT.

The work of the Standards Institute has made sound and substantial progress during the year under the direction of the Advisory Council composed of the following personnel:—

- Mr. A. R. Galbraith, F.R.S.E., M.Inst.C.E. (Chairman), Municipal Association of New Zealand (Incorporated).
- Mr. W. Donovan, M.Sc., F.I.C., Dominion Laboratory (Mr. R. L. Andrew, F.I.C., Deputy).
- Mr. A. Fletcher, Building Divisional Council.
- Mr. F. W. Furkert, C.M.G., M.Inst.C.E., M.I.Mech.E., New Zealand Institution of Engineers.
- Mr. W. A. Joiner, M.Sc., A.I.C., Chemical Divisional Committee.
- Mr. F. T. M. Kissel, B.Sc. (Eng.), M.I.E.E., A.M.Inst.C.E., Hydro-electric Branch, Public Works Department (Electrical Engineering Divisional Committee).
- Mr. E. H. Langford, M.A., Consumer Interests.
- Mr. G. A. Lawrence, B.Sc., F.I.C., New Zealand Institute of Chemistry.
- Dr. E. Marsden, M.C., C.B.E., D.Sc., F.R.S.N.Z., Secretary, Department of Scientific and Industrial Research.
- Mr. S. S. Millington, Stores Control Board.
- Mr. H. C. Morton, A.R.I.B.A., A.N.Z.I.A., Institute of Architects.
- Mr. W. W. Mulholland, President, New Zealand Farmers' Union.
- Mr. W. L. Newnham, A.M.Inst.C.E., M.N.Z.I.E., Public Works Department.
- Mr. G. A. Pascoe, Council of Scientific and Industrial Research.
- Mr. J. Read, Trades and Labour Council.
- Mr. L. J. Schmitt, A.I.C.A., F.C.A.A., Department of Industries and Commerce.
- Mr. E. T. Spidy, A.M.S.C.E., M.N.Z.I.E., Railways Department.
- Mr. F. B. Stephens, M.A., B.Com., Department of Internal Affairs.
- Dr. W. B. Sutch, Ph.D., M.A., B.Com., Consumer Interests.
- Mr. G. W. Wyles, A.M.I.E.E., M.I.R.S.E., Electrical Regulations Advisory Committee.
- Mr. L. J. McDonald, Secretary and Executive Officer.

The Advisory Council has met on six occasions during the year. Most of the detailed work, however, is carried out through committees, twenty-two of which have been in active operation, and 131 meetings in all have been held.

All standards organizations find that with many of their committees lengthy intervals between meetings are necessary on account of the need for investigations and analyses and, in some cases, research work of a comprehensive nature which has to be carried out before projects can proceed further.

Considering the fact that the organization needed to go through the developmental stages towards consolidation, the volume of work achieved during these deliberations, as outlined in this report, at once testifies to the effectiveness with which the members of the committees have dealt with the business placed before them, and is a tribute to the capacity and earnestness of purpose they have applied. It is desired also to place on record sincere appreciation of the spirit in which committees have co-operated with the executive, rendering every possible assistance at all times.

Consistent with the recognition of the significant advantages that must accrue from the adoption of common standards throughout the British Commonwealth of Nations, the advancement of the principle of uniform Empire standards is regarded as a consideration of prime importance, subject only to proper regard for the special requirements of local conditions and circumstances.

Developed and co-ordinated in this way, standards constitute a medium for specifying, in precise terms, the material, equipment, or goods which will satisfy Dominion requirements. Conversely, they acquaint us with the exact nature of goods which manufacturers in the United Kingdom, or other countries, can supply.

Adherence to national standards by public authorities and private agencies as a basis for purchasing supplies required for the same purpose eliminates the multiplicity of unnecessary variations in specifications to which the suppliers are otherwise called upon to manufacture. This not because the differences are required by any one concerned, but because they are inevitable, unless machinery exists for initiating consultation and collaboration among the affected parties with a view to developing common specifications that will best serve the needs of all consumers.

If the same principle be carried to the point of securing common standards by Empire countries, it is at once apparent that the facility thus provided for concentration of production upon a minimum number of types and patterns must greatly reduce production costs, and, in addition, so reduce the number of types and classes of equipment that need to be stocked by distributors, as to effect great savings in overhead charges, while at the same time affording better service to users. Further than this, the careful scrutiny to which the provisions of all specifications are subjected by competent and representative interests before being finally adopted, ensures the production and use of the most suitable and efficient equipment for given purposes.

It was with these considerations in mind, no doubt, that the Conference on Standardization to the Imperial Conference, 1930 (copy No. 225), page 3, Clause II, reported in the following terms :—

“ II (a). The Conference draws attention to the resolution of the Imperial Conference of 1926 in favour of the adoption, where practicable, of common standards, and recommends that the standardizing bodies in the various parts of the British Commonwealth of Nations should keep in regular and systematic consultation with a view to the establishment of uniform standard specifications so far as is practicable in their common interest.

“(b) As part of this consultation, the practice of communicating draft specifications prepared in one part of the Commonwealth, for the observations of the standardizing bodies in other parts likely to be interested, should be continued and extended . . . ”

A further advocacy of the importance of this principle is contained in the following extract from the Summary of Proceedings of the Imperial Economic Conference, Ottawa, 1932 :—

“ I. The Conference recommends that, with a view to assisting the co-ordination of the work of national standardization the following principles, as far as practicable, be observed :—

- “ (a) That the specifications should be in accordance with the needs of industry and fulfil a generally recognized want.
- “ (b) That the community interest of producer and consumer should be maintained throughout.
- “ (c) That the specifications should be arrived at by general consent.
- “ (d) That periodical review and revision should be undertaken to prevent crystallization and keep the specifications abreast of progress.
- “ (e) That full information regarding the initiation of any specification and progress in its preparation should without delay be circulated by the originating body to the corresponding bodies in other parts of the Commonwealth.”

The recommendations of each Imperial Conference from 1926 onwards, from which the above brief extracts are taken, are being carried out by the Standards organizations within the different units of the Empire, and the New Zealand Standards Institute takes its part in this mutual collaboration. Close contact is maintained with the British Standards Institution, the Standards Association of Australia, the Canadian Engineering Standards Association, the South African Standards Institution, and their many contributions, that have assisted the development of standards activity in this Dominion are gratefully acknowledged.

Acknowledgments and thanks are also due to the American Standards Association, the American Society of Testing Materials, the Bureau of Standards, and the United States Department of Commerce for their generous assistance and for the valuable publications and documents they have supplied.

It is axiomatic that standardizing bodies afford all affected interests opportunity to peruse and comment on the draft proposals, and the Standards Institute provides the facilities whereby manufacturers, distributors, and users in this Dominion have the advantage of seeing and commenting upon the proposals of the industrial, scientific, administrative, and commercial interests of the

respective countries from which the various draft specifications have originated. This method of considering whether the draft specifications of the Empire standards organizations are suitable for adoption as New Zealand standards, after consultation with all affected interests, clearly provides for the ultimate adoption of standards to satisfy the needs of New Zealand conditions and requirements.

The fact that a committee representative of competent experts from Government Departments, local bodies, professional, technological and trade organizations, makes a critical examination of the draft specification upon the basis of comment received, in response to its circulation, enables a co-ordinated comment representative of New Zealand interests to be forwarded to the originating body, and thus enables material or equipment for one and the same purpose to be ordered to a national specification. The cost and trouble to each party preparing specifications are consequently avoided.

Considerations affecting safe and efficient installation and operation of plant, uniform practice, and minimum diversification of dimensions and types, all of which simplify and reduce stores and stocks for manufacturers and distributors and which result in a corresponding reduction of costs, are thus provided for, to the satisfaction of all concerned.

SPECIFICATIONS AND PUBLICATIONS RECEIVED.

