1939.

NEW ZEALAND.

NEW ZEALAND STANDARDS INSTITUTE.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

(ANNUAL REPORT FOR THE YEAR 1938–39.)

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, 1939.

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

REPORT.

The work of the Standards Institute has been one of continuous activity during the year under the direction of the Advisory Council composed of the following:—

Mr. A. R. Galbraith, F.R.S.E., M.Inst.C.E., M.N.Z.I.E. Municipal Association of New Zealand (Incorporated) (Chairman).
Mr. F. W. Furkert, C.M.G., M.Inst.C.E., M.I.Mech.E., M.N.Z.I.E., New Zealand Institution of Engineers (Deputy Chairman).
Mr. S. Cory-Wright, B.Sc., A.M.I.C.E., M.N.Z.I.E., New Zealand Importers' Federation and United Kingdom Manufacturers' and New Zealand Representatives' Association (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. 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., M.N.Z.I.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. H. C. Monson, A.R.I.B.A., A.N.Z.I.A., New Zealand Institute of Architects.
Mr. P. M. Muir, Stores Control Board.
Mr. W. W. Mulholland, President, New Zealand Farmers' Union (Mr. A. P. O'Shea, deputy).
Mr. W. L. Newnham, A.M.Inst.C.E., M.N.Z.I.E., Public Works Department.
Mr. A. W. Nisbet, F.C.S. (N.Z.), New Zealand Manufacturers' Federation.
Mr. K. Pallo, New Zealand Manufacturers' Federation.
Mr. G. A. Pascoe, Council of Scientific and Industrial Research.
Mr. J. Read, Trades and Labour Council.
Mr. L. J. Schmitt, A.C.I.A., F.C.A.A., Department of Industries and Commerce (Mr. F. Johnson, deputy).
Mr. E. T. Spidy, 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. C. R. Lovatt, deputy).
Mr. L. J. McDonald, Secretary and Executive Officer.

Four meetings of the Advisory Council have been held during the year. Most of the work is, however, necessarily carried by various committees, of which thirty-two are in active operation, there having been a total of 102 meetings.

These committees consist of expert and professional officers attached to Government Departments and local authorities, as well as various organizations representing professional, technological, and industrial interests. The committees, after preparing a draft standard, or, alternatively, after considering draft standard specifications formulated by other standards organizations, circulate these to affected interests for comment. In the light of such comment the committees further consider the draft specifications, and in many cases are able to recommend to the Advisory Council that a New Zealand standard specification be issued. The value and effectiveness of the procedure of circulating drafts for comment before recommending their adoption to the Advisory Council can be well illustrated by one example. The draft standard specification for water-closet-flushing cisterns, prepared by the Plumbing Supplies Sub-committee, was circulated to some 330 interests for comment, 256 of which supplied comment which revealed a critical, yet constructive, examination of the provisions. In this way a consensus of competent opinion—including that of engineers and expert artisans employed by public authorities, district branches of the New Zealand Master Plumbers' Federation, and manufacturers—was brought to bear on the provisions. Most of the criticism concentrated on four or five essential points, and as a result of the consideration of these aspects by the committee the final standard specification, when issued, must necessarily incorporate a wider range of expert knowledge and experience than could have obtained had the provisions been prepared and adopted by an individual authority, no matter how eminent.

Throughout the year close co-operation has continued with the British Standards Institution, the Standards Association of Australia, the Canadian Engineering Standards Association, and the South African Standards Institution, and these bodies, by forwarding copies of their draft and standard specifications, have contributed in no small way to assist the progress of the work in New Zealand.

The American Standards Association, the American Society for Testing Materials, the Bureau of Standards, and the United States Department of Commerce also have been most generous in forwarding valuable publications and documents and generally in rendering much assistance, and to these organizations the thanks of the New Zealand Standards Institute are due. This spirit of co-operation and reciprocity among organizations having similar aims materially assists each standards organization to secure a maximum return with a minimum of effort and expenditure.

Specifications and Publications received.

During the year 768 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	116	107	223
Standards Association of Australia	21	27	48
Canadian Engineering Standards Association	..	35	35
South African Standards Institution	..	3	3
American Standards Association	..	41	41
National Electric Manufacturers' Association	..	38	38
United States Department of Commerce	..	81	81
United States Department of Agriculture	..	164	164
United States Army and Navy specifications	..	7	7
American Public Works Association	..	5	5
English translations of German (D.I.N.) specifications	..	25	25
Total specifications received	..	..	671
Other major publications received	..	..	97
			768

Specifications from Overseas Bodies.

British Standards Institution.

Standard Specifications—	
Number received during the year	107
Recommended as suitable for adoption as New Zealand standards without amendment	30
Recommended as suitable for adoption as New Zealand standards with amendment	2
Recommended as unsuitable for adoption as New Zealand standards	7
Still under consideration	68
Total	107

Also, the examination of fifty-nine standards already under consideration at the beginning of the year has resulted in the adoption of one of these as a New Zealand standard.

Draft Standard Specifications—	
Number received during the year	116
Recommended as suitable for adoption as New Zealand standards without amendment	39
Recommended as suitable for adoption as New Zealand standards with amendment	6
Recommended as unsuitable for adoption as New Zealand standards	5
Considered of no interest to New Zealand	2
Deferred until corresponding standards are received	8
Still under consideration	44
Received for information only	12
Total	116

The following recommendations have been made concerning the twenty-six draft specifications already under consideration at the beginning of the year:—

Recommended as suitable for adoption as New Zealand standards without amendment	6
Recommended as suitable for adoption as New Zealand standards with amendment	3
Recommended as unsuitable for adoption as New Zealand standards	1
Deferred until corresponding standards received	11
Received for information only	1
No recommendation made	4
Total	26

STANDARDS ASSOCIATION OF AUSTRALIA.

