



Invocation to mark the start of the Inaugural Session of the Eleventh Indian Standards Convention held at Chandigarh in September 1967. Seated on the dais are (from left to right): Shri B. K. Beci, Chairman, Reception Committee; Dr M. S. Randhawa, Chief Commissioner, Union Territory of Chandigarh; Shri K. V. Raghunatha Reddy, Union Deputy Minister of Industrial Development & Company Affairs; Shri Jehangir J. Ghandy, Vice-President, ISI; Dr K. ... Moudgill and Shri H. S. Belhaya, Secretary, Reception Committee.



T W E N T Y - F I R S T

**ANNUAL
REPORT**

APRIL 1967—MARCH 1968

INDIAN STANDARDS INSTITUTION

Manak Bhavan

9 Bahadur Shah Zafar Marg, New Delhi 1

Free to Members

Price Rs 2⁰⁰

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APPRECIATION

The Indian Standards Institution records with pleasure its deep appreciation for the specialized technical assistance and financial support received, during the year under review, from the wide circle of its members increasing with rapid speed and other organizations and individuals who have shown keen interest in it due to their long association with ISI associated with ISI work. Their valuable co-operation and help have enabled the Institution to make its humble contribution to the industrial and economic development of the country through standardization and quality control.

The interest taken by various organizations and individuals in the activities of the Institution bears ample testimony to the growing consciousness of the importance of standardization in the fast-developing industrial economy of the country.

The Institution looks forward, with confidence, to the continued support and active collaboration in its work from different economic interests representing industry, trade and commerce; research, technology and science; Government; consumers and purchasers.

PART I

GENERAL REVIEW

This Report reflects, in brief, the contribution made by the Institution in industrial and economic development of the country through standardization and quality control during the year 1967-68.

All-round progress was maintained in the multifarious activities of the Institution—formulation and implementation of Indian Standards, certification marking of goods, furtherance of in-plant standardization activity and training of standards engineers.

The activities of the Institution, during the year under review, registered a marked increase over those of the last year. Sixty-three more Indian Standards were published; 29 percent more licences under ISI Certification Marks Scheme were issued, and many new items of consumer interest like clinical thermometers were brought under the purview of the Scheme. The ISI Laboratory further developed its facilities and increased its activities for testing and research work.

A State Conference on Implementation of Indian Standards was held in Andhra Pradesh. The Eleventh Indian Standards Convention took place in Chandigarh. Different media of publicity and public relations were utilized to create standards-consciousness among different sectors of economy and to publicise ISI activities.

The Institution participated actively in the work of standardization at international level and rendered assistance to neighbouring countries in the establishment and promotion of standards activity.

The twenty-third meeting of the General Council of the Institution was held on 6 March 1968 under the chairmanship of Shri Fakhruddin Ali Ahmed, Union Minister for Industrial Development & Company Affairs and President of ISI. Shri Jehangir J. Ghandy and Shri Prabhu V. Mehta were unanimously re-elected Vice Presidents of ISI for another term of one year ending 31 March 1969. Five meetings each of Executive and Finance Committees were held during the year.

Standards Published — The number of Indian Standards in force, including those under print but excluding those withdrawn, on 31 March 1967 was 3 945. During the year under report, 635 new standards, as against 592 during the previous year, were sent to press and 16 existing standards were withdrawn. Thus, the total number of Indian Standards in force, including those under print, on 31 March 1968 was 4 564.

In addition to the 635 new standards, the Institution issued during the year, 159 revisions of existing standards, thereby raising the total of the Indian Standards issued during 1967-68 to 794 as against 731 during 1966-67. ISI also issued Hindi translation of two standards in the year under review. New and revised standards and standards withdrawn during the year are listed in Appendix A (see P 87)

ISI Certification Marks Scheme — The ISI Certification Marks Scheme, in the twelfth year of its operation, registered considerable progress as seen from the details given below :

	<i>As on</i> 31 March 1968	<i>As on</i> 31 March 1967
a) New licences granted during the year	242	188
b) Total number of licences issued since the inception of the Scheme	1 665	1 423
c) Applications received during the year for grant of licences	563	464
d) Total number of applications received since the inception of the Scheme	3 466	2 903
e) Annual value of goods covered under the Scheme	Rs 3 800 million (Approx)	Rs 3 650 million (Approx)

Twenty-four new products were brought under the Scheme. Particular mention may, however, be made of clinical thermometers, continuous filament viscous yarn, plaster of Paris, musk ambrettee, musk xylol and miner's boots.

The progress of the Scheme since 1955-56 is graphically represented in Fig. 1.

Of the applications received about 50 percent mature into licences. This is because more and more applications are from small-scale and medium-scale industries, many of whom ultimately do not find it possible to procure the necessary testing equipment or set up the in-process inspection facilities without which no licence can be granted. With the increase in the number of applications received consequent on the progress of ISI

Certification Marks Scheme, the gap between the applications received and the licences granted has increased through the years. While some applications are closed owing to non-fulfilment of the technical requirements, in the case of others considered hopeful, efforts are made, as far as possible, to encourage the manufacturers to provide the necessary facilities and to be able to produce goods in conformity with the Indian Standards, for which such applications are kept pending.

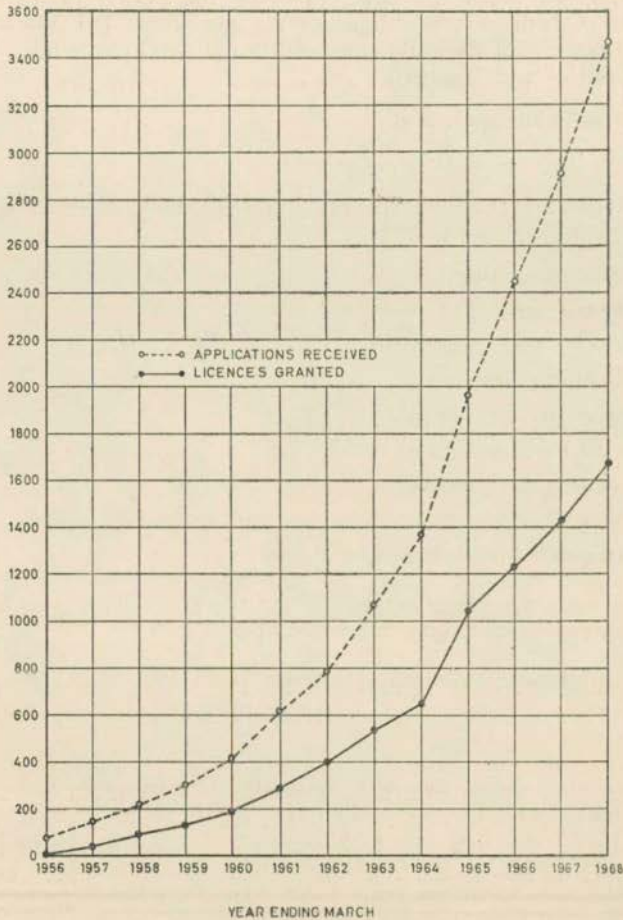


FIG. 1 PROGRESS OF ISI CERTIFICATION MARKS SCHEME

Assistance to Licensees — With a view to imparting training in statistical quality control methods to licensees of cables and conductors, a training programme was organized at Calcutta in April 1967. Thirteen trainees representing nine firms participated in the programme.

Meetings of Certification Marks Licensees — To study common problems in the operation of Certification Marks Scheme, ISI convened, during the period under review, three meetings of the licensees for steel, pesticides and biscuits.

ISI Mark for Export Products — During the period under review, the Government of India made obligatory the use of the ISI Mark for export purposes in respect of the following additional products, under the Export (Quality Control and Inspection) Act, 1963 :

- a) L-twill jute bags, and
- b) Jute sacking cloth.

The following products, if carrying ISI Mark, have been exempted from inspection prior to export :

- a) Sewing machines;
- b) Electric fans;
- c) Bicycles and components;
- d) Diesel engines;
- e) Power driven pumps;
- f) Small tools and hand tools;
- g) Stainless steel utensils;
- h) Automobile spares, components and ancillaries; and
- j) Expanded metal steel sheet.

Indian Standard specifications for rubber hoses have also been recognized as standard specifications for export purposes.

Cables and conductors valued at Rs 13 541 307 approximately were certified as export-worthy by the Institution during the period under review.

Recognition to Indian Standard Specifications — In accordance with the Solvent Extracted Oil, De-oiled Meal and Edible Flour (Control) Order, 1967 issued under the Essential Commodities Act, 1955 (10 of 1955), the Government of India in the Ministry of Food, Agriculture, Community Development & Co-operation, vide GSR 410 dated 17 March 1967, have prohibited the manufacture, stocking for sale, sale or offer for sale, of the the following products unless they conform to the standards of quality

specified in the Indian Standards noted against each :

<i>Product</i>	<i>Relevant IS: No.</i>
a) Solvent-extracted linseed oil cake (meal)	3440-1966
b) Solvent-extracted groundnut oil cake (meal)	3441-1966
c) Hexane, food grade	3470E-1966
d) Solvent-extracted coconut oil	3471E-1966
e) Solvent-extracted cotton seed oil	3472E-1966
f) Solvent-extracted groundnut oil	3473E-1966
g) Solvent-extracted coconut oil cake (meal)	3591E-1966
h) Solvent-extracted cotton seed oil cake (meal)	3592E-1966
j) Solvent-extracted rice-bran	3593E-1966

Under the same Order it has been notified that 'Every container in which the solvent is packed shall, at the time of sale by the manufacturer or dealer thereof, bear the ISI's Certification Mark:

Provided that where any quantity of solvent is transported in bulk in rail-tank wagons or road tankers it shall be sufficient if it is accompanied by a certificate conforming compliance with the provisions of the ISI (Certification Marks) Act, 1952 (36 of 1952) and the Rules and Regulations made thereunder'.

The Chief Director, Directorate of Sugar and Vanaspati has been appointed as the licensing officer under the said Order.

Modifications of Indian Standards — The Director General, ISI, in exercise of the powers conferred on him under sub-regulation 3 of the ISI (Certification Marks) Regulations, 1955, modified tentatively some of the provisions of IS: 1720-1960 'Cotton sewing thread, bleached or dyed', IS: 2037-1962 'Tracing cloth', and IS: 2333-1963 'Plaster of Paris'.

Competent Authority — The Central Government, in consultation with ISI, have appointed the Indian Jute Industries' Research Association (IJIRA) as competent authority for jute products in place of the Indian Jute Mills Association Quality Control and Inspection Committee (IJMAQIC).