During the year, 1,437 draft and standard specifications and general publications were received from the overseas standards bodies as shown hereunder:—

Name of Organization.	Number of Draft Specifications received.	Number of Standard Specifications received.	Total.
British Standards Institution	66	61	127
Standards Association of Australia	27	36	63
Canadian Engineering Standards Association .. .. .	..	2	2
South African Standards Institution	1	..	1
American Standards Association .. .. .	..	142	142
American Society for Testing Materials .. .. .	..	815	815
Bureau of Standards, United States of America .. .. .	..	272	272
Department of Commerce, United States of America .. .. .	..	15	15
Total specifications received .. .. .	..	..	1,437
Other major publications received .. .. .	..	..	120

The 127 draft and standard specifications received from the British Standards Institution and the 63 draft and standard specifications received from the Standards Association of Australia have been circulated to approximately 1,900 affected interests for comment, on the basis of which the following conclusions have been reached in regard to these publications:—

British Standards Institution.—Draft Standard Specifications.

(a) Recommended for adoption as New Zealand standard specifications without any amendment	14
(b) Recommended for adoption as New Zealand standard specifications subject to amendment	4
(c) Considered not applicable to New Zealand	6
(d) Considered to be unsuitable to New Zealand, but an alternative specification is required .. .. .	..
(e) Held in abeyance pending further information	8
(f) Held in abeyance pending the issue of standard specifications	6
(g) No recommendation made	2
(h) In circulation	26
Total	66

It will be noted that of the twenty-four British draft standard specifications, consideration of which has been finalized, eighteen are suitable for New Zealand conditions. This means that the volume of investigation and research that has been carried out, and the benefit of the consultation and collaboration of the most competent experts which these specifications embody, is made available to this Dominion in return for the maintenance of the necessary machinery to secure adequate consideration of these publications at this end.

Of the sixty-one new and revised standard specifications received from the British Standards Institution, nine have been recommended for adoption as New Zealand standards, while an examination of the others is in progress.

An examination is also being made by progressive stages of the 600 standard specifications issued by the British Standards Institution before the work was commenced here. This will result in the counterpart of the work being carried out by the British committees being completed here within practical limits.

None of the Australian standards has been adopted *in toto* as a New Zealand standard, neither have any of the drafts been recommended for adoption, although New Zealand and Australia have each adopted thirty-two common British standard specifications and consequently, to this extent, the two countries are working to common specifications.

Moreover, owing to the community of interest between the two countries, the draft or standard specifications issued by the Standards Association of Australia are very carefully scrutinized before any decision is made as to whether or not they should be adopted, having due regard to corresponding British standard specifications and the effect on supplies imported from the United Kingdom. In a few cases examination of Australian standards has resulted in the adoption of British standard specifications with suitable amendments, or the development of New Zealand standards, which give due attention to the provisions of the publications from the United Kingdom and Australia in relation to local requirements imported from both countries.

The standards issued by the South African Standards Institution and the Canadian Engineering Standards Association are also circulated for comment, but up to the present none of these publications has been adopted as a New Zealand standard.

The standards received from the American Standards Association, the American Society for Testing Materials, and the Bureau of Standards, United States of America, and the simplified practice publications received from the Department of Commerce, United States of America, are not circulated for comment, but are retained in the library for reference and consultative purposes when related or corresponding projects are under consideration.

STANDARD SPECIFICATIONS ORIGINATING IN NEW ZEALAND.

In addition to the attention and consideration that has been given to the examination of draft and standard specifications received from overseas organizations, the following New Zealand standard specifications have been published :—

N.Z.S.S. 143 : Galvanized (Zinc-coated) Steel Fencing-wire.

N.Z.S.S. 161 : Treatment, Grading, and Classification of Hides, Yearlings and Calf-skins.

Adherence to these specifications as the basis for the purchase and supply of material and commodities which they cover will establish confidence, satisfaction, and good will between the supplier and purchaser, as well as an equitable basis for trade. Manufacturers and distributors of wire, for instance, will know the type of wire required to suit the New Zealand market, while users will be afforded protection against being supplied with wire possibly so inferior in quality as to necessitate such early replacement.

Altogether the year's work has resulted in the development of thirty-three New Zealand standard specifications :—

New Zealand standards as at 31st March, 1927	..	..	..	..	128
Withdrawn	..	..	..	..	2

					126
New standards issued	..	..	..	..	33

Total as at 31st March, 1938	..	..	..	..	159

Two hundred and fifty copies of an index of New Zealand standard specifications, complete to the 31st March, 1938, have been issued and are in course of circulation to the most substantially interested parties and organizations.

In addition, a news-letter service has been instituted, drawing the attention of the interests concerned to the various specifications that have been issued, and which will be of assistance to their particular trade or professional activity.

STANDARD PROJECTS IN COURSE OF DEVELOPMENT.

The following original projects are in course of development :—

Acid and alkali solutions.	Mesh wire.
†Apples, standard grades for.	Methylene blue.
Asbestos-cement products.	†New South Wales desapped poles for use by Government Departments and Electric-power Boards.
Barbed wire.	*Paints, materials for : and ready mixed.
Bricks.	Paper sizes for drawing-office use.
Bridge loads and stresses.	†Pears, grades for.
Building by-laws revision.	Phenolphthalein solution.
Butter-boxes.	†Plugs and sockets.
Concrete.	Plumbing by-laws.
*Cisterns, flushing.	†Pollard.
Code for structural welding.	*Portable fire-extinguishers.
Concrete pipes (reinforced).	Rapid-hardening cement.
*Conditions of contract for civil engineering works.	Rennet.
Footwear.	Sacks (produce).
Galvanized iron (including roofing-iron).	Simplification of Government statistical and financial return forms.
†Grading rules for building-timber.	Steel sections.
Grading rules for white-pine.	Test sieves.
Heating and ventilation.	*Timber-building code.
†Illumination values.	*Woolpacks.
Iron fencing standards.	
Local-body by-laws.	
*Meat-meal and meat and bone meals.	

NOTE.—* = Well advanced (eight).

† = Draft standard specification issued for comment. Thus seven draft standard specifications have been issued.

The foregoing list of projects constitutes a heavy programme of work that is being effectively prosecuted by the various committees. One item—local-body building by-laws—in itself involves a comprehensive range of activity which, because of its significance, is referred to in a special section later in this report. The importance of standardization of corrugated iron, not to mention paint, flushing-cisterns, plugs, and sockets, is but indicative of the significance of the projects listed above. According to tests, galvanized roofing-iron, for instance, varies from 24 to 29 in gauge; in weight from 12.5 oz. to 18.6 oz. per square foot: while the weight of the zinc coating on both sides varies from 1.2 oz. to 2.4 oz. per square foot. It follows that there should be some means whereby the buyer will know the relative service life of the roofing iron he purchases in relation to its cost.

The necessity for this work could be similarly demonstrated by an analysis of the position in regard to any of the other projects, though in some cases from a somewhat different point of view. In the case of fire-extinguishers, for instance, the main consideration is that of safety as distinct from economy. Heating, ventilation, and illumination standards relate to considerations of comfort and health, while those for plugs and sockets relate essentially to convenience.

The development of these original projects, together with the examination of specifications from overseas, the circulation of the draft proposals, the co-ordination of the comments and the final adoption and issue of the standards concerned, is a work of considerable magnitude which, nevertheless, yields advantages to the Dominion that are far beyond the effort entailed.

A general appreciation of the work and recognition of its need is evident in almost all responsible quarters. Resolutions have been received, for instance, urging the standardization of local-body by-laws from local-body and public-authority interests, which assembled in conference to consider this question on the 8th September, 1937. These have been fully endorsed by resolutions received direct from the Counties' Association and the Municipal Association of New Zealand (Incorporated). In addition, more than seventy representations have been received from individual local bodies emphasizing the need to expedite this work. These are referred to under the heading "Standardization of Local-body By-laws" later in this report.