Standards Specifications—	
Number received during the year	27
Recommended as unsuitable for adoption as New Zealand standards	7
Still under consideration	20
Total	27

Also, fourteen standards already under consideration at the beginning of the year have been examined and found to be unsuitable to New Zealand conditions.

Draft Standard Specifications—	
Number received during the year	21
Recommended as suitable for adoption as a New Zealand standard with amendment	1
Recommended as unsuitable for adoption as New Zealand standards	2
Considered to be of no interest to New Zealand	5
Deferred until the corresponding standards are received	4
Still under consideration	9
Total	21

The following recommendations have been made concerning the sixteen draft standard specifications already under consideration at the beginning of the year:—

Recommended as suitable for adoption as a New Zealand standard with amendment	1
Recommended as suitable for adoption as New Zealand standards	2
Deferred until the corresponding standards are received	10
Still under consideration	3
Total	16

NEW ZEALAND STANDARD SPECIFICATIONS.

Original Specifications issued.

The provisions of the following specifications have been developed by committees of the New Zealand Standards Institute and issued as New Zealand specifications during the year:—

N.Z.S.S. 168 New South Wales Desapped or Dressed Desapped Hardwood Poles for Use by Government Departments and Electric-power Boards throughout New Zealand.

N.Z.S.S. 169 Classification and Grading of New Zealand Building Timber. (National Grading Rules.)

N.Z.S.S. 170 Standard Code of Illumination Values.
N.Z.S.S. 181P Provisional Standard Code of Clauses for Town Planning Schemes.
N.Z.S.S. 95 Standard Code of Model Building By-laws: Parts I VI, being revision of Sections I, II, III, V, and VI of the Model Building By-law issued in 1935 as New Zealand Standard Specification No. 95. The contents of these Parts are as follows—

Part I: Preliminary; revocation; definitions, &c.
Part II: Permits, form of, issuing of, withholding of, deviation from, &c.
Part III: General considerations of design.
Part IV: Basic loads (fixed, rolling, or vibratory); wind pressure; earthquake forces.
Part V: Reinforced-concrete-frame design, covering-materials, workmanship, basis of design (generally, and with respect to such members as columns, beams, and slabs); "flat slab" construction, &c.; and the various stresses which should be used under the appropriate circumstances for various grades of concrete and reinforcement, &c.
Part VI: Masonry panels in framed structures, whether they be reinforced-concrete or steel frames. These will cover panels of brick or concrete, reinforced or plain, and composite panels.

(Owing to consideration as to the form in which these proposals will be issued, they have not yet been printed, but will be issued as soon as a satisfactory conclusion is reached in the above regard.)

The issue of the above sections of the Standard Code of Model Building By-laws will establish a uniform standard of building construction throughout the Dominion that will provide the same factor of safety in respect of all hazards to which people inhabiting or frequenting buildings or their immediate precincts are subjected. The sections of this code are being issued in a form that will facilitate revisions and enable additions to be made as the provisions of the further sections are completed.

New Zealand standard specifications as at 31st March, 1938	159
New Zealand standard specifications adopted during the year 1938–39 ..	33
Total as at 31st March, 1939	192

In addition, thirty-six standard specifications have been recommended for adoption by the respective committees and only await the endorsement of the Advisory Council. Adoption of these will make a total of 228 New Zealand standards.

The majority of these specifications are British Standards Institution standards; nevertheless, they have been adopted as New Zealand standard specifications only after the closest scrutiny, involving their circulation to all substantially affected interests inviting comment and an expression of opinion as to whether or not they were suitable for adoption as New Zealand standards.

This method of adopting as New Zealand standards the standards originated by the British Standards Institution or other standards organizations which, after mutual consultation between all affected interests, are considered suitable for adoption has the advantage of clearly indicating to all concerned the specifications which detailed and authoritative examination has shown to satisfy the balanced needs of New Zealand conditions and requirements. The alternative procedure leaves each responsible party to determine whether such specifications are suitable for New Zealand purposes, frequently without sufficient opportunity to make the necessary detailed examination, and this may lead to material or equipment for one and the same purpose being ordered to different specifications. It may also leave those responsible with no option but to prepare separate specifications, whereas examination on the basis of collaboration results in amending the provisions in a way that renders them suitable to New Zealand requirements. Should this not be possible, alternative specifications are prepared on the same basis of consultation and collaboration between all affected interests when this is considered to be necessary. Whether New Zealand standards originate in New Zealand or with overseas standards organizations, they are not finally adopted as New Zealand standards except by mutual consent as between Government Departments, local bodies, and industrial and trade organizations, the interests of which frequently interrelate with public administration. Such procedure avoids duplication of effort in preparing specifications, and yet provides for pre-defined selection of equipment, material, and commodities on the broadest basis of experience and knowledge.

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

General adherence to the standards issued therefore enables Government Departments, local bodies, and industrial and trade organizations to secure considerable economies resulting from the elimination of superfluous types, sizes, and varieties of materials, equipment, or commodities required for one and the same purpose.

Original New Zealand Standard Specifications completed in Draft Form and at present in circulation.

D. 1094 Plugs and Sockets of the Flat-pin type.
D. 1135 Water-closet-flushing Cisterns.
D. 1142 Solutions and Methods for the Estimation of Acidity in Cream, Milk, and Whey.
D. 1144 Coagulating Strength of Rennet.
D. 1171 Portable Fire-extinguishers, Soda-acid Type.
D. 1214 Model Building By-law Part XV: For Residential Buildings, Flats, and Apartment-houses.
D. 1088 Standard Conditions of Contract for Use in Civil Engineering Works. (This project is not yet in circulation.)