ISI Laboratory — With the end of year 1967-68, the ISI Laboratory completed six years of its working during 1967-68. The Laboratory is equipped to carry out tests on a wide variety of products which cover over 320 specifications ranging from electrical and mechanical engineering goods to chemicals and agricultural products. Some of the important equipment

installed in ISI Laboratory for testing these products are listed below:

Mechanical Laboratory

- a) Tensile testing machine (1.2 tonnes capacity)
- b) Universal testing machine (50 tonnes)
- c) Visual hardness tester for Brinell & Vickers
- d) Rockwell hardness tester
- e) Universal impact tester (pendulum type)
- f) Profile projector
- g) Impact testing machine for plastics
- h) Impact tester for miners' boots

Workshop

- a) Hydraulic press for moulding of plastics (capacity 60 tonnes)
- b) Pillar type drilling machine
- c) Toolroom lathe
- d) Power hacksaw
- e) Polishing machine for metallographic sample preparation
- f) Moulding press

Electrical Laboratory

- a) Oscilloscope with photo recorder
- b) Kelvin bridge
- c) Electronic timer
- d) Precision vernier potentiometer
- e) Thermocouple calibration set

Chemical Laboratory

- a) Spectro-photometer visible and ultra violet range, with accessories
- b) pH meter
- c) Recording polarograph
- d) Absorption meter with fluorescence attachment
- e) Conductivity meter
- f) Moisture meter

The progress made in testing work during the year under report is as under:

	<i>During</i> 1967-68	<i>During</i> 1966-67	<i>Since setting up of</i> <i>the Laboratory</i>
a) Samples received	3 853	3 502	14 409
b) Samples tested	3 907	3 300	13 868
c) Indian S t a n d a r d Specifications covered	9	38	322
d) Value of testing work done	Rs 396 468·00	292 959·50	1 293 623·60

Graphical representation of the progress of the work done in the ISI Laboratory since its inception is given in Fig. 2.

Investigational Work — In addition to the testing work done, a number of investigational problems referred by the technical divisions and those arising out of testing work in the Laboratory were taken up regularly. During the year under review, the Laboratory took up 73 investigational problems of which 60 were completed. Of the investigational problems undertaken, special mention may be made of the following:

- a) Study on the test methods of dextrin for fixing limits of different constituents,
- b) Testing of cakes and rusks for fixing limits of different constituents,
- c) Estimation of lead extractable from brass by some of the food materials,
- d) Determination of acid and alkali resistance of unglazed tiles,
- e) Comparative evaluation of test methods for fermenting power of baker's yeast (Indian) by fermentometer and other methods,
- f) Testing of water meters to evaluate the accuracy of minimum flow, and
- g) Test evaluation for flame retardance and fire resistance of cables.

Testing of Clinical Thermometers — A noteworthy feature during the period under review is the certification of clinical thermometers. According to a notification issued recently by the Union Ministry of Health & Family Planning, the clinical thermometers have been brought under the operation of the Drugs and Cosmetics Act, 1945, whereby the thermometers conforming to the relevant Indian Standards and carrying the ISI Certification Mark will not be subjected to the normal restrictions applicable under the Drugs and Cosmetics Act.

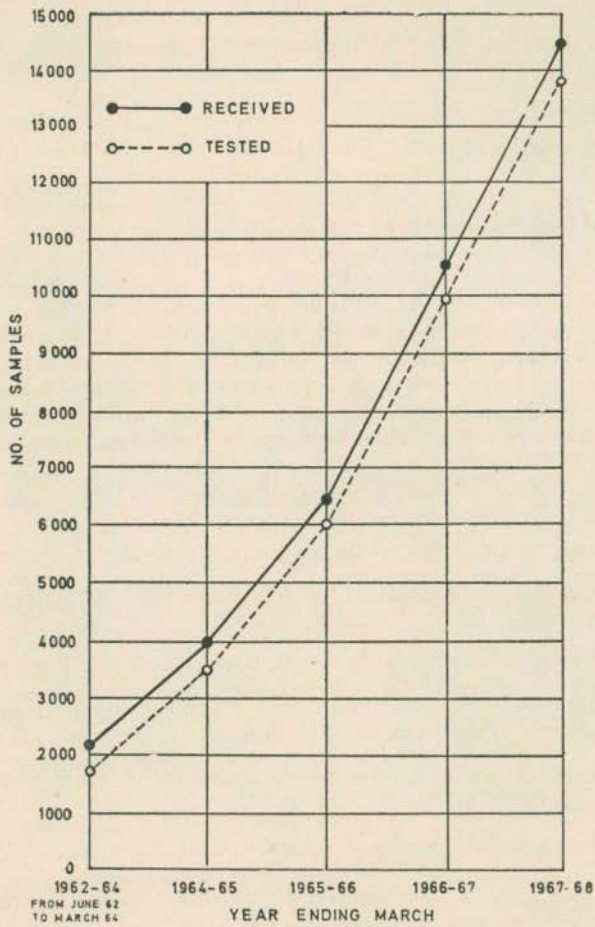


FIG. 2 PROGRESS OF TESTING IN ISI LABORATORY

While formulating the Indian Standard specifications for clinical thermometers, the need for large-scale testing of thermometers had been borne in mind so as to keep it in line with the practice in the advanced countries. The National Physical Laboratory (NPL) established a set-up for testing thermometers on a large scale. A comprehensive training programme was drawn up jointly by ISI and NPL whereby 22 persons were given training in the testing of thermometers for a period of three months. It is estimated that the unit which is now ready to test can test 5 000 thermometers per day per shift.

Laboratories in Branch Offices — With the object of coping up with the increase in the samples received for testing work arising out of the increase in the number of licensees, it has been decided to set up laboratories in Branch Offices at Calcutta, Bombay and Madras in the first phase and at Kanpur and Hyderabad later. The first three laboratories have been furnished and a part of the equipment already purchased. The Calcutta Laboratory will be used mainly for testing jute products and hessian, pesticides, biscuits, cables, fractional horse power motors and light engineering goods; while those at Madras and Bombay will be testing pesticides, inks and cables. These laboratories are expected to start work by the middle of this year.

Recognition of Testing Laboratories — The following additional laboratories were approved under the ISI Certification Marks Scheme for testing the samples of products mentioned against each:

- | | |
|--|--|
| 1. Central Leather Research Institute,
Regional Extension Centre, Kanpur | Leather — chemical
testing |
| 2. Government Research & Testing
Laboratories Ltd, Directorate of
Industries, UP, Kanpur | Leather and leather
products |
| 3. Small Industries Service Institute,
Iftekar Mansion, 79 Azmabad,
Hyderabad 20 | Chemicals, metals,
electroplating, ref-
ractories, etc |

Training of Personnel in ISI Laboratory — With the object of helping State Governments and licensees under the ISI Certification Marks Scheme in testing products in accordance with the Scheme, four persons were trained in the testing of pesticides and domestic electrical appliances in ISI Laboratory during the period under review.

Implementation of Indian Standards

Adoption of Indian Standards — During the year 1967-1968, a high level of adoption of Indian Standards was maintained by central purchase organizations of the Government of India. The position of implementation

of Indian Standards by various departments of the Government of India is as under:

DEPARTMENT	NUMBER OF INDIAN STANDARDS ADOPTED		AS ON 31 MARCH 1968
	Up to 31 March 1967	From 1 April 1967 to 31 March 1968	
Directorate General of Supplies & Disposals (DGS & D)	2 488	530	3 018
Department of Defence Production, Ministry of Defence (DDP)	1 356	189	1 545
Research, Designs & Stan- dards Organization (Railways) (RDSO)	1 149	111	1 260
Posts & Telegraphs De- partment (P & T)	577	—	577

In addition, Naval Headquarters, Hindustan Shipyard Ltd, Public Works Department of various States, Indian Chemical Manufacturers' Association, Chief Inspector of Factories and others intimated to the Institution of their decision to adopt specific Indian Standards of interest to them for the purpose of store purchase, design guidance and construction work.

Andhra Pradesh Conference on Implementation of Indian Standards — State Conference on Implementation of Indian Standards was convened by the Government of Andhra Pradesh at Hyderabad on 2 November 1967. The Conference was inaugurated by Shri K. Brahmananda Reddy, Chief Minister and was presided over by Shri B. V. Gurumurthy, Minister for Industry. Over 100 delegates representing both public and private sectors attended the Conference.

The Chief Minister and the Industry Minister in their speeches emphasized the need for active co-operation by all in the formulation of Indian Standards and their adoption. The discussions that followed covered different aspects of ISI work, namely, adoption of Indian Standards, recognition of ISI Certification Marks Scheme, extending the scope of standardization, etc. The Conference adopted a number of resolutions on the lines of those passed earlier by other State conferences. This Conference was thirteenth in the series, the earlier conferences having already covered Orissa, Kerala, Punjab, West Bengal, Mysore, Uttar Pradesh, Bihar, Gujarat, Maharashtra, Himachal Pradesh, Madhya Pradesh and Madras States.

Recommendation of the Ministry of Industrial Development and Company Affairs, Government of India on Use of National Standards—Ministry of Industrial Development and Company Affairs in their office memorandum brought the following to the notice of Ministries of the Government of India, State Governments, Chambers of Commerce and Trade Associations, etc, with a view to ensuring that the measures suggested are implemented:

‘It has been noticed that foreign collaborators are generally reluctant to the use of Indian Standards in the projects that are coming up either in the public or in the private sector with foreign technical know-how. There are many items of equipment in these projects which can be made in this country according to national specifications. If instead of using such items the design requires the use of foreign specifications, import of these equipments will continue for many years to come for various purposes including those of maintenance. Foreign collaborators should be persuaded to use the equipment and materials which are made according to the Indian Standard specifications wherever such specifications are available. This will save foreign exchange not only at the time of initial installations but also at the later stages.’

The Northern India Chamber of Commerce and Industry has already brought the foregoing to the notice of its members.

List of Manufacturers Operating to Indian Standards—As an aid to implementation, 18 inquiries covering 252 Indian Standards on various items were issued with a view to preparing a list of manufacturers claiming to produce goods according to Indian Standards. The claimants, some of whom responded favourably, were also approached for joining ISI Certification Marks Scheme. Information collected as a result of such inquiries is made available to all those who approach ISI for assistance in procuring standard goods.

Adoption by Purchasers and Consumers—For ensuring the adoption of Indian Standards, 16 inquiries relating to various items covering 126 Indian Standard Codes of practice, methods of tests, etc, were sent to different purchasers and consumers.

Review of Tender Enquiries—Tender enquiries issued by various organizations and departments were scrutinized and their attention was drawn to relevant Indian Standards for adoption. The response has usually been favourable.

Company Standardization

ISI Company Standardization Training Programmes—To provide detailed training in standardization methods and techniques for promoting and developing organized in-plant standardization practices in

Indian industries, following training programmes were organized during the period under review:

<i>Function</i>	<i>Venue & Period</i>
a) Survey-cum-training programme	Madras — 22 May to 28 June 1967
b) Residential training programme	Darjeeling — 16 Oct to 26 Oct 1967
c) Survey-cum-training programme	Delhi—13 Nov to 20 Dec 1967

Sixty-one participants from 51 organizations attended these programmes.

Since the start of company standardization programme five years ago, 587 technical personnel from 444 organizations both from public and private sectors have been imparted with this training.

Company Standardization Symposium at Heavy Engineering Corporation — At the request of the Chairman, Heavy Engineering Corporation, a special four-day company standardization symposium was conducted by ISI at Ranchi from 4 to 7 December 1967 to promote understanding on the scope and benefit of in-plant standards activity in HEC. The Symposium inaugurated by Shri A. C. Bhatia, Chairman, HEC, was attended by 25 senior officers belonging to the three Plants of the HEC complex, namely, Heavy Machine Building Plant, Foundry Forge Plant and Heavy Machine Tool Plant. Discussions at the various sessions of the Symposium led to a general recognition that a co-ordinated and effective in-plant standards activity would be of immense benefit to HEC as a whole.