In addition, numerous representations have been received throughout the year concerning the need to develop standards in relation to various types of materials, equipment, and goods. Indeed, the demands in this respect are far in excess of what can be met at the present stage of development.

Further appreciation of the value of standards is evidenced by the purchase of some three hundred standard specifications for the treatment, grading, and classification of hides, yearlings and calf-skins within two months of its issue.

SALES.

An indication of the value of standards is also to be found in the fact that for March, 1937, 27 specifications were sold, as compared with 401 in March, 1938, the total sales for the year amounting to 1,371 copies.

BUREAU OF INDUSTRY.

The obtrusive waste which arises from lack of standards in industry, resulting in the manufacture of a superfluous diversity of types of goods and duplication of stocks, is evident in this country. In all plans prepared by the Bureau of Industry, consideration has therefore been given to the question of standards, and it is pleasing to report that the interests concerned have been quick to recognize the benefits to be derived from the application of the standards principle. Consequently, a number of industries are making every endeavour to formulate satisfactory standards.

Two important matters which were specifically referred to the Standards Institute from the Bureau were the preparation of a standard specification for the treatment, grading, and classification of hides, yearlings and calf-skins, and the standardization and simplification of the statistical and financial returns required by the Government from industry.

In addition to these, the Standards Institute is collaborating with the Bureau of Industry and the Department of Industries and Commerce in the formulation and adoption of standards for a number of industries, including asbestos-cement products, pharmaceutical goods, and footwear.

The work of the Bureau of Industry has therefore assisted in securing the fuller development and adoption of standards in this Dominion, with resultant benefit to both consumer and producer.

CO-OPERATION OF GOVERNMENT DEPARTMENTS, LOCAL BODIES, TECHNOLOGICAL, INDUSTRIAL, AND TRADE ORGANIZATIONS.

The various phases of standards activity have been generously contributed to by expert officers of Government Departments and local bodies, while industrial and trade organizations have freely co-operated by nominating representatives to the committees. Only the contribution of this co-operative effort on the part of outside agencies has made possible the very satisfactory progress of the work. It also evidences a general recognition of the advantage that accrues to the interests concerned from the advancement of standardization which results from this common effort.

ACTIVITIES OF COMMITTEES.

Technical Advisory Committee (Five Meetings).

This committee has been appointed to direct and review the work of all technical committees in order to focus attention upon projects that satisfy the most important and urgent demands, and to ensure that the work of the committees is carefully checked and co-ordinated.

The committee held its inaugural meeting on 5th October, 1937, and at the following four meetings has directed 101 standard specifications and 54 draft standard specifications to the various committees.

In December, 1937, it was decided that, in order to facilitate the work of the Advisory Council, the Technical Advisory Committee would examine the reports of all Technical Committees and report thereon to the Council. Since then it has reviewed seventeen reports.

All miscellaneous specifications, publications, journals, and reports received have been referred to this committee for direction to the various committees.

**Building Divisional Council (Three Meetings).*

*†Plumbing Committee	..	..	..	..	..	..
Plumbing Supplies Sub-committee	..	..	..	..	..	2 meetings.
†Plumbing By-laws Sub-committee	..	..	..	..	..	..
*†Timber Committee	..	..	..	..	..	..
*Paints Committee	..	..	..	..	..	4 meetings.
*Timber Building Code Committee	..	..	..	..	..	2 meetings.
†General Construction Sub-committee	..	..	..	..	..	..
†Foundations Sub-committee	..	..	..	..	..	..
*†Ceramic Committee	..	..	..	..	..	..
*Other than Timber Building Code Committee	..	..	..	..	..	1 meeting.
Technical Sub-committee	..	..	..	..	..	22 meetings.
†Structural Welding Sub-committee	..	..	..	..	..	..
*†Heating and Ventilation Committee	..	..	..	..	..	..
*†Flats and Apartment House By-laws Committee	..	..	..	..	..	..
*†Fire-prevention Committee	..	..	..	..	..	..
						34 meetings.

Owing to the manner in which the work of the Building Divisional and Building Code Committees was interrelated, a conference of these two committees was called on the 28th October, 1937, and as a result the Building Divisional Council was established with a view to bringing the building section of standards activity under one direction. This necessitated consequential adjustments to the related committees, and, as the Divisional Council was to be chiefly responsible for directing the work associated with the standardization of local-body by-laws, it was found necessary to institute eight additional committees and sub-committees to prepare the provisions for different sections of this work. The Building Divisional Council, at its initial meeting after its reconstruction, gave the necessary direction concerning the additional committees required and for the co-ordination of their work. Pending advancement of the provisions in course of preparation by its committees to a stage when these can be considered by the Council, it will not have occasion to meet.

**Plumbing Committee.*

Plumbing Supplies Sub-committee	..	..	..	..	..	2 meetings.
Plumbing By-laws Sub-committee	..	..	..	..	..	..

The Plumbing Supplies Sub-committee has undertaken the preparation of standard specifications for flushing-cisterns, household taps, and general plumbing supplies, which will form part of a Standard Model Code for Plumbing By-laws. A draft specification for flushing-cisterns is about to be circulated to affected interests for comment.

**Paints and Coatings Committee (Four Meetings).*

A careful examination has been made by this committee of seven draft British and twelve draft Australian standard specifications relating to paints, in addition to four British and sixteen Australian standard specifications, and it has recommended three draft standard specifications for adoption.

Detailed consideration is being given to a New Zealand standard specification for "Red Lead Paint for Structural Steelwork," as well as to specifications for "Red Lead Paint for General Purposes."

**Other than Timber Building Code Committee (One Meeting).*

Technical Sub-committee	..	..	..	..	..	22 meetings.
Structural Welding Sub-committee	..	..	..	..	..	..

The Technical Sub-committee is engaged on a revision of N.Z.S.S. 95, New Zealand Model Building By-law, Sections I-X. The Revision of Sections I-III, to be reissued as Parts I-IV, of this standard has been completed, and the parent committee has endorsed the amended provisions, which will be issued when legal scrutiny has been finalized.

The Structural Welding Sub-committee has been instituted to prepare a draft Model Code, which will form part of the New Zealand Model Building Code.

* Referred to in section on "Standardization of Local-body By-laws."

† These committees have been instituted so recently that they have not yet had opportunity to meet.

Electrical Engineering Divisional Committee (Six Meetings).

The circulation to affected interests of thirty-two British and two Australian draft standard specifications and fifty British and eighteen Australian standard specifications, and their careful examination by this committee on the basis of the comment received, has resulted in the adoption of the following sixteen New Zealand standard specifications :—

N.Z.S.S.	B.S.S.	
148	635-1935	Thermal-type Time-element Relays (Alternating Current or Direct Current) for Railway Signalling.
149	581-1934	Electrically-driven Point-operating Machines for Railways.
150	561-1934	Alternating-current Line Relays (Two-element, Three-position) for Railway Signalling Purposes.
151	557-1934	Alternating-current Line Relays (Single-element, Two-position) for Railway Signalling Purposes.
152	520-1933	Alternating-current Track Relays (Two-element, Two-position).
153	519-1933	Medium Hard Copper Strip, Bars, and Rods, for Electrical Purposes.
154	475-1932	Tractive Armature Direct-current Neutral Line Relays.
155	452-1932	Tractive Armature Direct-current Neutral Track Relays.
156	442-1932	Terminals for Electrical Apparatus for Railway Signalling Purposes.
157	601-1935	Steel Sheets for Transformers for Power and Lighting.
158	161-1937	Tungsten Filament General Service Electric Lamps.
159	731-1937	Flexible Steel Conduit for Cable Protection and Flexible Steel Tubing to enclose Flexible Drives.
160	88-1937	Electric Fuses up to 800 amperes and 250 volts to Earth.