SALE OF STANDARD SPECIFICATIONS.

	Number of Copies sold.	Cash Receipts.
		£ s. d.
1938-39	4,791	450 13 6
1937-38	1,444	201 14 9
Increase	3,347	248 18 7

ACTIVITIES OF COMMITTEES.

Technical Advisory Committee (Five Meetings).

Fulfilling its function of directing and reviewing all work of a technical nature, the Technical Advisory Committee has directed 125 draft and 134 standard specifications to the appropriate committees for consideration, and has reviewed 83 reports in order to assist and facilitate the work of the Advisory Council in controlling the activities of the organization.

Building Divisional Council (One Meeting).

Plumbing Committee	1 meeting.
Plumbing Supplies Sub-committee	3 meetings.
Plumbing By-laws Sub-committee	1 meeting.
Timber Committee	2 meetings.
Paints and Coatings Committee	4 meetings.
Timber Building Code Committee	..
General Construction Sub-committee	..
Foundations Sub-committee	..
Ceramic Committee	..
Other than Timber Building Code Committee	2 meetings.
Building Code Technical Sub-committee	17 meetings.
Structural Welding Sub-committee	2 meetings.
Heating and Ventilation Committee	..
Flats and Apartment-house By-laws Committee	12 meetings.
Fire-prevention Committee	1 meeting.
Asbestos-cement Products Committee	2 meetings.
Asbestos-cement Products Sub-committee	1 meeting.
	48 meetings.

As the work of the Building Divisional Council consists of the examination and correlation of the work of the various committees under its control, it has been necessary to call only one meeting during the year.

Otherwise, members of the Council have maintained contact with the various projects under consideration by an examination of the reports of each committee concerned.

Plumbing Committee (One Meeting).

Plumbing Supplies Sub-committee	3 meetings.
Plumbing By-laws Sub-committee	1 meeting.

The Plumbing Committee exists for the purpose of directing and supervising the projects in the course of development by its sub-committees. Through the *Plumbing Supplies Sub-committee* a draft New Zealand standard specification for water-closet-flushing cisterns has been developed and circulated to interested parties for review, and the comments received as a result of this circulation are at present under examination. A New Zealand standard specification for household taps has also received preliminary consideration, and will be developed more fully as soon as the specification for water-closet-flushing cisterns is finalized.

In addition to the development of original New Zealand standards, the *Plumbing Supplies Sub-committee* has examined three draft and six standard specifications issued by standards organizations in other parts of the Empire. Of these, the three drafts have been deferred pending the receipt of the appropriate standards; British Standard Specification 766–1938—Bafflers or Draught Diverters on Gas Appliances, including recommendations for Flue Terminals has been recommended as suitable for adoption as a New Zealand standard; two have been found unsuitable for New Zealand conditions; and three are still under consideration.

At its inaugural meeting, the *Plumbing By-laws Sub-committee* reviewed the scope of its essential activities. A programme of work was drawn up which will be proceeded with upon the receipt of certain information now in the course of preparation.

Timber Committee (Two Meetings).

This committee has been responsible for the development of the following two original New Zealand standard specifications:—

N.Z.S.S. 168 New South Wales Desapped and Dressed Desapped Hardwood Poles.
N.Z.S.S. 169 Classification and Grading of New Zealand Building Timber (National Grading Rules).

Since these specifications were issued they have been readily adopted by the timber industry to an extent that gives every indication that the activities of this committee can be extended to very definite advantage.

Six draft and four standard specifications from overseas bodies have been referred to this committee. Two of the drafts have been found to have no application in New Zealand, while the remaining four drafts and the four standards are still under consideration.

Paints and Coatings Committee (Four Meetings).

This committee has adopted the policy of giving consideration to the adoption of specifications for base materials for paints before turning its attention to the more complex question of a specification for mixed paints. It has examined in detail the specifications for base materials issued by the British Standards Institution and the Standards Association of Australia, and has recommended the adoption of three draft and the ten standard specifications set out hereunder, while five drafts and seven standard specifications examined were considered to be of interest to New Zealand. With the completion of the work on paint materials consideration will be given to specifications for ready-mixed paints.

The following British standard specifications have been recommended as suitable for adoption as New Zealand standards:—

239–1935 White Pigments for Paints.
255–1938 Extenders for Paints.
282–1938 Lead Chromes and Zinc Chromes for Paints.
283–1938 Prussian Blue for Paints.
284–1937 Black (Carbon) Pigments for Paints.
296–1935 Lithopone.
303–1935 Green Pigments for Paints.
314–1938 Ultramarine Blue for Paints.
320–1938 Vermilion and Red Pigments for Paints.
370–1938 Venetian Red for Paints.

Other than Timber Building Code Committee (Two Meetings).

Technical Sub-committee .. .. 17 meetings.
Structural Welding Sub-committee .. .. 2 meetings.

The parent committee has held two meetings. At the first the proposals of the *Technical Sub-committee* for the revision of Sections I to III of the Model Building By-law (N.Z.S.S. 95) were examined in detail, while at the second (which was held in conjunction with the Building Divisional Council) the whole of the revised Parts I to VI were reviewed and approved for publication. The *Technical Sub-committee* has pursued a very active programme in its revision of N.Z.S.S. 95. Having completely revised Sections I, II, III, V, and VI, it is now undertaking a revision of Section VII—Steel Work. It has under consideration, also, the question of developing a standard specification for timber connectors.