For effective co-ordination of the efforts of the three Plants Standards Bureaus, it was proposed that a Standards Executive Committee with the General Managers of the three Plants as members, and a permanent Secretary may be established to formulate and monitor the corporate standards programme and issue standards under its authority. It was also suggested that corporate standards on items like drafting practice, purchase specifications, etc, may be taken up on priority basis.

Technical Library and Information Services — The Libraries of the Institution at the Headquarters and in Branch Offices at Bombay, Calcutta, Kanpur and Madras continued to render useful service to ISI subscribers, committee members, staff members and others in disseminating technical information on national and overseas standards, specifications and other allied subjects.

The progress made and the work done by the Headquarters Library during the period under review is given below:

✓ a) New publications accessioned and processed during the year	13 735
✓ b) Total number of standards and other technical publications available in the library	175 917

Hand 31 Oct 1969

✓ c) New journals subscribed to during the year	12
d) Total number of scientific and technical journals received in the library	514
e) Bibliographies and documentational lists prepared	86
f) Publications loaned out or consulted in the library	43 000

Membership — The Institution continued to pursue its activity of enrolling industrial organizations, business undertakings, individuals and others as its Subscribing Members. The Union Minister for Industrial Development & Company Affairs, and President of ISI, made an appeal to leading industrial units and various State Governments to join ISI as Subscribing Members. This brought an encouraging response and 13 new Donor Members were enrolled, bringing the total number of Donor Members during 1967-68 to 24, made up of 19 industrial organizations from public and private sectors and 5 State Governments.

The position of subscribing membership of the Institution as on 31 March 1968, as compared to that on 31 March 1967, was as follows :

<i>Class of Membership</i>	<i>As on 31 March 1968</i>	<i>As on 31 March 1967</i>
Patrons	2	2
Donor Member	24	11
Sustaining Member	1 992	2 073
Associate Member	1 335	1 280
Individual Member	387	414
	<hr/>	<hr/>
Total number of Members	3 740	3 780
	<hr/>	<hr/>
Membership subscription collected	Rs 1.61 million	Rs 1.50 million

It will be observed that though the number of sustaining members and individual members declined, the overall collection of membership subscription during the year 1967-68 was better than that of the preceding year.

The position of subscribing membership since 1951 is graphically represented in Fig. 3.

Public Relations — With a view to establishing good public relations with organizations and individuals associated with research, development, production, distribution and consumption of goods and services, efforts were continued to be made to publicise the activities of the Institution, propagate ISI Certification Marks Scheme, create awareness about the importance of standardization and quality control and further the standards movement in the country through various media.

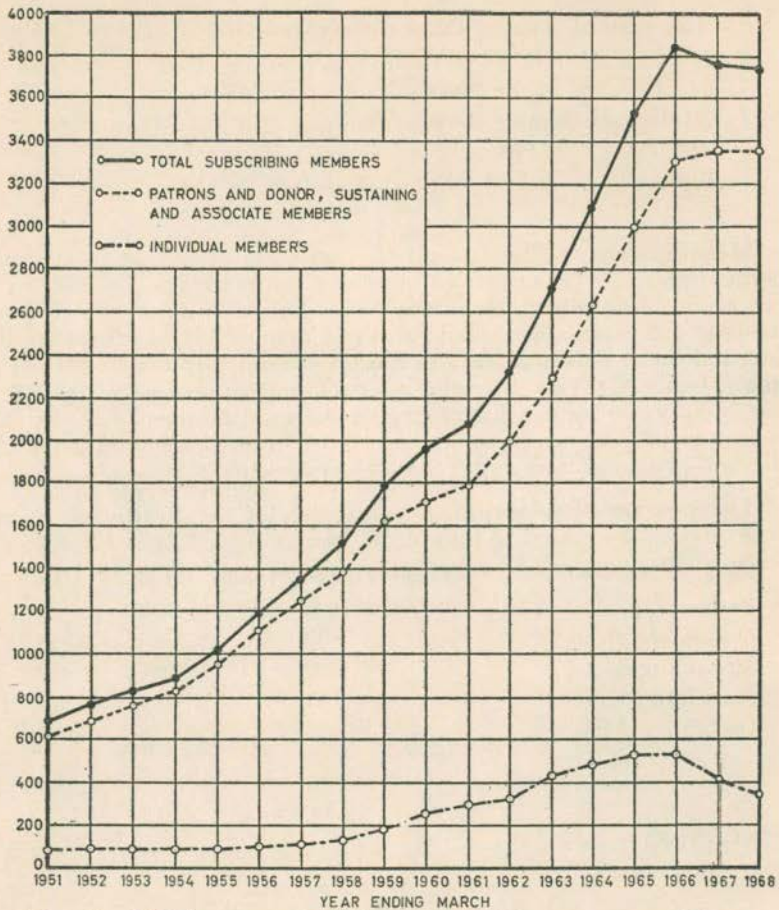


FIG. 3 ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS

Publicity

- Press Notes* — In all, 1 017 press notes were issued on published and draft Indian Standards and other important activities of ISI.
- Press Advertising* — To focus the attention of the public on the importance of ISI Certification Marks Scheme in its relation to consumers and manufacturers and to inform them about the advantages of ISI certified products, an advertising campaign was carried out in English and language papers as well as periodicals.
- Press Conferences and Press Interviews* — Press conferences and Press interviews were held to highlight important activities of ISI on different occasions.

- d) *Talks and Lectures* — Talks and lectures on the importance of standardization and the activities of ISI were delivered by ISI officers at important gatherings at several places.
- e) *Articles, Reviews, Write-ups, etc* — A number of articles, reviews and write-ups on different aspects of standardization and activities of ISI were contributed to newspapers, journals, souvenirs, reference publications, etc.
- f) *Exhibitions* — The Institution participated in a number of exhibitions. The details of these exhibitions are as under:
- 1) *Small Industries Exhibition* — organized by Small Industries Service Institute from 17 to 27 April 1967 at Calcutta.
 - 2) *Indian Standards for Building Industry* — organized by ISI from 24 to 29 April 1967 at Madras.
 - 3) *Small Industries Exhibition* — organized by Small Industries Service Institute from 13 to 15 May 1967 at Kanpur.
 - 4) *ISI Certified Products Exhibition* — organized by ISI from 25 to 31 May 1967 at Madras.
 - 5) *Exhibition at Moscow* — held in Moscow in June 1967 on the occasion of the Seventh General Assembly Meeting of International Organization for Standardization (ISO).
 - 6) *Mysore Dasara Exhibition* — organized by the Govt of Mysore from 4 October to 5 November 1967 at Mysore. A Silver Medal was awarded for good display in ISI Stall.
 - 7) *ISI Certified Products Exhibition* — organized by ISI on 2 November 1967 at Hyderabad on the occasion of the inauguration of ISI Branch Office at Hyderabad by the Chief Minister of Andhra Pradesh.
 - 8) *Indian International Trade and Industries Fair* — organized by All India Manufacturers' Organization from 21 January 1968 at Madras. Panels and charts depicting the role of standardization in industrial development, ISI activities, etc, were put up in the Fair.
 - 9) *Panorama of Progress 1968* — organized by Ministry of Commerce from 1 February to 14 April 1968 at New Delhi.

The joint stall of ISI, Agmark Organization and Export Inspection Council of India was renovated for the Exhibition held on the occasion of the United Nations Conference on Trade and Development (UNCTAD-II) in New Delhi. Working of Certification Marks Scheme and other activities of ISI were depicted through photographs, panels, charts and display of certified products. The stall was visited by many dignitaries, including Vice-President of India, Ministers, foreign delegates, and others.

- 10) *Exhibition on Sports* — organized by Rajasthan University Sports Board from 1 to 3 March 1968 at Jaipur. Indian Standards on sports goods were displayed.
- g) *Films* — Two documentary films, that is, 'Metric System' and 'Quest for Quality' were exhibited in Moscow during the Seventh Triennial General Assembly Meeting of International Organization for Standardization (ISO) held in June 1967. The documentary 'Quest for Quality' was awarded a Diploma by the Russian Organizing Committee.
- h) *Literature* — A pamphlet in Kannada on ISI Certification Marks Scheme was prepared and distributed on the occasion of Dasara Exhibition held in Mysore in October 1967.
- j) *Radio Broadcasts, Features and Interviews* — With a view to enlightening the public on the importance of standardization and publicising ISI activities, the following programmes were broadcast from All India Radio:

<i>Sl No.</i>	<i>Date</i>	<i>Subject</i>	<i>Broadcast by</i>	<i>Station</i>	<i>Language</i>
i)	23 Feb 1967 and 28 Apr 1967	Standardization and consumers	Dr A. N. Ghosh, Di- rector Gene- ral, ISI	Calcutta	English
ii)	27 Feb 1967	Standardization for self-suffi- ciency	Feature	Bhopal/ Indore/ Raipur/ Jabalpur/ Gwalior	Hindi
iii)	15 May 1967	Indian Stan- dards at the service of in- dustry and con- sumer	Shri G. L. Gulati, Director, Madras Branch Office, ISI	Madras	English
iv)	24 May 1967 and 28 May 1967	Consumer satis- faction through ISI Certifi- cation Mark	Feature	Madras	Tamil
v)	4 July 1967	Activities of ISI	Feature	Tiruchirapalli	Tamil
vi)	13 July 1967	Standardization and consumer	Dr A. N. Ghosh, Director General, ISI	Bombay	English
vii)	25 July 1967	Consumer pro- blems and utility of ISI Certification Marks Scheme	Feature	Hyderabad	Telegu

GENERAL REVIEW

<i>Sl No.</i>	<i>Date</i>	<i>Subject</i>	<i>Broadcast by</i>	<i>Station</i>	<i>Language</i>
viii)	24 Sep 1967	Eleventh Indian Standards Convention	Dr A. N. Ghosh, Director General, ISI	Jullundur	English
ix)	27 Sep 1967	Indian Standards Institution	Feature	Jullundur	Punjabi
x)	29 Sep 1967	Inaugural function of Eleventh Indian Standards Convention	Radio News-reel	Jullundur	English
xi)	12 Oct 1967 and 13 Oct 1967	Quality control and export promotion	Interview with Dr A.N. Ghosh, Director General, ISI	External services	English

Presentation of Indian Standards to National Standards Bodies — The Institution has been helping the developing countries in their standardization activities. As a part of its programme, ISI presented as gifts, during the year under review, complete set of Indian Standards to the national standards bodies of the following countries at special ceremonies held in ISI Headquarters on the dates given against each:

<i>Name of the Country/ Standards Body</i>	<i>Presented through</i>	<i>Date</i>
Industrial Testing & Research Centre, Damascus (Syria)	H. E. Shayesh Terkaovi, Counsellor of Syrian Arab Republic in New Delhi	5 July 1967
Institute of Standardization, Govt of the Republic of Vietnam, Saigon	Ministry of External Affairs	Sep 1967

Visitors to ISI — In pursuance of its policy of furthering the cause of standards movement in the country, the Institution has been inviting various dignitaries, important persons as well as students of different technical, scientific and engineering institutions to visit the Institution. They are taken round the Standards Exposition Hall and ISI Laboratories and explained the importance of standardization in the context of industrial development and ISI activities. Subjects of mutual interest are also discussed. Such visitors take keen interest in the work of the Institution and the progress being made by the country in standardization and quality control.