The following standard specifications, which have been re-issued by the British Standards Institution in revised form, have been readopted after due consideration :—

N.Z.S.S.	B.S.S.	
53	81-1936	Instrument Transformers.
75	168-1936	Electrical Performance of Industrial Electric Motors and Generators with Class A Insulation.
78	171-1936	Electrical Performance of Transformers for Power and Lighting.

Eleven draft standard specifications have been recommended for adoption as New Zealand standard specifications.

The work of the Plugs and Sockets Sub-committee has finalized in the preparation of draft proposals for a specification for flat-pin plugs and sockets. After careful consideration these proposals have been endorsed by the Divisional Committee and are now to be circulated to affected interests. The specification has been prepared with the object of making plugs and sockets for like purpose interchangeable.

The convenience to users and servicing organizations, in addition to the saving in overhead charges that will result from a reduction of the diversification of types of this equipment, constitutes a general advantage so obvious as not to require emphasis. The general aim has been to secure this gain to all concerned with the least possible disturbance to existing practice.

The use of the equipment according to the specification when future electrical installations are being undertaken will progressively establish a more satisfactory position in regard to the interchangeability of electric plugs and sockets, with a corresponding benefit, expressed in convenience and economy, to all concerned.

Some improvement upon the present position in this respect is very desirable. Under present conditions such variations in sockets are found in one house as to require three different types of plugs. There is no real reason why the connections on domestic electric equipment should not be so standardized as to permit the use of one connecting-cord for any type of domestic electrical appliance.

The ever-increasing use of electricity calls for a corresponding application of standards. The precise definition of the margin of safety of insulation, the clearances maintained between various terminals, and many other instances too numerous to mention, but indicate the importance of standardization in this field in order to protect the public from the manifold hazards associated with the use of inferior apparatus or equipment, or its faulty installation.

That this is recognized overseas is evidenced by the fact that, with few exceptions, all the leading countries of the world have instituted a system of certification of electrical equipment based upon standards of efficiency and safety. This certification aspect of standardization is one which could be used greatly to the benefit of this Dominion, and while it is specially important in the case of electrical equipment there is no reason why its general benefits should be confined to this sphere.

Illumination Committee (Five Meetings).

Illumination Sub-committee 3 meetings.

This committee has examined three British and one Australian draft standard specifications, and seven British standard specifications, two of which have been endorsed as New Zealand standards :—

N.Z.S.S.	B.S.S.	
144	52-1936	Bayonet Lamp-caps, Lampholders, and Lampholder Plugs, for Voltages not exceeding 250 volts, Dimensions of.
145	324-1934	Translucent (Diffusing) Glassware Illumination Fittings for Interior Lighting.

N.Z.S.S. 109 (B.S.S. 566-1934), which had been previously adopted, has since been found not to meet the requirements of local conditions, and, consequently, has been withdrawn from the list of New Zealand standards.

One draft standard specification has also been recommended for adoption.

The sub-committee has performed most valuable work in the preparation of a comprehensive draft Code of Recommended Illumination Values, comprising twenty pages. The provisions were formulated by a representative and expert committee, which, in addition to using its own valuable knowledge and experience, has examined reports of comprehensive investigations carried out in other countries and has examined and investigated actual lighting values for domestic, office, and factory purposes under varying local conditions. The draft provisions, therefore, embody the most reliable authoritative and practical information in regard to most generally satisfactory illumination values for the differing activities and requirements for which they are prescribed.

The draft code has been issued for comment to all affected interests, and this comment will subsequently be submitted to the committee for consideration, when any necessary amendment will be made in accordance with the suggestions received.

Ophthalmological authorities agree that adequate standards for lighting afford the greatest protection from injury to vision, with its associated nervous disabilities, and that much defective eyesight could be avoided if this consideration were given sufficient attention. It is also acknowledged by research workers in older countries that good lighting is an aid to greater efficiency, to the avoidance of accidents, and to the promotion of employee welfare generally.

The code, when finally issued, should therefore be very valuable as a guide concerning the correct illumination required to meet varying conditions.

Mechanical Engineering Divisional Committee (Four Meetings).

Fire-extinguishers Sub-committee 5 meetings.

The draft specifications examined number fifty-two British and four Australian, while twenty-five British standard specifications have also been examined. Five of the standard specifications have been endorsed as New Zealand standard specifications, as follows :—

N.Z.S.S.	B.S.S.	
136	349-1932	Identification Colours for Gas-cylinders.
137	726-1937	Measurement of Air-flow and Free Air delivered by Compressors, Standard Method of.
138	720-1937	Calibration of Carburettor Jets for Petrol-engines (all types), (for Flows not exceeding 2,000 ML. per minute), Standard Method for the.
139	394-1936	Short-link Wrought-iron Crane Chain (excluding Pitched or Calibrated Chain) : subject to slight amendment.
147	739-1937	Machine-tool Elements, Dimensions for.

The Committee has also recommended for adoption thirty-two draft standard specifications covering materials and machinery used in connection with mechanical engineering.

The volume of work performed by this committee in making a detailed examination of the provisions of the eighty-one draft and standard specifications illustrates the importance of standardization to engineering activity.

The advancing mechanization associated with trade and industry, indeed with the whole of social organization, is making demands upon the engineers that cannot be met except by a corresponding increase in the application of the standards principle to their activity. Standards, by predefining dimensions, patterns, strengths, methods of test, construction, and installation, and all related factors and considerations, greatly simplify the complexity of the procedure of designing, manufacturing, installation, and operation.

Standard specifications have, for instance, reduced the number of rolled section material, steel joists, angle bars, and other iron and steel sections to less than one-half of what were previously used, with a corresponding reduction in the cost of manufacture and distribution, accompanied by better service and more carefully selected material for the particular purpose for which it is to be used.

The interchangeability of engineering components has also been greatly assisted by the development of standards for such equipment and material as bolts and nuts, spanners, rivets, pipe threads and flanges, keys, taper pins, &c., providing for standards with minimum and maximum tolerances for limits and fits. The advantage to the user when such parts require replacement is obvious, as also are standards for design, construction, and workmanship from the point of view of safety of the community.

The inconvenience and disadvantage to users were they called upon to develop separate specifications because of the lack of national or uniform standards needs only to be mentioned to be fully appreciated. While local standards for engineering material and equipment now exist, the advantage that accrues could be greatly extended with the adoption of Empire standards, as has been done, for example, in the case of marine boilers for ships.

The work of the committee in carefully examining and co-ordinating New Zealand standards with British standard specifications is making an effective contribution towards this end, and is in accord with the repeated recommendations from successive Imperial Conferences.

A further value of engineering standards is that, in many instances, they replace text-books, as statements of best practice as agreed upon by members of committees chosen for their special qualifications for this work.

The sub-committee appointed to formulate standard provisions for portable fire-extinguishers has almost completed the draft proposals covering the soda-acid type of extinguisher, which will shortly be circulated to affected interests, after which similar provisions will be prepared for extinguishers of the foam and carbon tetrachloride types.

The importance and value of the work of this sub-committee is best indicated by the fact that it was commenced in the first place in consequence of several accidents, resulting from the bursting of fire-extinguishers, one of them proving fatal. A Government departmental committee was therefore set up to investigate the standard of construction and maintenance of fire-extinguishers and to report on the desirability of imposing some form of control of the position. As a result of the investigation it was found that a number of sub-standard extinguishers was in use, both in public and private buildings, and further, some extinguishers in service were found to be heavily overcharged. In many instances nozzle blockages, similar to that which caused the fatality, were discovered, and the committee reported that there was urgent necessity for the standardization of both construction and maintenance of fire-extinguishers. The Standards Institute was therefore asked to set up a committee to formulate specifications to which portable extinguishers should conform, and good progress has been made, as indicated above.

The provisions, of course, will have regard for efficiency in operation by elimination of factors which might cause delay in bringing a fire-extinguisher into use in the case of emergency, in addition to satisfying safety requirements.

Civil Engineering Divisional Committee (Five Meetings).