The *Structural Welding Sub-committee* is proceeding with the preparation of a comprehensive Model Code for Welding, which will include provisions under the following headings:—

Material and equipment:
Machines and equipment:
Design practice:
Workmanship and inspection.

Flats and Apartment-house By-laws Committee (Twelve Meetings).

A section of the Standard Code of Model By-laws prescribing general conditions for residential buildings (flats and apartment-houses) has been finalized in draft form, and is now in the process of circulation to affected interests for review before it is finally issued as part of the Model Building By-law.

Fire-prevention Committee (One Meeting).

At its inaugural meeting this committee discussed and approved a programme of work as set out under the following headings :—

(1) Building Construction Code : Fire-prevention.
(2) Building Exit Code—
  (*a*) General buildings.
  (*b*) Hotels, Boardinghouses, and other residential buildings.
(3) Theatre Code : Construction and operation.
(4) Fire prevention : General—
  (*a*) Fire-alarm installations, electrical and water type.
  (*b*) Private fire-prevention installations.
(5) General Fire Prevention By-laws.

Information necessary to the development of these projects is now being sought, and upon its receipt the work will be actively proceeded with.

Asbestos-cement Products Committee (Two Meetings).

Asbestos-cement Products Sub-committee .. .. .. 1 meeting.

This committee has been occupied with the formulation of a New Zealand standard specification for asbestos-cement pressure pipes, close contact being maintained with the corresponding committee of the Standards Association of Australia. Before the provisions could be drafted it was found necessary to have tests carried out in order to establish more definitely the relative strengths and durability of these pipes. These tests are now being conducted, and with their completion a suitable specification will be drafted, after which attention will be given to the development of suitable standards for these asbestos-cement products, including corrugated and plain sheets.

Civil Engineering Divisional Committee (Three Meetings).

Fencing-wire Sub-committee .. ..
Steel Sub-committee .. ..
Bridge Loads and Stresses Sub-committee .. ..
Cement and Concrete Sub-committee .. .. 3 meetings.

In addition to the draft and standard specifications under consideration at the beginning of the year, eleven draft and twenty-eight standard specifications have been referred to the parent committee for consideration. After due examination, five draft specifications and the following two standard specifications have been recommended as suitable for adoption as New Zealand standards :—

302–1938 Round Strand Steel Wire Ropes for Cranes.
785–1938 Rolled Steel Bars and Hard Drawn Steel Wire for Concrete Reinforcement.

Standard conditions of contract for use in Civil engineering works have been completed by the committee and referred to the Legal Committee for scrutiny.

The *Fencing-wire Sub-committee*, after completing N.Z.S.S. 143 for Galvanized (Zinc-coated) Steel Fencing-wire, which was issued at the beginning of last year, has now turned its attention to the development of a standard specification for iron fencing standards. On the basis of information supplied by manufacturers and distributors in the Dominion, a statement of the requirements that appear to satisfy local conditions has been referred to the provincial branches of the New Zealand Farmers' Union for an expression of opinion from the farming community.

Material is also being collected from the importers of barbed wire and woven wire as a preliminary step to the drafting of a standard specification for this material.

The *Cement and Concrete Sub-committee* has completed a New Zealand standard specification for the testing of concrete, based upon the Third and Fourth Schedules of the Model Building By-law (N.Z.S.S. 95). This has now been forwarded to the Advisory Council with a recommendation that it be issued as a New Zealand standard. The sub-committee has also carried out investigations in an endeavour to find in New Zealand a suitable sand that can be used as a standard sand for testing-purposes in lieu of Leighton Buzzard sand. It has also completed a draft specification for rapid-hardening cement which, when finalized, will form an addendum to N.Z.S.S. 43 Portland Cement.

Mechanical Engineering Divisional Committee (Five Meetings).

Fire-extinguisher Sub-committee .. .. 3 meetings.

The attention of the parent committee has been almost exclusively confined to the examination of draft and standard specifications issued by other standardizing bodies within the Empire. During the year fifty-two draft and fifty-two standard specifications have been referred to it for consideration, of which twenty-nine draft and the following twenty-seven standard specifications have been recommended as suitable for adoption as New Zealand standards :—

102–1930 Tramway Axles.
209–1937 Fuel Oils for Diesel Engines (Petroleum and Shale Oils).
302–1938 Round Strand Steel Wire Ropes for Cranes.
321–1938 General Grey Iron Castings (Grades A and C).
489–1933 Turbine Oils.
640–1935 Bare Rod or Wire Electrodes for Metal Arc Welding Wrought Iron and Mild Steel.