During the year under review, student parties from 46 technical institutions of different Universities, trainees of Indian Institute of Public Administration and doctor trainees in the hospital management visited ISI.

In addition, a number of persons from India and abroad paid visits to the Institution, including the following distinguished visitors:

- a) Mr Howard H. G. McKern, Museum of Applied Arts and Science, Sydney;
- b) Mr Kozshurou Skvoztsov of USSR Embassy, New Delhi;
- c) Shri Fakhruddin Ali Ahmed, Union Minister for Industrial Development & Company Affairs and President of ISI;
- d) H. E. Shayesh Terkaovi, Counsellor of the Syrian Arab Republic in India;
- e) Dr Robert F. Legget, Director, Division of Building Research, National Research Council, Ottawa, Canada;
- f) Dr J. Weston, Director, Building Research Station, Garston, Watford, Herts, UK;
- g) Dr T. L. Webb, Director, National Building Research Institute, Pretoria, S. Africa;
- h) Mr J. de Geus, Secretary General, C.I.B., International Council for Building Research Studies & Documentation, Rotterdam (Holland);
- j) Smt Rajan Nehru, 38 Hamilton Road, Allahabad;
- k) Shri K. V. Raghunatha Reddy, Minister of State for Industrial Development & Company Affairs;
- m) Mr Seung Yup Park, Director, Fine Instruments Centre for Seoul;
- n) Shri K. C. Pant, Minister of Revenue & Expenditure, Govt of India, New Delhi
- p) Shri E. T. Dandapani and Shri P. A. Swaminathan, Members of Parliament; and
- q) Shri Ahmed Mohd Lalif, Ministry of Industry, Sudan.

Eleventh Indian Standards Convention — The Eleventh Indian Standards Convention was held at Chandigarh from 24 September to 2 October 1967. The Convention was inaugurated by Dr M. S. Randhawa, Chief Commissioner, Union Territory of Chandigarh and Shri K. V. Raghunatha Reddy, Union Minister of State for Industrial Development & Company Affairs presided over the inaugural function. The function was attended by a large number of distinguished audience including delegates, local industrialists, officers of Central and State Governments and prominent citizens of Punjab and Haryana. Some delegates from foreign countries also participated in the Convention.

Seven technical sessions were held in which subjects of topical interest were discussed by delegates representing Central and State Governments, manufacturing organizations, business undertakings, chambers of commerce,

associations of trade and industry, technical and research organizations, consumers, and purchasers.

Particulars of the delegates, technical sessions and papers presented are given below:

Delegates

Total number of the delegates who attended the Convention (Gentlemen 458, Ladies 54)	512
Accompanying ladies	30
Total:	<u>542</u>

Technical Sessions

- S-1 Standardization of Chemical Products of Plant Origin
- S-2 Quality Control in Small Scale Industry
- S-3 Elimination of Wastage in Industry
- S-4 Standardization as a Tool for Light Mechanical Engineering Industry
- S-5 Standards in Aid of Agriculture
- S-6 Development of Small Scale Textile Industry
- S-7 Informative Labelling of Consumer Goods

Technical Papers

No. of Technical Papers	105
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General Session — For the first time, a General Session on the subject 'Safety in Home' was included in the programme of the Convention. Prominent speakers gave talks on different aspects of the subject, which evoked great interest and about 400 delegates took part in the deliberations of the Session.

A Reception Committee consisting of leading citizens of the Punjab, Haryana and other States, under the chairmanship of Shri B. K. Bedi, made necessary arrangements for the delegates in respect of accommodation, transport, local visits, etc. Some social functions, cultural programmes and excursions were also arranged on the occasion of the Convention.

Intensive Publicity — Intensive publicity was given to ISI activities on the occasion of the Eleventh Indian Standards Convention held at Chandigarh through press advertisements, press releases including features, articles and photographs, editorials, radio broadcasts and press conferences. Thirty newspapers and journals from all over the country brought out special supplements, and carried features on ISI activities. In addition, a 220-page Souvenir was published by the Reception Committee during the Convention.

A detailed report of the Eleventh Indian Standards Convention was published in December 1967 issue of the *ISI Bulletin*.

K. L. Moudgill Prize — The K. L. Moudgill Prize for the year 1967 of the cash value of Rs 1 000·00 was awarded to Dr A. N. Ghosh, Director General, Indian Standards Institution, for his outstanding contribution in the field of standardization both at the national and international levels, by Dr M. S. Randhawa, Chief Commissioner, Chandigarh, on 25 September 1967 at the Inaugural Function of the Eleventh Indian Standards Convention held at Chandigarh.

Fellowship of ISI — Fellowship of the Indian Standards Institution was conferred on 66 Chairmen and Vice-Chairmen of Division Councils and Chairmen of Sectional Committees and Advisory Committees of technical character, who had retired from that position after distinguished service in the cause of standardization or were continuing as such for the last ten years or more, on 25 September 1967, at the time of the Eleventh Indian Standards Convention held at Chandigarh. So far, ISI Fellowship has been granted to 245 persons who have rendered valuable services in the development and promotion of standardization in different spheres of industry.

Finances — During the year under review, the total income of ISI from various sources, such as Government of India grant, membership subscription, sale of standards and certification marking fee, amounted to Rs 9 073 453·07 as against an expenditure of Rs 9 204 257·99. A statement of accounts for the year 1967-68, duly audited, is given in Appendix B (*see* P 118).

In addition to the expenditure directly incurred by the Institution and given in the certified statement of accounts, expenses were also incurred by committee members from Government and private organizations for attending the meetings of ISI committees within India and abroad. Besides, several organizations, both in public and private sectors, undertook testing work and supplied samples. Such invisible contributions for the year under report are estimated at Rs 860 000·00.

Second ISI Building — During the year under review, electrical installations was completed in the new building. Construction of garages and staff quarters is likely to be taken up within next few months.

The position of the building fund as on 31 March 1968 stood as follows:

	<i>Rupees in million</i>
a) Government grant	1·085
b) Interest-free deposits	0·777
c) Interest-free overdraft	0·122
d) Donations, etc	0·305
e) Advance rent	1·315
	<hr/> 3·604 <hr/>

Interest-free deposits amounting to Rs 11 000 were refunded to four parties during the year 1967-68. Bulk of the interest-free deposits will be refunded during the year 1968-69 on the expiry of the five year period for which the deposits were received.

ISI Staff — The following important staff change took place during the period under report:

- a) Shri S. K. Sen, Deputy Director General, went on deputation from ISI to the Institute of Standards and Industrial Research of Iran to take up an assignment as Adviser on Weights & Measures and Certification Marking. He was relieved of his duties in ISI on 9 November 1967.
- b) Dr Sadgopal was promoted as Deputy Director General from Director with effect from 12 April 1967.
- c) Shri A. P. Banerji, Director, Calcutta Branch Office, was awarded the Netherlands Government Fellowship for 1967, for the course for Quality Instructors held by the International Quality Centre, for a period of about four months commencing from 10 August 1967 in the Netherlands.
- d) Shri Y. K. Bhat, Deputy Director, was awarded the Netherlands Government Fellowship for 1968, for the course for Industrial Quality Instructors, for a period of about five months commencing from February 1968 in the Netherlands.
- e) Shri Kavaljit Singh, Deputy Director, went on deputation to the Ministry of Commerce, Government of India, to take up an assignment as Director (Protocol) in the Organization for United Nations Conference on Trade and Development (UNCTAD-II). He was on deputation from 7 December 1967 to 31 March 1968.

The total strength of the Institution as on 31 March 1968 was 950 consisting of 195 officers and 755 staff members.

Branch Offices — In pursuance of its policy to keep close liaison with industry, trade and commerce in different regions with a view to promoting standardization and quality control, the Institution set up its fifth Branch Office in Hyderabad at the request of the Andhra Pradesh Government. The Industries Department of the Government of Andhra Pradesh provided rent-free accommodation measuring 40 sq m. The Branch Office was formally inaugurated on 2 November 1967 by Shri Brahmanand Reddy, Chief Minister of Andhra Pradesh. Efforts were continuing to get better and bigger accommodation for this Branch Office in a central place.

The Branch Offices located in Bombay, Calcutta, Kanpur and Madras continued to render useful service to industry, trade and commerce in their respective regions by disseminating information relating to standardization and allied subjects, selling Indian and overseas standards, enrolling subscribing members, inspecting factories under the ISI Certification Marks

Scheme, carrying on compulsory pre-shipment inspections of certain goods meant for export and maintaining liaison with commerce and industry.

International Activities — The Institution continued to take active part in standardization at international level with the object of promoting standardization activity and developing international trade.

The Institution also made efforts, in accordance with its policy, to establish cordial and co-operative relations with standards bodies of other countries and to assist in the development of national standards organizations, particularly, in the developing countries.

During the year under report, ISI participated actively in the work of various technical committees of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

ISI held secretariats of the following 16 technical committees, sub-committees and working groups dealing with subjects of interest to India, in addition to providing chairmanship for IEC/TC 43 Electric Fans:

- a) ISO/TC 50 Lac
- b) ISO/TC 56 Mica
- c) ISO/TC 88 Pictorial Markings for Handling of Goods
- d) ISO/TC 113 Measurement of Liquid Flow in Open Channels
- e) ISO/TC 12/SC 1 Inter-conversion of Values
- f) ISO/TC 34/SC 7 Spices and Condiments
- g) ISO/TC 34/SC 8 Stimulant Foods
- h) ISO/TC 17/WG 8 Dimensions of Hot-Rolled Steel Sections
- j) ISO/TC 54/WG 7 Vetiver Oil
- k) ISO/TC 113/WG 1 Measurement of Liquid Flow in Open Channels by Velocity Area Methods
- m) ISO/TC 113/WG 2 Measurement of Liquid Flow in Open Channels by Notches, Weirs and Flumes
- n) ISO/TC 113/WG 3 Glossary of Terms Relating to Measurement of Liquid Flow in Open Channels
- p) ISO/TC 113/WG 4 Measurement of Liquid Flow in Open Channels—by Dilution Methods
- q) ISO/TC 113/WG 5 Measurement of Liquid Flow in Open Channels—Flow Measuring Instruments and Equipment
- r) ISO/TC 113/WG 6 Measurement of Liquid Flow in Open Channels—Sediment Flow
- s) IEC/TC 43 Electric Fans

The Seventh ISO General Assembly met in Moscow on 26-27 June 1967 under the presidency of Shri Jehangir J. Ghandy. Mr. F. Sünter (Turkey) was elected President of ISO for the three-year term starting from January 1968.

DIVISIONAL REPORTS

0. INTRODUCTION

0.1 Part II of the report gives, in brief, a record of the technical work done during 1967-68 by different divisions and departments of the Institution in respect of the formulation of Indian Standards.