Fencing Wire Sub-committee	..	..	..	..	..	6 meetings.
Steel Sub-committee	..	..	..	..	..	1 meeting.
Bridge Loads and Stresses Sub-committee	..	..	..	..	..	1 meeting.
Cement and Concrete Sub-committee	..	..	..	..	..	..
Asbestos Cement Products Sub-committee	..	..	..	..	..	..

This committee has examined thirty-two British and nine Australian draft standard specifications and fourteen British and two Australian standard specifications, recommending the adoption of two draft specifications and the following four standard specifications:—

N.Z.S.S.	B.S.S.	
110	674-1936	Rubber Joint Rings for Water Mains and Sewers.
112	722-1937	Borehole and Well Pump Tests.
113	723-1937	Sewage Pump Tests.
114	724-1937	Vapourizing Liquid Pump Tests.

The *Fencing-wire Sub-committee* was responsible for the preparation of a standard specification for galvanized (zinc coated) steel fencing-wire which, as previously reported, has been issued as N.Z.S.S. 143.

The *Steel Sub-committee* has been giving consideration to the adoption of standard specifications for different classes of steel. In view of the difference in the provisions of the specifications covering steel which are issued by the Standards Association of Australia and the British Standards Institution, the committee has found some difficulty in recommending the adoption of the standards issued by either authority because of the fact that steel is imported from both countries for use in this Dominion.

The *Bridge Loads and Stresses Sub-committee* is preparing provisions for a New Zealand standard specification for highway bridges, loads, and stresses which may be used as the basis of design for all highway bridges. This will mean that designers throughout the country will know exactly the strength to which they need to design their structures. Uniformity in bridge strengths is necessary since it would be quite useless and wasteful to undertake the expense of constructing a bridge to carry a given loading at one point of a highway, if a bridge at the next point under the control of another authority were incapable of carrying the same loading. Hence the reason of the Public Works Department in referring this project to the Standards Institute for attention. The standard specification referred to will serve to avoid the necessity for much duplication of work in designing, and at the same time will avoid wasteful expenditure in designing to unnecessary strength or in the construction of bridges that may have to be renewed at an unduly early date because of their inadequate strength.

The *Cement and Concrete Sub-committee* is undertaking the development of specifications for reinforced concrete pipes, rapid-hardening cement, concrete, and standard methods for testing concrete.

The specification for rapid-hardening cement will probably be issued as an addendum to the New Zealand standard specification for Portland cement for use in special cases in which the time required for concrete to set is an important consideration from the point of view of permitting its early use and in order to allow attendant work to proceed, which otherwise would have to be held up for a considerable period.

The strength of concrete, so important for constructional purposes, depends upon a proper mixing of its constituents—sand, stone, water, and cement, which need to be used according to defined standards. The importance of exercising the utmost care in this regard cannot be overemphasized if our buildings, dams, reservoirs, bridges, and other such forms of construction are to withstand the stresses imposed upon them, including resistance to seismic forces. This consideration will be further satisfied by the specification in course of preparation for the testing of concrete, which will define the most effective methods by which the engineer may satisfy himself of the strength of the concrete used throughout a structure.

The *Asbestos-cement Products Sub-committee* has only recently been instituted, and on this account has held two meetings only so far, but its function will be to prepare standards that will ensure that asbestos-cement products will be manufactured to strengths that will satisfy the purposes for which they are used, and to dimensions that will render them interchangeable, thus facilitating maintenance service.

The civil engineering phase of standardization is important on account of considerations of safety, health, life, and economy, for which it provides.

Water-supply, sewerage, roads, bridges, hydro-electric schemes, and, indeed, almost all the constructional activities of public authorities are substantially dependent for their efficiency upon civil engineering standards.

The foregoing represents but a few examples of the major importance of the work of this committee. The extension of standardization in this sphere will assist to make the work of the civil engineer still more efficient and economical to the advantage of the whole community.

Chemical Divisional Committee (Six Meetings).

During the year forty-eight British, seven Australian, and two South African draft standard specifications, and twenty-eight British, one Australian, and one South African standard specifications have been examined by this committee. Twenty-two of the draft standard specifications have been recommended for adoption as New Zealand standards and four standard specifications endorsed as New Zealand standard specifications as follows:—

N.Z.S.S.	B.S.S.	
140	733-1937	Density Bottles.
141	729-1937	Methods of Testing the Zinc Coating on Galvanized Articles other than Wire.
142	616-1935	Sampling of Coal Tar and its Products.
146	453-1932	Determination of the Fusion Temperature of Coal Ash.

Proposals have been prepared for specifications for pollard, meat-meal, and meat and bone meals. The draft specification for meat-meal and meat and bone meals was circulated to the affected interests for comment, as a result of which it has been recommended that a representative sub-committee should be appointed to give the matter further consideration, and it is intended to institute such sub-committee before the matter is carried further.

The draft provisions for minimum requirements for pollard will be released for circulation at an early date.

To state that practices and processes of modern chemistry are founded upon standards would probably not be an overstatement of the importance of this section of standards activity. Chemicals, in the first place, are brought to very rigid standards and thus very considerable saving of time and money is effected because their characteristics, strengths, and constituent elements are known. Different standards for the same chemical, according to the purpose for which it is used, are frequently necessary, and in all cases the selection of the different strengths and degrees of purity in the one chemical is dependent upon the predefinition of these factors, which is made available to interested parties through the use of standards.

The chemist has for many years realized the importance of using standard methods, and standard apparatus, wherever possible, in order to save time and expenditure. An outstanding instance of this is the use of standard methods for the analysis of water, which result in the analyses of waters carried out in various parts of the world being easily comparable. It is acknowledged also that laboratory testing is greatly simplified and rendered much more effective when a standard is set, and the tests can be directed towards ascertaining whether the goods, equipment, or material comply with the accepted standards for example, roading materials, paints, lubricating-oils, and other innumerable commodities.

In regard to apparatus, a very great advance has recently been made by the standardization of ground joints and stoppers. This means that stoppers are interchangeable, and thus a valuable piece of apparatus is now not rendered useless by the loss of its stopper.

Another fairly modern development is the availability of standard samples of various materials such as special steels, iron-ores, and bronzes which have been very carefully analysed by expert analysts, the analyses being stated on the bottle, accompanied by a certificate and, where necessary, the details of the methods of analysis employed are stated.

Standard tests are a further valuable aid to the chemist, and are being used increasingly. The individual investigation and thought that would frequently be necessary to work out testing formulae are thus avoided, and, moreover, a standard test produces results that are uniformly comparable. Even in cases where chemists are working according to their own or some locally established method these standard samples and tests enable analysts to improve their technique by ascertaining whether the results obtained by them give equal results with those obtained by the most expert analysts in their own particular field.

Testing Facilities Committee (Two Meetings).

The last annual report referred to the recommendation that had been made for the preparation of a schedule of testing apparatus available in New Zealand. The information has been compiled under appropriate headings with an adequate index, so that this schedule, comprising eighty-two pages, is now available for reference.

The preparation of this work has been commended by a number of interests to whom it has been despatched, with expressions of opinion that it will prove to be extremely valuable as a quick means of indicating where any class of testing may be carried out most effectively and conveniently.

Information will be assembled continuously concerning additional equipment that is available with a view to revising the schedule at regular intervals.

Dairy Machinery and Requisites Committee.

The projects under consideration by this committee are as follows:—

- Milk and cream cans :
- Milk and cream coolers :
- Milk-weighers :
- Sterilizer steam temperature :
- Dairy refrigerating machinery :

Dairy Products Analysis Sub-committee (Two meetings).

The *Dairy Products Analysis Sub-committee* was formed primarily to give consideration to the bacteriological and chemical analysis of dairy products. It is working in close collaboration with the corresponding committees of the British Standards Institution, and is thus carrying out, in this Dominion, the counterpart of the work being undertaken in the United Kingdom.