702–1936 Silicon Aluminium Alloy Castings for General Engineering Purposes.
703–1936 Y-alloy Castings (as cast) for General Engineering Purposes.
704–1936 Y-alloy Castings (Heat Treated) for General Engineering Purposes.
749–1937 Underfeed Screw Type Stokers.
752–1937 Acceptance Tests for Steam Turbines, Test Code for.
754–1937 System for the Direction of Rotation of Machine Tool Handwheels and Levers relative to Movement produced.
759–1937 Valves, Gauges and Similar Fittings for Land Boiler Installations.
762–1938 Wrought Iron Bars, "Special" Grade.
765–1938 Internal-combustion Engines, Carburettor-type, excluding Aero-engines.
766–1938 Baffilers or Draught Diverters on Gas Appliances, including Recommendations for Flue Terminals.
772–1938 Rubber Joint Rings for Gas-mains.
778–1938 Steel Flange Joints for Hydraulic Pipe-lines for Pressures up to 1,500 lb. per square inch.
779–1938 Cast-iron Boilers for Central Heating and Hot-water Supply.
780–1938 Riveted Steel Boilers for Hot-water Central Heating and Hot-water Supply.
782–1938 Electrodes for Metal Arc Welding in the Construction of Ships.
786–1938 High Duty Iron Castings, Grades 1, 2, and 3.
788–1938 Wrought-iron Tubes and Tubulars, Gas (Light), Water (Medium), and Steam (Heavy) Qualities. (Addendum, March, 1938.)
789–1938 Steel Tubes and Tubulars, Gas, (Light), Water (Medium), and Steam (Heavy) Qualities. (Addendum, March, 1938.)
790–1938 Nickel-silver Sheets and Strip of 10–30 per cent. Nickel Content (up to and including 3 S.W.G. (0·252 in.) thick).
799–1938 British Standard Code for Fully Automatic Oil-burning Equipment for Central Heating and Hot-water Supply (with amendment).
806–1938 Ferrous Pipe and Piping Installation for and in connection with Land Boilers.

The *Fire-extinguishers Sub-committee* has completed a draft New Zealand standard specification for portable fire-extinguishers of the soda-acid type, which has been widely circulated to affected interests for review. The comments received have been collated, and now await the final consideration of the sub-committee. Also under consideration are proposals for portable fire-extinguishers of the carbon tetrachloride and foam types, for which relevant information is being sought and necessary tests are being carried out.

Electrical Engineering Divisional Committee (Four Meetings).

Plugs and Sockets Sub-committee .. .. 1 meeting.

Since the beginning of the year, nineteen draft and thirty-nine standard specifications have been referred to this committee. The examination of these and other specifications still under consideration from the previous year has resulted in the recommending of nine draft and the following twelve British standard specifications as suitable for adoption as New Zealand standards: —

89–1937 Indicating Ammeters, Voltmeters, Wattmeters, Frequency and Power-factor Meters.
96–1938 Carbon Brushes (Parallel Sided) for Use on Commutator and Slip Ring Machines.
115–1938 Metallic Resistance Materials for Electical Purposes.
116–1937 Oil Circuit-breakers, Oil Switches, and Oil Isolating Switches, for Alternating-current Circuits.
158–1938 Marking and Arrangement for Switchgear Bus-bars, Main Connections, and Auxiliary Wiring.
159–1938 Bus-bars and Bus-bar Connections in Air, Oil, or Compound. (Addendum, May, 1936, and March, 1938.)
454–1938 Lead-acid Train-lighting Accumulators (Plante and Faure Type).
495–1938 Fittings for Double-capped Tubular Lamps. (Addendum, April, 1935, and December, 1936.)
634–1935 Finishing Air-drying Insulating Varnish for Electrical Purposes.
760–1938 Metal-sheathed Paper-insulated Plain Annealed Copper Conductors for Use in Mines, including Voltage Tests.
775–1938 Contactors when supplied separately on or in Connection with other Gear.
794–1938 Transformers for Low-voltage Lighting below 1 kVA Rating (excluding Transformers for Use in Mines).

The committee has also undertaken the development of a New Zealand standard specification for the rating and testing of hot-water-heater elements, on which subject particulars supplied by manufacturers have received preliminary discussion, while further information is being sought from the appropriate overseas bodies.

Arising from inquiries concerning hot-water containers, the question of the tinning of these containers, and of food-containers generally, has received consideration. Investigations conducted by the committee indicate that the use of coatings with a high percentage of lead can constitute a very real danger, and further inquiries are being made in an endeavour to ascertain the exact extent of this danger, with a view to eliminating it as far as possible by the inclusion of provisions relating to purity of tin content in relevant specifications.

A further question which has been fully examined by this committee is that of the interchangeability of lamp caps and holders manufactured to British and American specifications. From an examination of the specifications concerned it appeared that strict adherence to the provisions would prevent the use of British plugs with American holders, and *vice versa*. However, investigations revealed that in actual practice plugs and holders in both countries are manufactured with sufficient tolerance from their respective dimensions to be interchangeable.

The *Plugs and Sockets Sub-committee*, which was responsible for the formulation of the draft New Zealand specification for plugs and sockets of the flat-pin type for use on 10 ampere 250 volt sockets, has now examined the comments received as a result of the circulation of the specification to affected interests, and after amending the draft as found desirable in the light of the comments received has recommended it to the parent committee as suitable for adoption as a New Zealand standard.

Chemical Divisional Committee (Three Meetings).

Meal Sub-committee .. .. 1 meeting.

During the year, twenty-three draft and forty standard specifications have been referred to this committee, and the examination of these has resulted in the recommending of fourteen drafts and the following twenty-five British Standard specifications as suitable for adoption as New Zealand standards:—