It does not attempt to cover in detail all the work done and that under consideration, but it gives only the more important developments in different spheres of activity. However, for information and record, a list of standards published and in press during the year are given in Appendix A (*see* P 87).

0.2 Formulation of Standards — During the year 1967-68, 635 new standards were adopted and sent to press; 159 standards were revised (*see* Appendix A); 542 new proposals for formulation of Indian Standards were received and 270 proposals (including some made during the previous year) were accepted and referred to various committees for further processing.

Graphical representation of the growth of Indian Standards since 1951 is given in Fig. 4.

0.3 Technical Committees of ISI and Their Membership — As on 31 March 1968, 1 778 committees of the Institution with a membership of 21 251 experts, representing various interests, namely, manufacturers, consumers, scientific, technical and research organizations, Government departments and purchasers, were engaged in the task of formulation of Indian Standards.

During the year 1967-68, 807 committee meetings were held for standards work.

The growth of ISI committees, their membership and their activities since 1951, are shown in Fig. 5 and 6.

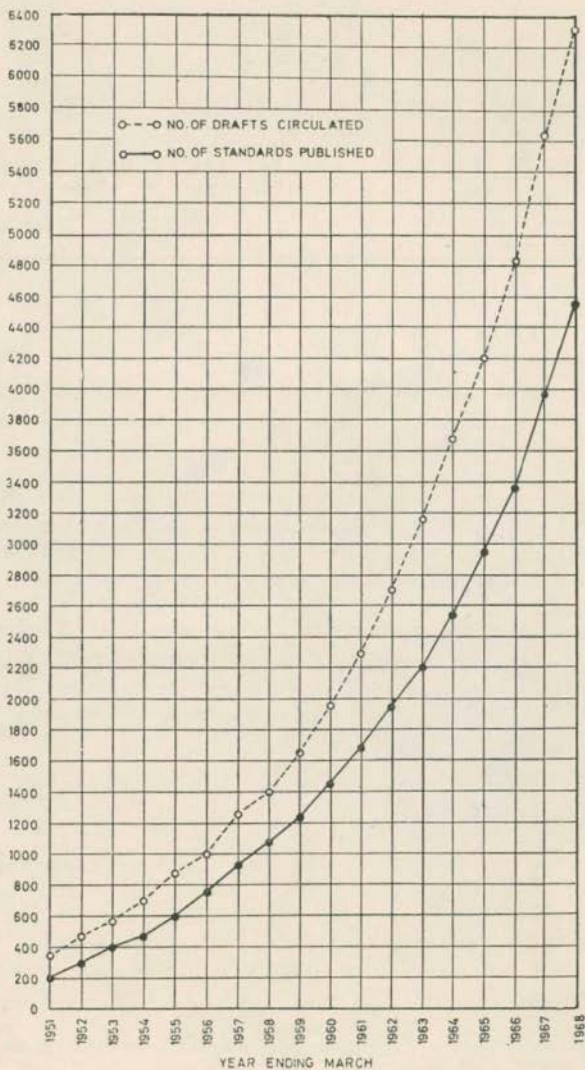


FIG. 4 GROWTH OF INDIAN STANDARDS

0.4 Record of Work — Cumulative information about the work pertaining to different divisions and departments of the Institution is given in Table 1:

**TABLE 1 RECORD OF ISI TECHNICAL DIVISIONS AND SECTIONS
(FOR THE YEAR 1967-68)**

(For details of standards published and those under print during 1967-68,
see Appendix A)

DIVISION OR SECTION	NO. OF COMMITTEES	NO. OF MEETINGS	NEW AND REVISED STANDARDS PUBLISHED AND UNDER PRINT	AMENDMENTS TO STANDARDS	DRAFT STANDARDS CIRCULATED	NEW SUBJECTS TAKEN UP
Agricultural & Food Products	129	106	71	36	67	82
Chemical	389	119	149	64	134	17
Civil Engineering	276	140	121	34	116	6
Consumer Products	98	75	75	6	62	—
Electrotechnical	153	66	97	57	78	17
Mechanical Engineering	281	127	133	41	123	17
Structural & Metals	323	79	92	21	85	38
Textile	103	69	54	28	49	88
Miscellaneous	26	26	2	1	6	5
TOTAL :	1 778	807	794	288	720	270

1. AGRICULTURAL AND FOOD PRODUCTS DIVISION

1.1 The Indian Standards formulated by the Agricultural and Food Products Division during the year under report (*see* Appendix A) covered new ground on the food side and important areas in the field of agriculture and dairying.

1.2 On the food side, the new ground covered include code for construction of sugar godowns to prevent deterioration of sugar; code for construction of abattoirs to help in the building of slaughter houses on scientific lines; two codes for sanitary conditions, handling and transport of fish for helping the industry in streamlining the basic quality control operations; specifications for alcoholic drinks, such as gin, whiskies and brandies; grade specifications for turnip, beets, sweet potato, chillies and mandarins; and specifications for spices, such as ajowan, dehydrated onion and cloves. Besides, 4 standards were prepared by the Tobacco and Tobacco Products and Tea Sectional Committees.

1.3 In the field of agriculture, the emphasis continued to be on specifications for agricultural inputs, namely, pesticides, seeds and farm implements. For pesticides, another guide was prepared for handling cases of pesticide poisoning and specifications were finalized for toxaphene, thiram, endosulfar binapacryl and their formulations. For seeds, important cereals and oil seeds were covered, such as, wheat, rice, maize, mustard and rape seed. Regarding farm implements, work was initiated on tractor-driven implements and to begin with dimensions for three point linkage for agricultural tractors were standardized.

1.4 In the field of dairying and animal husbandry, initial headway was made for a code for construction of cattle houses. Standards on poultry feeds, mineral mixtures for supplementing cattle feed and bonemeal as livestock feed were revised. In addition standards on broiler feeds, guar meal as livestock feed and fishmeal were formulated. Regarding specifications for dairy products, new standards were issued on sterilized milk and malted skimmed milk food. The new standard in the field of dairy equipment was on aluminium farm milk cooling tanks.

1.5 New work for preparation of Indian Standards in the fields of microbiological tests, vitamin assay and sensory (organoleptic) testing was initiated. The work on formulation of a code of practice for the transport of live animals was also continued, the emphasis during the year under report being on laboratory animals, such as snakes and frogs.

1.6 The Agricultural and Food Products Division Council held its thirteenth annual meeting on 19 March 1968. While reviewing the work of the Division in general, the Council accorded approval to the inclusion of about 100 new subjects in the programme of work of various Sectional Committees.

1.6.1 The Council reviewed the composition of the following Sectional Committees due for reconstitution:

- a) Tea Sectional Committee, AFDC 16
- b) Animal Housing and Equipment Sectional Committee, AFDC 17
- c) Meat and Meat Products Sectional Committee, AFDC 18
- d) Fish and Fisheries Products Sectional Committee, AFDC 27
- e) Drinks and Carbonated Beverages Sectional Committee, AFDC 30
- f) Bakery and Confectionery Sectional Committee, AFDC 31
- g) Processed Cereals and Pulses Sectional Committee, AFDC 32

1.6.2 Dr H. A. B. Parpia, Director, Central Food Technological Research Institute, Mysore was appointed as the new Chairman of Tea Sectional Committee, AFDC 16.

1.6.3 On the recommendation of the Farm Implements and Machinery Sectional Committee, AFDC 20, the Division Council agreed to the participation of Indian Member-Body in the work of ISO/TC 22/T Agricultural

Tractors and ISO/TC 23 Agricultural Machines as 'P' (Participating) member.

1.7 A list of 71 Indian Standards formulated by the Agricultural and Food Products Division Council and sent to press during the year under review is given in Appendix A.

2. CHEMICAL DIVISION

2.1 During the year under review, Chemical Division continued to formulate Indian Standards for various important products falling under its purview with the object of helping the industrial development of the country. Notable standards include the following:

- a) IS: 1848-1968 Writing and printing papers (*first revision*)

With the revision of this standard, it has been possible to cover about 65 percent of the total production of paper in the country. In this revision, Grade 2 has been introduced for some types of writing and printing papers in addition to some other changes.

- b) IS: 3976-1967 Safety rubber canvas boots for miners

This being an important safety item compulsorily by all coal mines. The specification has been based on the report of the Miners' Boots Committee set up in 1963 by the Ministry of Labour and Employment in which ISI played an active role and was responsible for carrying out investigations and submitting the final report to the Government of India.

- c) Indian Standards on vegetable tans and *KATTHA*

The following three standards on the subject are first in this field and are expected to help the tanning industry in securing vegetable tans of suitable quality:

- 1) IS: 3967-1967 Cutch
- 2) IS: 3968-1967 Wattle bark
- 3) IS: 3969-1967 *Goran* bark

Besides, with the publication of IS: 4359-1967 'Specification for *KATTHA*' an important project undertaken about a decade ago has been completed. The basis of this standard is radically different in approach since it grades *KATTHA* in accordance with catechin content. The adoption of this standard for the purposes of PFA Rules is receiving the attention of the Central Committee for Food Standards (CCFS), Ministry of Health and Family Planning.

- d) IS: 4286-1967 Processed solid smokeless domestic fuels

The need to preserve firewood, cattle dung, etc, the burning of which deprive the soil of the much-needed nutrients was felt for

a long time. This could be achieved by popularizing the use of solid fuels in place of firewood, cattle dung, etc. This standard covers requirements for not only the so-called 'soft coke' but also of briquetted fuel made from lignite and the low and medium temperature carbonization products.

e) IS : 4091-1967 Dermatological tests for cosmetics

Dermatological testing of cosmetics is the most important aspect of a specification for a finished cosmetic. Considerable variation in the methods employed exists even in the advanced countries. This standard provides a uniform basis for carrying out such tests in the country.

f) IS : 4155-1966 Glossary of terms relating to chemical radiation hazards and hazardous chemicals

This standard, which defines technical terms relating to chemical and radiation hazards and hazardous chemicals, has been published in view of the rapid pace of industrialization within the country and consequent increase hazards to public due to chemicals and radiations.

g) IS : 4209-1966 Code of safety for chemical laboratories

In the chemical laboratories, the very nature of work exposes the workers to various hazards. The implementation of this code will help in safeguarding the workers from such hazards.

Efforts were made to maintain close collaboration between ISI and other national organizations. Technical personnel of ISI continued to discuss matters of common interest with their counterparts in other national and technical organizations.

2.2 The Standing Working Committee of the Chemical Division Council held its meeting on 4 December 1967. Five new proposals were approved for formulating Indian Standards.

2.3 A list of 149 Indian Standards formulated by the Chemical Division Council and sent to press during the year under review is given in Appendix A.

3. CIVIL ENGINEERING DIVISION

3.1 During the period under review, Indian Standards on a number of important subjects relating to civil engineering were published while work on many other important draft standards and subjects made considerable progress.