The sub-committee is embarking on an extensive programme of work, and has already examined three British and one South African draft standard specifications, in addition to nine British Standard specifications, recommending one draft standard and the following four standard specifications for adoption as New Zealand Standard specifications:—

- B.S.S.
- 700-1937 Graduated and Straight Pipettes.
- 734-1937 Density Hydrometers for Use in Milk.
- 684-1936 Methods of Analysis of Fats.
- 733-1937 Density Bottles.

It has also under consideration the formulation of provisions for standard specifications for methylene blue, phenolphthalein solution, acid and alkali solutions, and rennet. The preparation and adoption of these standards, it is considered, will do much to eliminate irregularities frequently encountered in the strength of the solutions and in the method of acid determination at different factories.

In the control of the manufacture of cheese and butter, standard acid, alkali, and indicator solutions are, therefore, of considerable importance in that they will materially assist to maintain the uniformly high quality of our dairy products, upon which the maintenance of our market substantially depends.

Consideration is also being given to the standardization of methods for casein analysis, in order to provide a satisfactory specification for the quality of the commercial article as a guide to manufacturers. Specifications for salt for dairying purposes, bandage cloth for cheese, and methods for sampling, and of bacteriological analysis of butter and other dairy products are also under review.

Further evidence of the value of the work undertaken by this sub-committee is in the consideration it has given to B.S.S. 755-1937—Apparatus and Methods for the Determination of the Percentage of Fat in Milk and Milk Products by the Babcock Method; and B.S.S. 696-1936—Standard Apparatus and Methods for the Determination of the Percentage of Fat in Milk and Milk Products by the Gerber Method. The Babcock tests for milk and cream are the basis of all purchases of milk or cream for manufacturing purposes in New Zealand, and the Gerber test is widely used by herd-testing organizations. It is therefore of great importance that the apparatus and procedure in these tests should be accurately standardized. The committee, in making the examination of these specifications, has recommended alterations and amendments that render them applicable to New Zealand conditions.

Hides Committee (Two Meetings).

A Hides Committee was appointed to consider the question of formulating standard specifications for the treatment, grading, and classification of hides, yearlings and calf-skins. After two meetings draft provisions had been finalized and circulated to affected interests for comment, which were subsequently considered by the committee, suitable amendments made, and the specification issued as a New Zealand standard.

This establishes uniform grades as a basis for trade that will have a common meaning to buyers and sellers within the Dominion and overseas. The net result should be to establish a degree of orderly marketing, stable and sound trade, which will be equally advantageous to distributors, purchasers, and users.

Woolpacks Committee (Two Meetings).

Weight and Weave Sub-committee	..	..	..	..	1 meeting.
Size Sub-committee	..	..	..	..	1 meeting.

Careful consideration was given by this committee to the standardization and simplification of woolpacks. It was hoped to formulate provisions providing for the tensile strength, weave, weight -- including tare allowance -- resistance to water and dirt, in addition to size.

It was not found possible, in the meantime, however, to secure agreement any further than a recommendation for the adoption of a simplification of sizes providing for the use of the 42 in. pack with the loose tops for general purposes, not excluding, of course, the use of the 48 in. and 54 in. packs for special purposes.

Statistical and Financial Return Forms Committee.

At the close of 1937 representations were made through the Bureau of Industry concerning the need for the standardization and simplification of the statistical and financial return forms required by Government Departments from trade and industry. A committee has been set up to consider the question, and the nomination of its personnel has been completed, though the committee has not, as yet, had opportunity to meet. It will do so in the near future, and it is hoped that some progress will be made that will satisfy the convenience of the interests concerned without in any way minimizing the effectiveness of administration.

Public Authority and Local-body By-laws Committee (Two Meetings).

The recognition that standardization activity affected the activity of local bodies and public authorities at so many points was responsible for the appointment of this committee, on a basis widely representative of these interests, in order that the work of any other committee, which was considered to affect substantially local bodies or public authorities, should be submitted first to this committee for review before being referred to the Advisory Council for adoption. This procedure will eliminate the risk of action being taken which might in some way handicap or adversely affect local-body and public-authority interests.

The second meeting of this committee took the form of a conference of representatives of local-body and public-authority interests called to consider the desirability or necessity of proceeding with an active programme of standardization of local-body by-laws. The conference unanimously concluded that the work was a matter of urgent necessity, and strongly urged that it should proceed with the utmost expedition. Consequent upon this recommendation the necessary committees were instituted under the direction of the Building Divisional Council, good progress having been made, as reported elsewhere under appropriate headings.

Town-planning Committee.

Executive Sub-committee 11 meetings.

The quickening of interest in the field of town-planning was no doubt responsible for the request from the Town-planning Board to the Standards Institute to proceed with the preparation of model clauses for guidance of local districts in the preparation of their town-planning schemes. This committee, representative of all interests, therefore deputed a sub-committee to prepare the necessary provisions, and it is making good progress towards the completion of the draft clauses.

Similar work carried out in overseas countries in addition to the existing schemes in New Zealand have been carefully investigated with a view to ensuring that the model clauses, which are in course of preparation, will be in accord with the latest developments in the town-planning sphere. When the work is completed it should exert a useful influence in preventing haphazard expansion and development, which produce conditions socially detrimental and which result in economic loss.

If past experience be any guide to the future it is not necessary to look far to see how some co-ordination of ideas and plans in the past would have obviated many of the administrative difficulties and undesirable conditions which we are, to-day, striving to remedy.

STANDARDIZATION OF LOCAL-BODY BY-LAWS.

In view of the strong and numerous representations from local bodies and public authorities throughout the Dominion, to which reference was made earlier in this report, an active programme of standardization of local-body by-laws has been instituted.

In making these submissions those concerned have stressed the general loss and handicap that results from the existing position. A number of local authorities have pointed out that their by-laws have not been revised over periods extending from fifteen to fifty years, with the result that they are somewhat obsolete. Others have intimated that they are withholding revision or compilation of a new set of by-laws pending the issue of the standard provisions.

In support of its representation one small local body emphasizes that the preparation and printing of a set of by-laws for its own use would involve considerable cost, and that this cost, multiplied by the number of other local bodies similarly placed, would be avoided by the issue of a general set which could be adapted to local requirements of a detailed nature.

Again, it has been stressed by other local authorities that it is not unusual to find the use of identical equipment compulsory in one locality yet prohibited in an adjacent district. This, it is pointed out, causes confusion to contractors and artisans; duplication of work and expense in preparing specifications, and heavy duplication of the stocks of suppliers. It also handicaps transfer of supplies and incurs heavy capital and obsolescence charges on reserve stocks and stores. Particularly in view of the comparatively limited quantity of this class of equipment and material that is necessary to satisfy local requirements, unnecessary variations in types, patterns, and dimensions so diversify its production as to render local manufacture uneconomic, and on this account we have to import the material and equipment which could otherwise be manufactured in the Dominion, and thus deny to the people of the Dominion opportunity for further employment and enterprise.

In the report of a committee appointed by the Minister of Health of the United Kingdom pointed comment is made on this aspect of the position to the effect that the phenomenal increase in the activities of public authorities for a generation past has established them as the largest aggregate market for many staple commodities, and that the satisfaction of this market by local production is due to the people of the United Kingdom, and in particular to British manufacturers, who will thereby have their position immeasurably strengthened.

Further than this, the unnecessary diversification of our imported supplies correspondingly increases production costs overseas which, together with the increased charges incurred at this end, expresses itself in added financial burdens, the only return for which is less efficient service.

Good progress has been made up to the present in response to the representation received from local-body interests, particularly in regard to the development of standards for building construction. A complete survey of the work necessary for the undertaking has been made, including a comprehensive plan of the divisions into which it will fall and the committees to which the various projects will be delegated have been drawn up as a guide for future activity. A number of new committees has been instituted and are at present engaged in the development of the relevant standard specifications - the projects so treated having been indicated in earlier sections of the report.