188–1937 Determination of Viscosity of Liquids in Absolute (C.G.S.) Units, Method for the.
283–1938 Prussian Blue for Paints.
303–1938 Green Pigments for Paints.
314–1938 Ultramarine Blue for Paints.
320–1938 Vermilion and Red Pigments for Paints.
454–1938 Lead-acid Train-lighting Accumulators (Plante and Faure Type).
541–1934 Determining the Rideal-Walker Coefficient of Disinfectants, Technique for.
575–1934 Carbon Tetrachloride.
593–1935 General Purposes Laboratory Thermometers. (Addendum, August, 1935.)
616–1938 Sampling of Coal Tar and its Products.
733–1937 Density Bottles.
735–1937 Sampling and Analysis of Coal and Coke for Performance and Efficiency Tests on Industrial Plant.
748–1937 Haemacytometer Counting Chambers and Haemacytometer Dilution Pipettes.
742–1937 Fuel Oils for Burners (Petroleum and Shale Oils), including Methods of Test.
745–1937 Joiners' Glue (Cake or Powder, Jelly or Liquid, and Casein Glue). (Addendum, October, 1937.)
757–1937 Testing Gelatines, Methods for.
763–1937 Sampling of Coal, with Special Reference to the Size-weight-ratio Theory, by E. S. Grummell, D.Sc., with Notes on Sampling and Analysis for Ash Content by A. Crawford, M.Sc., Ph.D., and W. Reed.
771–1938 Synthetic Resin (Phenolic) Moulding Materials and Mouldings.
773–1938 Ostwald-Folin Pipettes.
776–1938 Materials for Use in the Manufacture of Magnesium Oxychloride Flooring Compositions.
783–1938 Japanese and/or Korean Sardine Oil (Pale) (with amendment).
784–1938 Methods for the Testing of Chemical Stoneware.
791–1938 Bomb Calorimeter Thermometers.
797–1938 One-mark Capillary Pipettes.
804–1938 Method for the Crucible Swelling Test for Coal.

An original draft New Zealand standard specification for pollard with a minimum fibre content has been completed and is now in course of circulation to affected interests. A specification for cleaning benzine is now in the initial stages of development. In the light of the comments received on the draft specification for meat-meal and meat and bone meal which was issued for comment some time ago, it was found desirable to reconsider the proposals, and for this purpose a special sub-committee has been instituted.

The *Meal Sub-committee* at its inaugural meeting discussed very fully the provisions of the draft New Zealand standard specification for meat-meal and meat and bone meal, finally deciding to await further expressions of opinion from manufacturers before proceeding with the amendment of the present provisions.

Dairy Products and Requisites Committee (Four Meetings).

This committee has worked in close collaboration with similar committees of the British Standards Institution in an endeavour to produce a uniform set of standards for dairy products and requisites throughout the Empire. The collaboration has taken the form of an interchange of reports between the two bodies, so that they may be examined in detail and lead to the development of projects satisfactory to each country. Comments and expressions of opinion with regard to local conditions have been freely exchanged, with the result that there is already apparent a most desirable unanimity of opinion on the specifications already issued. Quite recently the system has been extended to include the Standards Association of Australia.

Original projects in the course of development by the New Zealand committee are the following :—

The coagulating strength of rennet :
Solutions and methods for the estimation of acidity in cream, milk, and whey :
Babcock and Gerber methods of testing for fat content :
Methylene-blue solution for the reductase test :
Dairy thermometers.

Footwear Sub-committee (One Meeting).

As a result of representations received from the New Zealand Footwear Manufacturers' Association, the Footwear Sub-committee was recently called together after a lapse of over a year. Proposals for draft specifications for various types of footwear submitted by the Footwear Manufacturers' Association were discussed, and finally referred back to the Association for further consideration. It was also agreed at this meeting that a survey of children's feet should be undertaken, in order to ascertain the most suitable sizes, shapes, and other requirements of lasts from which to manufacture footwear that would not cause deformity of children's feet. At present the possibility of conducting such a survey is dependent upon finding suitable people who are capable of conducting the survey under the surveillance of the School Medical Officers.

Hides Committee (One Meeting).

In accordance with the understanding when N.Z.S.S. 161 for the Treatment, Grading, and Classification of Hides, Yearlings, and Calf-skins was issued, the committee was called together at the end of the year after the adoption of the specification by the hides industry. Comments and suggested alterations to the provisions were considered, but it was felt that no useful purpose would be served by making any alterations to the existing specification.

The committee discussed steps which could be taken to prevent undue damage to calf-skins as a result of rough handling. This was not a point which could be met by the provisions of a specification, the only solution to the problem being an educational campaign which would ultimately make the entire industry aware of the harm that could be done in this way.

Soundly informed opinion reports that the reliability of the uniform grades of quality of hides and calf-skins for which the specification provides has served to increase the confidence of buyers in the New Zealand products, and that this has had a good influence in maintaining a firmer market than otherwise would have prevailed. Market fluctuations due to other factors make it impossible to assess in terms of money the value of this advantage to the Dominion, but it nevertheless illustrates the benefits that accrue from the sound development of standard specifications.

Town-planning Committee (Three Meetings).

Town-planning Sub-committee .. .. Two meetings.

The drafting of the Standard Code of Clauses for Town-planning Schemes has been completed and the provisions have been issued as a provisional standard code which will be subject to review and, if necessary, amendment at the end of one year.

Statistical and Financial Return Forms Committee.

A special committee was instituted to examine the nature of statistical information required from the general public by Government Departments, and to report upon the possibility of introducing a measure of simplification of the requisite forms. The committee has collected information from Government Departments concerning the forms in use, and at the same time has invited suggestions for the simplification of these from commercial and industrial interests. All the necessary information has been received and collated, and now awaits the attention of the committee before the report is presented.

Legal Committee (Three Meetings).

This committee was instituted for the purpose of giving legal scrutiny to various specifications and codes issued by the Institute, and more particularly in connection with the standardization of local-body by-laws. The revised Parts I to VI of the Model Building By-law (N.Z.S.S. 95) have been scrutinized and recommended as suitable for publication. Also, draft Conditions of Contract for Use in Civil Engineering Works prepared by the Civil Engineering Divisional Committee await the attention of this committee.

Motor-spirits Committee (One Meeting).

At its inaugural meeting this committee discussed the desirability and practicability of drawing up standard specifications for motor-spirit. It was agreed that further information be sought on this subject before any further steps be taken, and a further meeting will be called as soon as this information is to hand.