3.2 Of the printed standards, special mention may be made of the specifications for concrete porous pipes for under-drainage, vitreous sanitary

appliances, lime pozzolana mixture, portable chemical fire extinguishers, method of testing wooden flush door shutters, testing bond in reinforced concrete—pull out test, recommendations for stacking and storage of construction materials at site, code of practice for design and construction of well foundations, indexing and storage of drill cores, criteria for design of arches, ancillary structures in sewerage system, safety code for demolition work, finishing of wood and wood based materials, stone masonry, earthquake resistant construction of buildings, code of building bye-laws, use of chemical resistant mortars, guide for preparation of project report of river valley projects, and recommendations for structural design of radial gates and fixed wheel gates. An emergency standard on protective helmets for scooter and motor cycle riders was also printed.

3.3 Of the draft Indian Standards taken up during the period under review, particular attention may be drawn to specifications for unplasticized PVC pipes for portable water supply, preservative treated and fire resistant plywood, methods of test of asbestos fibre, code of practice for selection and use of heavy duty industrial floor finishes, code for oxidation ponds, design and installation of brick kilns, painting non-ferrous metals in buildings, bye-laws for construction of cinema houses, criteria for design of reinforced concrete chimneys, safety code for tunnelling work, earthwork on canals, maintenance of canals, and design of draft tubes.

3.4 The progress in the work on formulation of standards for multi-purpose river valley projects continued to be maintained satisfactorily, and so far 17 standards have been published. The newly set up Standing Working Committee on Projects of the Civil Engineering Division Council held its first meeting on 15 September 1967, and after considering the progress made by the various multi-purpose river valley project committees and their scope of work decided to set up a new Sectional Committee to deal with barrages.

3.5 The work relating to the preparation of different parts of the National Building Code was proceeding satisfactorily.

During the period under report, 151 meetings of Sectional Committees, Subcommittees and Panels were held.

3.6 A list of 121 Indian Standards formulated by the Civil Engineering Division Council during the year under review and sent to press is given in Appendix A.

4. CONSUMER PRODUCTS DIVISION

4.1 During the year under review, most of the Indian Standards published by the Consumer Products Division were related to medical group of items as the manufacture of these items has recently started and the importance of standardization is keenly felt. In the preparation of standards both on

medical group as well as consumer group of subjects, a good deal of investigation, performance testing and field trials were involved. The field trials were on the performance of some medical instruments like extraction forceps, aural dressing forceps and aural hook, as well as other items like sanitary towels and gas burning appliances.

4.2 In the medical group of items, special mention may be made of development in the country of interchangeable medical syringes to the exacting tolerance limits specified in IS : 3238-1965 'Dimensions of hypodermic syringes, interchangeable type'. The Hospital Equipment Sectional Committee, CPDC 14, which brought out standards on horizontal sterilizers, has started work on the much needed high speed sterilizers, anti-static castors for hospital equipment, examination tables, dressing trolleys, etc. The work of artificial limbs, which includes interchangeable dimensions between various limbs, made considerable progress. Some standards on terminal fittings were published while others were at advanced stages of preparation.

4.3 Domestic and Commercial Gas Burning Appliances Sectional Committee, CPDC 23, held its inaugural meeting in May 1967. One standard (IS : 4246-1967 Specification for domestic gas stove for use with LPG) was brought out by this Committee, and safety aspects covered in the standard have already got recognition both from the manufacturers and users.

4.4 A list of 75 Indian Standards formulated by the Consumer Products Division Council during the year 1967-68 is given in Appendix A.

5. ELECTROTECHNICAL DIVISION

5.1 During the period under review, Indian Standards on a number of important subjects were formulated and revised. Of these, special mention may be made of the five dimensional standards for metal parts for transformer bushings up to and including 36 kV. In these standards, aluminium parts (an import substitute) in addition to copper parts have been specified with a view to achieving considerable economy besides bringing about ease of interchangeability. Indian Standards for domestic electrical appliances, such as domestic electrical food mixers (liquidizers, blenders and grinders) and thermostats for general purpose electric ovens were published. Third revision of the Indian Standard relating to general and safety requirements for light electrical appliances was brought out expanding the scope to cover double insulated appliances also.

5.2 Standards covering many items of automobile electrical equipment, such as horn switches, head light switches, dip switches, fuse boxes, flashers, distributors, lighting of number plates, and code of practice for lighting and signalling devices, were published. These standards, when implemented, will contribute to improvement in the quality of motor cars made in the country. Revised versions of the standards for bayonet lamp holders and ballasts for fluorescent lamps now incorporate the substitution of brass or

copper by aluminium. Code of practice for installation and maintenance of transformers was revised covering many additional items of installation and maintenance techniques. Publication of the code of practice for selection of ac induction motor starters (voltage not exceeding 1 000 volts) fulfils a long-felt need for various types of motors for different drives. Code of practice for installation and maintenance of paper insulated power cables (up to and including 33 kV) was revised and it now includes the latest practices in the installation and maintenance of paper insulated, both copper and aluminium conductored, power cables. Indian Standards for heavy and normal duty air-break switches and composite units of air-break switches and fuses for voltages not exceeding 1 000 volts and isolators were published during the year.

5.3 In the field of electronics and telecommunications, Indian Standards on methods of measurements, performance requirements and radiation measurements on television receivers were processed for printing. These standards are expected to assist in the development of indigenous manufacture of television receivers in the country. Standards relating to hearing aids and magnetic tapes for sound recording and reproduction were also brought out.

5.4 A number of standards on electrotechnical vocabulary and graphical symbols were published during the period.

5.5 Among other important items, work in hand included preparation of draft Indian Standard for circuit-breakers in the range of 11 kV and 132 kV; classification of areas for electrical installation in petroleum refineries; code of practice for selection of electrical equipment for such areas; and code of practice for protection against possible hazards in radio transmitting and similar electronic equipment. The Conductors and Cables Sectional Committee, ETDC 32, is expected to finalize shortly a very important specification for thermoplastic covered cables. This type of cables is expected to bring about a lot of savings in the use of imported materials.

5.6 Inaugural meetings of the following Sectional Committees were held during the year:

- a) Electrical Instruments Sectional Committee, ETDC 48, and
- b) Integrating Meters Sectional Committee, ETDC 49.

5.7 The Electrotechnical Division Council (ETDC) held its annual session on 29 February 1968. Consequent upon the retirement of Shri B. V. Baliga from the services of Bharat Electronics Ltd, and his resignation from the chairmanship of ETDC, Shri S. Swayambu, Chairman and Managing Director of Heavy Electricals (India) Ltd, Bhopal was elected Chairman. In this meeting the Council, besides reviewing the composition of various Sectional Committees, approved 20 new subjects for formulation of Indian Standards. Another important point discussed in the meeting related to the question of making reference to Indian Standards in Rule 29

of the Indian Electricity Rules. Some important recommendations were made on this subject to the Central Electricity Board.

5.8 The Electrotechnical Division Council also holds the Secretariat of the Indian National Committee of the International Electrotechnical Commission (IEC) and as such it continued to take active part in the deliberations of the various committees of that Organization. A detailed account of the activities of the IEC of interest to India is given in Part III of this report.

5.9 A list of 97 Indian Standards formulated by the Electrotechnical Division Council which were sent to press during the year under review is given in Appendix A.

6. MECHANICAL ENGINEERING DIVISION

6.1 The Mechanical Engineering Division continued to make satisfactory progress in its activities. During the year under review, 134 Indian Standards were either published or were under print, as against 116 Indian Standards formulated in the preceding year. Twenty-four existing Indian Standards were revised. One hundred and thirty-eight draft standards were finalized for publication and 119 draft standards were issued for eliciting comments, while 99 new draft standards were also prepared during this period.

6.2 Standards prepared during the year covered a number of important subjects, such as, machine tools and small tools, gears, bearings, engineering metrology, hand tools, gas cylinders, transmission devices, chemical engineering, threaded fasteners and rivets, marine engineering and shipbuilding industry and weights and measures. Besides, standards were also formulated on wire ropes and wire products, sewing machine components, instruments (drawing, optical and surveying), mining, lifting chins and associated fittings, and material handling equipment.

Mention may also be made of the four glossaries prepared during the year, namely, Glossary of terms used in refrigeration and airconditioning; Glossary of terms used for high vacuum technology; Glossary of conveyor terms and definitions; and Glossary of terms for ships' derricks.

6.3 Among the standards revised during the year, special mention may be made of those relating to (a) preferred numbers, (b) technical supply conditions for threaded fasteners, and (c) pictorial markings for handling of goods generally.

6.4 All technical committees of the Division, numbering 278, remained active during the year. Meetings of 31 Sectional Committees and 103 Subcommittees and Panels were held. Twentythree new Subcommittees and Panels were setup under the various Sectional Committees.

6.5 Work was also initiated on a number of new subjects of which particular mention may be made of the formulation of a guide for the use of SI Units. It is hoped that this guide, when prepared, would be useful not only to engineering industries, but also for teaching of science and engineering subjects, using SI Units.

6.6 The Standing Working Committee of the Mechanical Engineering Division Council (SWCE), held its twentysecond meeting on 23 November 1967 at New Delhi, and reviewed the activities of the Division.

Compositions of 10 Sectional Committees were reviewed and they were re-constituted for another term of three years. While discussing the scope of Screw Threads and Fasteners Sectional Committee, EDC 27, the SWCE felt that it was rather broad-based which included screw threads, threaded fasteners and rivets. Moreover, as the work of the Sectional Committee had grown enormously, the SWCE decided to split up the existing Sectional Committee into three Sectional Committees in order to handle the work expeditiously and in a detailed manner. The new Sectional Committees have been designated as under:

- a) Screw Threads Sectional Committee, EDC 27;
- b) Bolts, Nuts, and Fasteners Accessories Sectional Committee, EDC 70; and
- c) Rivets Sectional Committee, EDC 71.

6.7 Inaugural meetings of the following new re-organized Sectional Committees were also held during the year:

- a) Shipbuilding Sectional Committee, EDC 56;
- b) Marine Engineering Sectional Committee, EDC 67;
- c) Marine Instruments and Safety Aids Sectional Committee, EDC 68; and
- d) Meteorological Instruments Sectional Committee, EDC 69.

These Sectional Committees discussed their respective scopes of work and set up Subcommittees and Panels to deal with the subjects allotted to them.

6.8 One hundred and thirty-three Indian Standards, formulated by the Mechanical Engineering Division and sent for publication during the year under report, are listed in Appendix A.

7. STRUCTURAL AND METALS DIVISION

7.1 The Structural and Metals Division maintained a steady progress of work during the year under report through the concerted efforts of the various Sectional Committees, Subcommittees and Panels. During the year, the Division processed for publication 94 Indian Standards, including the

revision of 28 existing Indian Standards, as against 82 during the last year. Another 13 draft standards were finalized and are awaiting publication. In addition, 65 draft Indian Standards were sent into wide circulation for eliciting technical comments. Work on many other items was in progress.