It is intended that each separate section of the work should be issued as it is completed to enable the local bodies to derive the benefits of the uniform provisions, within the limits of their application to varying local conditions and requirements, by progressive stages, until a comprehensive set of by-laws is available providing for the use of the most suitable and uniform equipment and materials.

The subject is so extensive and diverse that it is not possible to make any adequate statement of the range of equipment, material, practices, and conditions which must be incorporated before the work is complete.

The organization at present adopted centres round the Building Divisional Council under which works the Building Code Committees - one of which deals with timber buildings and another with all buildings other than timber (for instance, brick, reinforced concrete, steel and combinations of these materials). The latter committee also deals with the question of the general requirements to which all classes of building, whether timber or otherwise, should be subject.

In addition to the committees and sub-committees developing the building code, there are a number of other committees working under the Building Divisional Council dealing with various materials used by local authorities. The various by-laws controlling the use of the materials or equipment covered by the specifications will thus only require to lay down that such material or equipment shall comply with the requirements of New Zealand standard specifications by reference to titles and numbers only. This method will simplify the procedure when modification of any by-law becomes desirable, or when advancing knowledge and experience appears to indicate that the specification for a material should be brought up to date, or that new specifications for new materials should be prepared.

The Plumbing Committee has made considerable progress in comparing the plumbing equipment which is used in various parts of the Dominion and also in studying the provisions of the Health Act in this connection and the extent to which these are adhered to in different localities. The Plumbing By-laws Sub-committee has only recently commenced operations, but substantial results may be expected shortly.

The Paints and Coatings Committee is giving the necessary attention to the development of suitable standards to satisfy the need in this respect.

The same will apply to the Ceramic Committee, Heating and Ventilation Committee, Fire-prevention Committee, and Flats and Apartment House By-laws Committee, which are to initiate the work in their respective spheres.

The Building Code Committee and its technical sub-committee have made substantial progress, and have, as far as they are able to go, completed Sections I-III, which will be reissued as Parts I, II, III, and IV of the Model Building By-law. These four parts form the basis on which all the other work will be built, and as the other sections of the work are completed further parts can be issued with the preliminary advice that they are to be read in conjunction with the relevant New Zealand standard specification or code.

Part I deals with preliminaries, the revocation of old by-laws and the commencement of new ones, the statutory requirements overriding the previous by-laws, interpretations, &c.

Part II deals with building permits, the circumstances under which permits are required, how they shall be applied for, the particulars which the application shall set out, and the plans and specifications which shall accompany it. It lays down the conditions under which a permit shall be withheld or issued, and when issued the form and effect of the permit, the fees to be paid in connection therewith, and the means whereby it shall be ensured that nothing is done either in the way of omission or commission contrary to the requirements of the permit.

Part III deals with general design and construction: laying down methods of design, general rules to be followed to ensure safety and stability, particular requirements for special buildings such as those for public meetings and institutions, governing the use of special materials and special forms of construction, and providing for the occasions when alterations and additions to existing buildings are desired.

Part IV lays down the basic loads to be assumed in buildings of various types, which loads are to be used in calculating the stresses in, and consequently the requisite sizes of the various parts of the structure. It further lays down the safeguards which must be followed when structures are subject to special conditions such as the impact and vibration of machinery and the operation therein of motor-vehicles. It provides that all structures must be designed in such a way as to make adequate provision for the effects of wind and earthquake, as well as ordinary loading. With regard to earthquake stresses, it lays down the magnitude of these which must be assumed in the design of buildings falling within different categories. For instance, it must be self-evident that the construction of fire-brigade stations providing the maximum margin of safety is of vital concern to the community, in that their destruction in earthquake would create more disorganization and loss than the destruction of a warehouse, and similarly the inmates of public and other hospitals require more protection than those living in private houses.

The four parts of the code referred to above can be issued immediately after they have been reviewed by a small Legal Committee that is being appointed for this purpose, in co-operation with

the Department of Internal Affairs. Their issuance and universal adoption will be of such immense value to local authorities as to pay its own tribute to the consistent and effective work of the members of the Building Code Technical Sub-committee who have formulated the provisions which subsequently have been endorsed by the Building Code Committee.

The formulation of the different parts of a building code necessitates an examination of the various standards and materials used by different countries, and even districts within the same country, which vary so widely. Consequently, the preparation of a new standard code involves an immense amount of research and consideration in order that conflicting viewpoints may be resolved in a code best suited to our conditions and requirements.

It is recognized that many local authorities have not the necessary technical staff (or the financial resources to employ such a staff) to enable them to prepare the detailed provisions which are necessary to provide reasonable Dominion-wide safety. The committee is therefore proceeding with the preparation of clauses covering the use of bricks, stone, plain concrete, reinforced concrete, and steel. In connection with steel, it is covering both the field of riveted work and of welded work. Most attention has hitherto been given to the question of reinforced-concrete construction, as this is probably the most popular material in which large structures are being constructed. As the instability of large structures naturally involves the greatest amount of risk to life and limb, it is felt that this is the next part which should be issued. The sub-committee has been working on it for several months and has held a large number of meetings. It has also received the assistance of a District Advisory Committee working in Auckland which has discussed various clauses as they were prepared and has expressed opinions thereon, in addition to bringing forward suggestions for modifications or additions.

It is thought that with very little more work the reinforced-concrete section can be issued, and if it becomes a standard for the future work of New Zealand a great advance will have been made.

With the completion of the reinforced-concrete section certain testing necessary to ensure good workmanship and material is called for. Originally the method of carrying out these tests was included in an appendix, but the universal use of concrete and the desirability for tests under all circumstances has brought the sub-committee to the decision that it will be better to bring out a special standard dealing solely with the question of testing concrete, including the material constituents thereof, and this work is well advanced.

PURCHASE OF SUPPLIES BY PUBLIC AUTHORITIES.

Actually there can be no distinct line of demarcation between standardization of local-body by-laws and the development of standards for materials, equipment, and commodities upon which public authorities may base their purchases. This aspect of the work should be undertaken in the interest of true economy, efficient service, protection against accident hazards, effective administration, and co-ordination and synchronization of related activities; indeed, on account of the significance of its general economy and social advantages.

The principle of purchasing supplies on the basis of standards is one that has been so widely accepted in most countries that any departure from it has come to be regarded as a violation of a regular procedure. The savings, according to authoritative statements, are authentically estimated, in various countries, to reach surprising proportions.

This is supported by the finding of the second report of the Committee for the Standardization and Simplification of the Requirements of Local Authorities to the Ministry of Health of the United Kingdom, from which the following vital passages are quoted :—

“ We are constituted a Committee in January, 1932, as the upshot of a conference of representatives of the associations of local authorities called at the Ministry by your predecessor, Mr. Greenwood, to see what more could be done towards standardizing the innumerable articles bought by local authorities (*i.e.*, purchasing a standard unit which should incorporate the best points of all available types) towards simplification by the adoption of the type or types of articles most generally used . . . ”

Reference is made to a previous report dated 29th March, 1934, in which the following recommendation was made :—

“ 1. That local authorities should standardize all their requirements to which standardization is appropriate, and simplify them by eliminating unnecessary variations of type, size, or quality.”

and the report continues to say :—

“ We brought to notice the activities of the British Standards Institution and urged all local authorities to take advantage of British standard specifications, where they exist, and to draw the attention of the Institution to articles which might usefully be made the subject of British standard specifications. We referred to the obvious waste of time and money involved in the use of twenty types of one article where five types would do, and we quoted from the experience of local authorities, railway companies, and others, both in this country and abroad, to show that standardization and simplification, where they have been practised, have effected economy and increased efficiency.”