Illumination Committee (Two Meetings).

Illumination Sub-committee .. ..

The original New Zealand Standard Code of Illumination Values has been finalized and is now in the process of being printed for publication. The wide interest displayed in this publication during its circulation in draft form suggests that it will be widely used and appreciated. Many commendations of the code were received, both from interests within the Dominion and overseas, including one from the United States National Committee of the International Commission on Illumination, which sought leave to use the provisions at a forthcoming session of the International Commission on Illumination.

The issue of the Standard Code of Illumination Values should do much towards securing the use of adequate and proper lighting for different needs according to the demands upon eyesight, and so enable respective tasks to be carried out with greater ease, speed, and safety, while avoiding eyestrain that consequently leads to defective vision with all its attendant disabilities.

General Progress of Work.

It has not been possible to meet all the requests that have been made throughout the year for the development of standards. The representations that have been made in this regard, and which have not been met, are, however, under consideration with a view to determining their relative claims and urgency with the object of satisfying all legitimate requirements. In the meantime, as evidenced by the foregoing review, the work has been proceeded with during the year in a way that registered satisfactory progress. There have been clear indications also of a growing appreciation of the importance of standards as an aid to industrial development and as a basis for more orderly and effective commercial activities and relationships generally. Commercial and trade organizations, administrative institutions, individual traders, and other responsible sections of the community have displayed an increased recognition of the value of the principle of standardization, and this reveals a growing standards consciousness that can be regarded as a healthy social trend that will prove to be to the ultimate advantage of the Dominion proportionate to its growth.

Visit of Mr. Percy Good, Deputy Director of the British Standards Institution.

During the year interest in standards activity received a valuable stimulus from the visit of Mr. Percy Good, Deputy Director of the British Standards Institution, who, at the invitation of the Governments of Australia and New Zealand, visited these two countries to confer in regard to the standardization activity being carried out on a basis of reciprocity with the United Kingdom and other Empire countries.

After spending some six weeks in Australia, Mr. Good arrived at Auckland on 17th October, 1938, where he was welcomed by representatives of trade organizations and the Auckland branch of the Institution of Engineers. Reaching Wellington the following day, he commenced to acquaint himself with the standards activity that was being carried on in the Dominion.

Subsequently, he met representatives of manufacturers' associations, chambers of commerce, United Kingdom Manufacturers, and New Zealand Representatives' Association (Incorporated), New Zealand Importers' Association, New Zealand Institution of Engineers, and officers attached to local authorities and Government Departments in Christchurch, Dunedin, Wellington, and Auckland. In addition to giving eight addresses and two radio talks from 2YA, the visitor conducted some twenty-five interviews during his visit.

In the course of these addresses Mr. Good expressed himself as agreeably surprised and satisfied with the effectiveness of the work in the Dominion, and the striking progress that had been made under the direction of the Advisory Council since the reconstitution of the organization within the Department of Scientific and Industrial Research. He also expressed the opinion that, although the administration of standards in the Dominion was a Government activity, he was satisfied it was working along lines identical with those adopted in the United Kingdom and the countries where standards operated independently, though in close partnership with Government Departments and local-government authorities. Mr. Good said it was agreed that the standards organization could not be effectively maintained in a country with such limited industrial units as New Zealand unless the Government undertook the fuller responsibility in the way that had been done.

In the presentation of his case Mr. Good used interesting examples to show the duplication of effort and elimination of waste, on a vast scale, and the more effective utilization of our energies and resources that resulted from the sound development and administration of standards. He stressed that his mission was concerned with a principle which penetrated every phase of human endeavour and activity, and quoted interesting instances of standard equipment which greatly minimized accident incidence and gave protection to health, thus greatly reducing the associated costs in addition to avoiding the distress that results from avoidable accidents and unnecessary injury to health. For this reason, many authorities cited such specifications in their regulations. As this practice made it possible to concentrate on manufacture to a common specification for the same equipment used by different authorities, instead of manufacturing to individual specifications, which greatly increased original costs and maintenance charges, he hoped the same principle would be generally adopted in New Zealand in accordance with the recommendations of the 1932 Imperial Conference held at Ottawa.

In this connection Mr. Good pointed out that it was significant that the approving authority for local-body loans in the United Kingdom required that all material purchased with such loan-moneys should, as far as possible, conform to British standard specifications, in order to ensure the most economic expenditure of public money. The success of the work and the measure of its benefits to all concerned was dependent upon the measure of co-operation and active participation of all responsible commercial, industrial, and administrative organizations, which, he freely acknowledged, was already forthcoming to a promising extent.

During his presence in Wellington Mr. Good addressed a combined meeting of over one hundred members of the committees of the New Zealand Standards Institute on the general subject of standards procedure and administration. He also met several individual committees, and conferred with members of the Council on several occasions.

Conference on Metal Containers for Foodstuffs.

During the visit of Mr. Good, opportunity was taken to convene a conference of representatives of manufacturers of metal containers for foods—meat, milk, fruit, and vegetable products—and the Government Departments concerned, in order to discuss the draft schedule of sizes issued by the British Standards Institution and to agree upon a procedure by which New Zealand could collaborate in formulating an Empire standard on this subject. The question was fully discussed with Mr. Good, who stressed the importance of this matter, from the point of view of the Imperial authorities, as a means of facilitating storage and distribution of rations, particularly under conditions of national emergency. The conference recommended that a special committee be established for this purpose, with sub-committees in the main centres to facilitate preliminary discussion.

Standard Marks and Certification.