7.2 Of the standards processed for publication, special mention may be made of code of practice for corrosion protection of light gauge steel sections used in buildings; specifications for steel wires for cold formed springs; carbon-chromium steels for the manufacture of balls, rollers and bearing races; mould steels; carbon-manganese free cutting steels; case-hardening steels; alloy steel blooms, billets and slabs for forgings for general industrial use; steel tubes used for water wells; elliptical mild steel tubes; comparison of Indian and overseas standards for steel castings; code of practice for design, manufacture, erection and testing of heavy duty electric overhead travelling cranes and special service machines for use in steel works; methods for determination of inclusion content in steel and method for elongation conversions for steel; crane-suspended hand-operated geared ladles for steel and iron foundries; welding of structures subject to dynamic loading; recommendations for submerged arc welding of mild steel and low alloys steels; copper (*second revision* of IS : 191); copper for commutator bars; refined secondary tin; comparison of Indian and overseas standards for aluminium castings; method for spectrographic analysis of platinum; methods of chemical analysis of metallic manganese and primary nickel; fabricated nickel anodes for electroplating; and glossary of terms relating to refractory materials.

7.3 Draft standards finalized for publication included those for manganese ores for the production of ferro manganese; flourspar for use in metallurgical industries; standards for casting pit refractories; codes of practice for design of portal and semi-portal wharf cranes, and design of mobile cranes (all types).

7.4 The draft standards issued into wide circulation included those for methods of chemical analysis of chrome manganese and silico chromium; method for shot peening of laminated and coil springs; rationalization of sizes of steel bars specified to IS : 2073-1962, IS : 2255-1962 and IS : 2591-1964; cast iron rain-water pipes and fittings (*first revision* of IS : 1230-1957); refined secondary zinc; gold alloy inlay castings; silver-tin dental amalgam alloys; code of procedure for welding at low temperatures; pattern plates for machine moulding boxes; chemically bonded chromemagnesite and magnesite-chrome refractories for general purposes; stainless steel for utensils and hospitalware (sheet, coils and circles); code of practice for packaging of steel tubes; electroplated coatings of nickel and chromium; reference blocks for calibration of ultrasonic flaw detectors; hot-dip zinc coatings on structural steel and other allied products; and performance tests for protective scheme used in the protection of light gauge steel against corrosion.

7.5 Some of the important draft standards compiled during the year related to steel for the manufacture of laminated springs for railway rolling stock

(ribs and groove sections); hot-rolled steel plates for ship's hulls; method for determination of weight of coating on hot-dip aluminium wire; tin-coated finishes on cooking utensils; sizes of cupola furnace for foundry; silica bricks for coke ovens; and sampling of powders for powder metallurgical purposes and splitting selected samples.

7.6 New subjects taken up for the formulation of standards included, among others, chemical analysis of copper-nickel shot; master alloys of copper, such as copper-chromium, copper-cadmium, copper-aluminium, copper-phosphorus, copper-tellurium, copper-manganese, copper-silicon, copper-arsenic, and copper-tin, solders for jointing aluminium and aluminium alloys; osmium-iridium-rhuthenium alloys for pen points; code of practice for weld repair and fabrication of steel castings; physical tests for iron ores; chaplet for use in foundry; zinc, cadmium and nickel plating on threaded parts; code of practice for construction of rooms for x-raying and gamma-raying; and code of procedure for conducting field studies on atmospheric corrosion of metals.

7.7 The Structural and Metals Division Council held its Eleventh meeting on 23 September 1967 at New Delhi. At this meeting the Council, apart from other things, set up three new Committees, namely, Corrosion Protection Sectional Committee, SMDC 29; Powder Metallurgical Materials and Products Sectional Committee, SMDC 30; and Co-ordinating Committee on Materials for Automobiles, SMDC 31. The Council also reviewed the compositions of eleven sectional committees and reconstituted them.

7.8 Ninety-two Indian Standards formulated by the Structural and Metals Division Council and sent to press during the year under report are listed in Appendix A.

8. TEXTILE DIVISION

8.1 Indian Standards formulated by the Textile Division during the period under review covered many important subjects, of which special mention may be made of the following:

- a) Standard on glossary of terms pertaining to defects in fabrics and natural fibres.

The glossary prescribes the definitions and principal causes for various defects which usually occur in fabrics. Photographic illustrations for some of the defects have also been given to supplement the definitions. It is hoped that the publication of the standard will eliminate ambiguity and confusion arising from different interpretations of the defects and will be helpful in inspection and taking remedial measures for the elimination of defects.

The revised version of the glossary of textile terms pertaining to natural fibres incorporates many new terms relating to coir, jute, silk and textile testing.

- b) Code of practice for seaworthy packaging of cotton cloth and yarn.

The revision of the standard was taken up in view of the difficulties experienced by the industry in implementing the standard and the complaints of the overseas importers as pointed out by the Cotton Textiles Export Promotion Council. The revised standard is expected to be adopted soon by the Textile Committee of the Ministry of Commerce, Government of India, Bombay, to form as a basis for compulsory inspection of the packing of export packages.

- c) Code of practice for packaging of ready-made garments intended for export: Part I Seaworthy packaging.

Ready-made garments hold a good export market at present. This standard has been formulated to provide a dependable guideline for the procedure of packing ready-made garments to protect them from hazards of transit, provide for ease of handling and preserve the contents from contamination and other deterioration. This part of the standard covers the requirements of packing when the goods are intended to be exported by sea. Another part of the standard dealing with the packing of garments intended to be exported by air is in the process of formulation.

- d) Specification for cotton fabrics for reinforcement of rubber hoses.

This standard has been formulated with a view to promoting effective co-ordination between the textile and rubber hose industries.

- e) Specification for jute bagging for wrapping cotton bales.

Jute bagging is an export jute product. This standard has been formulated for the purpose of quality control and pre-shipment inspection of jute goods. It is hoped that the quality control measures with reference to this standard would further help in strengthening the export trade of the jute bagging.

- f) Specification for rayon velvet, which is an important export item earning foreign exchange has been formulated to help manufacturers in producing velvets of good quality. Specification for nylon fabrics for industrial and special purposes has been specifically formulated to meet the needs of special Defence uses.

- g) Specifications for khadi items, such as cotton bunting cloth, blanketing cloth, woollen *KAMBLIES* and woollen twill cloth.

These standards deal with the fabrics woven on handlooms from hand-spun yarn. The standards formulated at the instance of the Khadi Commission, it is hoped, would help the *khadi* sector in maintaining regularity in production as well as help the central purchasing agencies in procuring their requirements of right quality.

- h) Specifications for hosiery items, such as gents' worsted pull-overs, gents' slippers, gents' cotton knitted briefs, knitted puttees and cotton knitted sports shirts.

These standards will give a fillip to the small-scale hosiery industry where production of hosiery goods is mostly concentrated. It is hoped that the standard on cotton yarn, grey for hosiery would help the hosiery units in procuring yarn of dependable quality.

Specifications for gents' cotton short drawers and rib-knitted gents' nylon stockings, in addition to helping the hosiery units in maintaining the quality, would help the official agencies in procuring these items of right quality.

Standard on glossary of terms relating to hosiery has also been formulated with the intention of eliminating ambiguity arising from local interpretations of meanings of terms commonly used in the hosiery industry and trade and to establish a generally recognized usage.

- j) Standards on textile mill accessories, such as skewers, dobbie harrels, weft pirns for shuttles for pirn-changing automatic cotton looms, all metal reeds for warping, metal heald frames for flat steel healds and contact wire healds.

These standards are expected to provide a useful guideline to the manufacturers in maintaining the quality of their products and will ensure dependable supplies, higher efficiency and less breakdown in textile mills.

- k) Specification for textile materials for aeronautical purposes, such as braided nylon cord, nylon tapes, nylon sewing threads and nylon breaking cords.

These standards have been formulated with a view to encouraging indigenous production of the materials which are hitherto being imported.

- m) Standards on hand-made *NAMDHAS*, sunnhemp druggets and sunnhemp carpets.

The standard on hand-made *NAMDHAS* has been published at the instance of the Government of Jammu and Kashmir—a major exporter of the item. It is expected that formulation of a national

standard for hand-made *NAMDHAS* will go a long way in boosting export of this item.

The standards on sunn hemp druggets and sunn hemp carpets have been published at the instance of the Government of Madras. It is only recently that sunn hemp druggets and sunn hemp carpets have found their place in the export trade of the country and formulation of national standards on these items will give a fillip to their export.

- n) Specifications for textile materials for fishing purposes, such as nylon twines.

With the indigenous production of nylon yarn in the country, nylon nets for fishing have become very popular. These are much lighter and hence much bigger nets could be handled with ease by the fisherman. Added to this, they are rugged which do not allow the fish to escape or cut the net. In order that the fisherman may get good quality nylon nets, this standard was formulated covering the quality requirements of nylon twines.

8.2 The Textile Division Council (TDC) held its seventeenth meeting on 1 May 1967 in New Delhi.

The Council re-elected Dr. T. S. Subramanian (Director, IJIRA, Calcutta) as its Vice-Chairman for another term of three years ending 31 December 1969.

The Cotton Healds and Reeds Sectional Committee, TDC 22, and the Wire Healds Sectional Committee, TDC 23, were amalgamated into one Sectional Committee, namely, Healds and Reeds Sectional Committee, TDC 22, to deal with all types of healds and reeds. Spindle Tape and Tubular Banding Sectional Committee, TDC 25, Wicks for Oil Burning Domestic Appliances Sectional Committee, TDC 32, and Tapes for Electrical Purposes Sectional Committee, TDC 35, were amalgamated into one Sectional Committee, namely, Narrow Fabrics, Webbing and Braids Sectional Committee, TDC 25, to deal with all types of narrow fabrics. Composition of four Sectional Committees was reviewed and they were reconstituted. The subject of card and gill pins for use in jute industry was approved for formulation of an Indian Standard.

The Advisory Committee on Indian Standards for Accessories used by the Textile Industry was set up to review the published standards on mill accessories and suggesting various measures including arrangements for conducting performance tests and series of controlled operational trials under the guidance of research laboratories in production conditions in their respective areas. The data thus available from such trials and tests could be used while reviewing the Indian Standards on textile mill accessories for making changes and for spelling out the real advantages of using materials bearing ISI Certification Mark.

The Council decided that the formulation of Indian Standards for export varieties of fabrics need not be taken up unless specific demand for such standards was made by agencies, such as Export Promotion Councils and Government bodies. It was further decided that the Sectional Committees functioning under Textile Division Council and dealing with the formulation of Indian Standards for fabrics be permitted to take up market varieties for preparation of Indian Standards only on functional aspects like width, dimensional changes due to washing, colour fastness and such like particulars as would satisfy the basic requirements of consumers.

8.3 The Advisory Committee on Indian Standards for Accessories used by the Textile Industry held its first meeting on 13 May 1967 in New Delhi, to discuss the lacuna in the standards on textile mill accessories which hindered their implementation. The Committee was of the opinion that standards could be easily implemented by the manufacturers if it was explained to them that accessories conforming to standards were better and the standards should specify characteristics which would be measured objectively. The Committee suggested a guideline for investigation and exploring the possibility of incorporating these requirements in the standard and requested the ISI Directorate General to approach the important textile research organizations to conduct project work of performance tests in their laboratory pilot plants and within selected mills and to correlate the test results for further consideration by the Committee.

8.4 The Standing Working Committee of the Textile Division Council (SWCT) held its fifteenth meeting on 30 January 1968 in Bombay.