A further inquiry was instituted in Surrey, England, concerning the desirability of purchasing according to standards, with the result that it was found that on a total of £380,600 expended on supplies in the financial year 1929-30 a definite saving of £20,000, or 5.25 per cent. over the first twelve months had resulted. The Committee of Inquiry made recommendations that would carry the principle further, and as a result of this they estimated that a further £10,000 per annum, making a total of £30,000, or 7.87 per cent., would be effected.

Reverting to the report of the English committee, the advantage of purchasing on standard specifications instead of by trade-marks or by chance is stressed in the following terms :—

“ We have already emphasized the necessity of establishing for each requirement a standard or standards representing the quality, grade, and size best suited for general use. Specification by reference to trade names or proprietary brand names is unsatisfactory. For even if it be known with certainty that the brand name is applied to only one product of constant and uniform quality, the specification of that product defeats the object of bulk purchase, firstly (and obviously), because it restricts competition to the producers of that product and, secondly, because the producer is often bound by agreement with his regular customers not to sell below a fixed price which is determined, to some extent, by the demand he has created for it, by expenditure on advertising and other factors which have only an indirect connection with the quality or intrinsic value of the product.”

Reliable statements have been published by the steel industry in the United Kingdom stating that as a result of the adoption of standards within this industry it has saved over £1,000,000 a year. In the cement industry and in other numerous instances similar enormous savings have also been effected.

The *Encyclopedia Britannica* quotes a statement issued by the United States Chamber of Commerce to the effect that the elimination of waste of effort and materials, resulting from a full programme of standardization, would raise the standard of living by 25 per cent.

More than ten years ago authoritative statements set the savings effected through the standardization of United States Government purchases at \$100,000,000.

The English Parliamentary Committee previously referred to quotes the following from the “ Logic of Industrial Organization,” by P. Sargent Florence (Kegan Paul, Trench, and Co., Ltd.) :—

“ First of all there is a myriad variety in the articles provided. Instead of large-scale production of a few commodities, there is everywhere small-scale production of a multitude of sizes, shapes, and qualities of the same sort of article. Some numerical idea of this orgy of specification may be obtained by a glance at the United States of America. Even in that supposed country of standardization it took all the energy of Mr. Hoover, when Secretary of the Department of Commerce, to get the following results between 1921 and 1925. Among producers' goods the number of sizes or varieties of shovels, spades, and scoops, were reduced from 4,460 to 384, of grocers' paper bags from 6,280 to 4,700, of grinding-wheels from 715,200 to 255,800 Among consumers' goods the number of sizes and varieties of hotel chinaware was reduced from 700 to 160, of brass lavatory and sink traps from 1,114 to 72, and milk bottles alone from 49 to 9.”

There can be no doubt, therefore, as to the possibility that exists for very substantial economies, if the standards principle were applied to the whole of the trade and industry of the Dominion.

Representations from business interests and public authorities in this country within the past year provide evidence that the urgency of the need to develop standards as a basis for the purchase of stores by public authorities is recognized. Manufacturers of paints, concrete pipes, bricks, and other clay products, textiles, and furnishings have pointed out that the development of national specifications covering these products, which would be acceptable to the public purchasing agencies in particular, would greatly reduce manufacturing costs, with a corresponding reduction in prices, limit the stocks they would be required to carry, and enable them to give better service.

Another important aspect to which attention has been drawn is that frequently workers have to be discharged during the slack months of the year when these materials, equipment, or goods are not being ordered—only because it is unsafe to manufacture for stock in the absence of specifications which will determine the types and classes of goods that will be subsequently ordered.

CONSUMER STANDARDS.

The development of standards for public purchasing would automatically promote the development of commodity or consumer standards that would yield incalculable benefits to producers, distributors, and users. In overseas countries where Government Departments, local authorities, and large commercial and trading institutions have developed the practice of buying almost entirely to specifications, producers and manufacturers have necessarily worked to these specifications, with the result that the advantage of the corresponding reduction in costs—side by side with a raising of the quality, utility, and efficiency of goods which has been secured by the major organizations—has also been extended, though in lesser degree, to the mass of individual consumers.

Apart from a great deal of valuable exploratory work that has been carried out, the development of the commodity and consumer side of standardization has not as yet received the serious attention of this organization. This is not due to any failure to recognize the importance of this aspect of the activity. It is acknowledged that it is supremely important, and if considered from the point of view of the number of people who would benefit directly from its development, or upon the basis of the proportion of national income devoted to goods purchased over the counter, as compared with the amount applied to bulk purchasing by public authorities and other organizations, it is by far the most important side of the work—that is, judged on relative volume of expenditure and benefits.

The Consumer Standards Advisory Committee has been in existence since 1936 and has appointed sub-committees to give attention to the following projects :—

- Paper and stationery.
- Textiles.
- Fruit and produce for the domestic market.
- Footwear.

The parent committee has met on two occasions and has given attention to exploratory work as a basis for future activity.

The Paper and Stationery Committee has also had two meetings.

The Fruit Committee has finalized provisions for standard grades for apples and pears which were in the meantime incorporated in regulations issued by the Department of Agriculture.

It has not been possible to prosecute the work of the Consumer Standards Advisory Committee and its sub-committees effectively, as has been the case with other committees. Because of the significance of the considerations involved and the comprehensiveness of the work to be undertaken, the requirements can only be met when the organization has had time and opportunity to develop to a stage that will permit it effectively to initiate and maintain this side of the activity. The question of testing facilities is involved. It is hoped that it will be possible to establish this phase of the activity during the ensuing year.

The process of specialized mass production has been responsible for placing such an amazing array and complexity of goods on the consumer market that some method to assist the purchaser to compare their characteristics, quality, utility, and value seems essential to the judicious spending of income. The value of the goods received for income expended is a no less important consideration to the purchaser than is the amount of the income itself, and it is not possible to determine the value received in goods, unless there is some means whereby the factor of quality can be determined in the same way as are the factors of weight, volume, measurement, and price. Indeed, the factors of quantity and price possess little meaning unless related to the third factor of quality.

It is not by any means only the interest of the consumer that is involved in this aspect of the problem. Judging by the activities of trade organizations throughout the world, including manufacturers, producers, and distributors, these business organizations are displaying more concern at the confusing position that is developing than are the consumers themselves, even though the consumers have powerful organizations at work in many countries. Trade organizations, representative of all phases of business activity, are seeking to develop some order from the confusion that is threatening to envelop their activity.

Commodity and consumer standardization has in fact proceeded to a stage overseas that induces attention to it here if the interests of our manufacturing organizations are not to be seriously prejudiced. Already there is evidence that the certification insignia, based on standards, used in advertising matter and attached to labels of imported goods displayed for sale, is influencing purchasers in favour of these imported lines to the possible detriment of New Zealand manufacturers and the employment of New Zealand labour.

Scientific progress is discovering new processes and materials which can be applied to duplicate uses—some of them as cheap substitutes for genuine constituent materials—and this permits imported or manufactured inferior goods to be placed in the market in competition with higher-grade products from which they cannot be distinguished by the inexpert.

Consequently traders find themselves having no equitable basis for competition, with the net result that both customer and trader may be exploited by the competitive, superficially-attractive, substitute lines which are not comparable in quality, utility, or efficiency with legitimate competitive goods.

Traders are finding that standards related to labelling, advertising, or other descriptive matter give added value to the claims contained in such sales presentation because they are then more reliable and consequently find more general acceptance by the community.

Standards, therefore, provide a common language for buyer and seller. They do not replace other guides to selection, but supplement these more adequately by making advertising more informative, labelling more useful, trade-marks more efficacious, as symbols of quality, utility, and value. The consumer-buyer will also benefit if the presence or absence of certain qualities is definitely known, so that goods possessing desired characteristics can be selected and those possessing undesirable ones avoided.

The use of standards would therefore save money for consumers and traders, since the characteristics of goods will be known and buyers will not need to pay for qualities they do not want or receive. Price, which is the only present guide, is not an infallible indication of quality or excellence.

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