Throughout all these discussions and deliberations, Mr. Good made it clear that his visit to Australia and New Zealand was to secure agreement concerning a reciprocal control and protection of standard marks as a means of certifying the quality, dimensions, or other characteristics of goods, by means of establishing a warranty to denote that these conformed to the requirements of standard specifications. While this was the specific object of his visit, it was not possible to separate it from the wider aspects of standardization, which consequently were not precluded from his attention.

The question of the proper use and control of standard marks, in the opinion of Mr. Good, was exceedingly important, as the protection which standards afforded to both buyers and sellers was to a considerable extent sacrificed unless there was a universally recognizable distinguishing mark which could not easily be used illegitimately. Standard marks thus adopted and protected would establish a reliable certification of goods according to their intrinsic merit and value.

He desired to secure agreement concerning a method for the administration of such marks which, together with the adoption of standard trade descriptions or definitions, would define the factors of quality, which are no less important in relation to value than the factors of price and quantity, because, unless the three factors—price, quantity, and quality—be properly related there can be no means of determining value.

It was important, therefore, that standard marks should possess the same validity, authority, and universal recognition as Imperial weights and measures, and to this end he sought agreement to which he hoped all English-speaking nations would ultimately subscribe.

After full examination and consideration of the whole position, the Advisory Council of the New Zealand Standards Institute recommended that this Dominion should subscribe to the general conclusions agreed upon by the United Kingdom and the Commonwealth of Australia in regard to the procedure that should be adopted to protect and control the use of standard marks and the certification of goods generally.

The report embodying this agreement of the Advisory Council appears as Appendix I of this report.

In conclusion, it is desired to place on record appreciation of the valuable work gratuitously performed by members of the respective committees.

A. R. Galbraith, F.R.S.E., M.Inst.C.E.,
Chairman, Advisory Council.

L. J. McDonald,
Secretary.

APPENDICES.

APPENDIX I.

REPORT ON RECOMMENDATIONS IN REGARD TO ADMINISTRATION OF STANDARD MARKS AND CERTIFICATION ADOPTED BY THE ADVISORY COUNCIL OF THE NEW ZEALAND STANDARDS INSTITUTE AT A SPECIAL MEETING HELD ON WEDNESDAY, 2ND NOVEMBER, 1938.

1. That it would be advantageous if all certification trade-marks could be controlled under the ægis of the national standardization authority. It is, however, recognized that this cannot be achieved in New Zealand or, indeed, in other parts of the British Commonwealth under existing legislation. Pending any legal action to alter this position and pending the further discussions recommended below, the Council will endeavour to secure voluntary acceptance of this principle when the use of certification trade-marks becomes possible in New Zealand, and to support any recommendation to this effect which may be made to the standardization authorities in the other parts of the Empire.

2. That certification trade-marks should in general only be permitted when they indicate conformity to published specifications issued or approved by the national standardization authority.

3. That the application of certification trade-marks should only be permitted when the methods and control of production give reasonable assurance that the implied guarantee by the maker that the product conforms to the specification has real validity (see Appendix Ia).

4. That the systems of control should be reasonably uniform in the constituent parts of the British Commonwealth.

5. That the constituent parts of the British Commonwealth should reach an agreed policy with a view to united action in regard to arrangement with other countries, so that in due course the International Convention for the Protection of Industrial Property may be invoked to provide for the effective protection of all certification marks in the various countries associated with the convention.

The Council also accepts the view of the British Standards Institution that the use of voluntary certification trade-marks is a question for industry to determine. The Council considers that the primary needs of the moment are (*a*) to secure that the machinery for control is available when industry desires to use these voluntary certification marks; (*b*) to provide protection against the misuse of the names and marks of the national standardization authorities; and (*c*) to secure that all certification trade-marks shall be properly used under effective control.

The Council accepts the suggestion of the British Standards Institution that each of the national standardization authorities within the British Commonwealth should study the subject of certification marks, and that a meeting of representatives from each of the Dominions should in due course be convened at a date and place mutually convenient, and the Council invites the British Standards Institution to take the necessary steps to arrange such a conference through appropriate channels.

Resolution. That this Council concurs with the view expressed by the Deputy Director of the British Standards Institution that New Zealand should fully participate in Empire standards activity, which serves to promote the welfare of the respective communities within the British Commonwealth and is absolutely essential to the sound development of manufacturing industries within the Dominion. The Council strongly recommends adequate representation from the Dominion to attend an Empire Standards Conference which is to take place at an early date.

APPENDIX Ia.

SYSTEM OF CONTROL AT PRESENT IN OPERATION IN GREAT BRITAIN FOR QUANTITY OF MASS-PRODUCED ARTICLES OR MATERIALS.

(*a*) The manufacturers must hold a license to use the mark, and may only use it in association with an identification mark and, where necessary to avoid confusion, an indication of the specification with which the product conforms.

(*b*) The license is granted after the maker has satisfied the Mark Committee by independent evidence that he has in operation a system of control of his manufacturing processes which is shown to secure the production of material conforming to the requirements of the standards specification. This generally involves control of the raw material, maintenance of testing-equipment by periodic authoritative check, suitable sampling and testing at various stages of manufacture, with, if necessary, final checking, evidence being available to show the degree of effective control secured by this system.

(*c*) The licensee is required to keep records in an approved form at each stage where a check is applied, and for these records to be open to inspection without previous notice.

(*d*) The licensee must agree to reimburse the Mark Committee for any expenditure they may decide to incur in applying check tests, &c., up to an agreed maximum in any one year.

Approximate Cost of Paper.—Preparation, not given; printing (1,525 copies), £22 10s.

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