Two Sectional Committees were reconstituted and 57 new subjects were approved for formulation of Indian Standards. In addition to this, 28 other new subjects were also approved by SWCT, by postal ballot, during the period under review. The Nylon Fishing Nets Subcommittee, TDC 10:5, was elevated to the level of a Sectional Committee under the name of 'Textile Materials for Fishing Purposes Sectional Committee, TDC 42', to deal with all types of textile materials for fishing purposes. A new Sectional Committee, namely, Apparels Sectional Committee, TDC 43, was also set up to formulate Indian Standards for ready-made garments.

8.5 A list of 54 Indian Standards formulated by the Textile Division Council and sent to press during the period under review is given in Appendix A.

9. SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

9.1 Documentation (EC 2)—(Sectt: Publications Deptt)—The reconstituted Documentation Sectional Committee (EC 2) met under its new Chairman Shri B.S. Kesavan, Director, Indian Scientific Documentation Centre (INSDOC), on 16 October 1967 in New Delhi. The Sectional Committee reconstituted Reprography Subcommittee, EC 2:2,

Structure and Layout of Books and Periodicals Subcommittee, EC 2 : 3, and amalgamated the two panels, namely, Panel for Abbreviations for Titles of Periodicals in North Indian Languages (EC 2 : 5 : 1), and Panel for Abbreviations for Titles of Periodicals in South Indian Languages (EC 2 : 5 : 2) with the Alphabetization and Abbreviations for Titles of Periodicals Subcommittee, EC 2 : 5. The Sectional Committee also recommended the formation of a subcommittee to deal with the production aspect of the textbooks, namely, Production of Textbooks Subcommittee, EC 2 : 11.

One standard, namely, Indian Standard glossary of cataloguing terms (*first revision* of IS : 796) was published during the year under Report. The Committee finalized the draft Indian Standard practice for layout of library catalogue code (*first revision* of IS : 1358-1959) and also finalized draft amendment No. 1 to IS : 3050-1965 ' Code of practice for reinforced binding of library books and periodicals '. The Committee approved for wide circulation the draft Indian Standard abbreviations for titles of periodicals in Indian languages.

The following new subjects were taken up in its programme of work:

- a) Article in a periodical, prelims;
- b) Sizes of publications;
- c) Symbols and notations for simplifying, checking and correcting proofs of illustrations; and
- d) Catalogue cards.

9.2 Quality Control and Industrial Statistics Sectional Committee (EC 3)—(Sectt : Statistics Department) — The draft ' Indian Standard Precision of Test Methods, Part I Principles and Application ' was issued into wide circulation for eliciting comments. The Committee also formulated draft ' Indian Standards regarding statistical quality control during production by use of control charts for variables, methods of regression and correlation and inter laboratory testing for determination of the precision of test methods. These draft standards, when printed would considerably promote the knowledge and application of statistical techniques in industries.

10. STATISTICS DEPARTMENT

10.1 During the period under review, the Department was actively engaged in the formulation of a number of Indian Standards on methods for sampling of different types of materials and also basic Indian Standards on control charts, random sampling methods and other statistical techniques, in addition to evolving sampling plans for incorporating in material specifications. An important feature of the year was the appointment of Work Study Sectional Committee to formulate standards relating to terminology and glossary of terms used in work study, norms for performance, indices of relaxation allowance, and to compile anthropometric data as also the data on optimum working conditions and basic time for elemental activities.

Mention may also be made for the organization of the third training course in Statistical Quality Control for the benefit of the ISI Licensees for cables and conductors.

10.2 The Department continued to scrutinize draft Indian Standards with the object of introducing in them, wherever possible, concepts of statistical quality control. Of the 676 draft standards scrutinized during the year, statistically sound sampling plans were recommended for incorporation in 382 cases and in most of the cases these recommendations were accepted by the concerned Sectional Committees. In this connection, mention may be made of Indian Standard specifications on pipe wrenches (IS: 4003-1967), knitted puttees, dye (IS: 4053-1967) canned *RASOGOLLA* (IS: 4079-1967), chain pipe wrenches (IS: 4132-1967), surgical rubber gloves (IS: 4148-1967), typewriter ribbons (IS: 4174-1967), brushes foundry flat (IS: 4301-1967), and fire resistant brattice cloth (IS: 4355-1967).

10.3 The Department also scrutinized the routine inspection schemes referred to it for the issue of licences under the Certification Marks Scheme. The routine inspection data collected from different licensees in accordance with the recommended schemes were also statistically analyzed to find out whether or not the certified goods conformed to the relevant Indian Standards as also to examine the adequacy of the recommended frequencies of testing and inspection.

10.4 Training in Statistical Quality Control (SQC)—The third training programme in Statistical Quality Control for the benefit of ISI licensees for cables and conductors was held from 10 to 18 April 1967 at Calcutta. Nine licensees had nominated 13 trainees to participate in the programme.

Besides the SQC techniques, the participants were given instruction in procedural and practical aspects of introducing SQC methods in their production processes. Such programmes would help the licensees in producing goods of uniformly satisfactory quality conforming to the relevant Indian Standards at an economic level, thereby considerably facilitating the sound operation of ISI Certification Marks Scheme.

10.5 The Department conducted extensive investigations and carried out statistical analyses of the data relating to different aspects of standardization work.

Statistical analyses of data relating to honey, neem fruit oil, neem seed oil and neem kernel oil were made and specification limits were recommended for different characteristics based on the results of statistical analyses. Data on indigenous wire healds were analyzed and specification limits for breaking strength were recommended.

With a view to incorporating the latest developments in science and technology in Indian Standard specifications, extensive collection and

analyses of data on products, such as biscuits, oilcakes, Portland cement and hessian were conducted for revising the specification limits.

For evolving a suitable method of sampling of steel castings for general engineering purposes based on process variation, data were collected and analyzed statistically. Studies are in progress for estimating the repeatability and reproducibility of test methods used in the chemical analysis of *KATTHA*.

10.6 Comments and suggestions were sent for the improvement of draft proposals of the International Organization for Standardization (ISO) and some overseas Standards Bodies, pertaining to coal sizing, raw rubber in bales and green coffee.

11. RESEARCH AND INVESTIGATION

11.1 Research and investigation are basic to the development of economy, industry, science and technology, as well as in the field of standardization. Therefore, for furthering the cause of improving the quality of industrial products, it is essential that quality requirements, methods of tests and sampling procedures are scientifically tested and analyzed in laboratories and test houses before being prescribed in Indian Standards.

Research and analytical studies have been undertaken in ISI's own laboratory. They have also been carried out in active collaboration with national, state and private laboratories, testing organizations and research bodies. The Institution is appreciative of the co-operation and assistance received from them.

11.2 Details of the research and investigation carried out during the year under report are given in the following paragraphs.

Agricultural and Food Products Division — The research and investigation undertaken by this Division related to the efficacy of various common indicator solutions used in the analysis of pesticidal formulations, adhesion property of organo-mercurial dry seed-dressing formulations, smoke forming property of *Gamma* BHC lindane smoke generators, thiram content by amine method, acidity and alkalinity requirement in endosulfan technical, binapacryl technical and their formulations, solubility of warfarin technical in distilled water, neutralization value of warfarin technical, neutralization range for coumafaryl technical, infra-red absorptivity of toxaphene, determination of quality characteristics of honey, analysis of milk and milk products; separation of three substances of turmeric powder, and determination of their chemical properties with particular reference to curcumin; and determination of chemical characteristics of saffron, dehydrated onion, chillies and cinnamon.

Chemical Division — The problems on which research and investigations were carried out included testing of barium potassium chromate for

soluble chromates in order to specify suitable limits for the unreacted potassium chromate; determination of aldehyde content in crotonaldehyde; testing of samples of coated paper and board (art and chrome), and pulp-board produced in the country with a view to arriving at suitable requirements. Samples of writing and printing paper were tested to arrive at suitable requirements. This became necessary as a result of change in the available raw materials.

Investigations were undertaken to evaluate the suitability of glass bottles, corrugated boxes, tinplate containers, hessian bags, etc, as packages for various types of pesticides. Study on thermal shock resistance of porcelain crucible was completed. Investigations were under progress to examine whether the limits prescribed with regard to minimum tin-coating for *VANASPATI* tins could be safely lowered. Work relating to testing of soiled cloth for reflectance, tannin content in myrobalan nuts, colour values of waterproof drawing ink, carbon black in book printing ink, and transparency and shrinkage of tracing cloth was under progress.

Civil Engineering Division — The problems on which research and investigations were completed during the year included thermal efficiency of brick kilns; performance test for batch type concrete mixers; performance of concrete vibrators; investigation on polythene pipes for their suitability for potable water supply; investigation on moulded rubber rings. Research and investigations were in progress on revision of permissible limit of magnesia content in building limes; testing of natural building stones; abrasion resistance requirement of cement concrete flooring tiles; development of simple field tests for determining the abrasion resistance of cement concrete flooring tiles; investigations on use of square and circular plates for load tests on soils; effect of vibrations on soils; testing and calibration of sieve shaker; effect of sediment on velocity distribution and hence on discharge; effect of sediment on the rating of current meters; minimum number of verticals for discharge measurement in canals; position of current meters with reference to the boat; investigations on the use of the bubble gauge; effect of sediment on discharge coefficients of notches, weirs and flumes; instructions for collection of data for the determination of errors in the measurement of flow by velocity area methods; effect of bed formation by sediment motion (form drag) on flow in open channels; cupping and twisting of fibre boards; preservative treatment for cores for blockboards; tests on vitreous sanitary appliances for laying down proper performance criteria; improvements in wall type flushing cisterns; studies for combination of timbers for manufacture of aircraft plywood; testing abrasion resistance of fibre boards; testing warping and glueability for composite construction; testing creeping and swelling of wood-based building boards; fire resistance of wood based building boards; and limiting values of strength and other properties of pozzolana.

Structural and Metals Division — Investigations to determine the optimum temperature for ignition of silica being conducted at five

laboratories were completed. For silica determination in various metals and alloys, ignition temperature of 900° to 950°C was specified in Indian Standards while in British and other overseas standards a temperature of more than 1100°C was recommended. This investigation was, therefore, called for to check the results obtained at 900° to 950°C in comparison with those obtained at higher temperature. The data collected as a result of the investigations were examined by the relevant technical committee and it has been decided that optimum temperature for ignition of silica shall henceforth be prescribed as 1050°C in Indian Standards published by the Structural and Metals Division.

Another investigation completed related to the determination of spelling resistance requirements for fireclay refractories.

New research work undertaken related to (a) testing samples of blast furnace refractories (corresponding to Type I refractories); these test results will help in revising IS: 1529-1961 'blast furnace refractories for steel plants'; (b) testing some samples of hot face insulating bricks conforming to IS: 2042-1963 'Insulating refractories'; the results of these investigations will help in including some more properties like thermal conductivity, in IS: 2042-1963; and (c) investigations on RRL PCE test cones for their adoption as Indian Standard PCE test cones. These tests will help in adopting such cones as Indian Standard PCE test cones.

Textile Division — Investigations were carried out in connection with the preparation of ISI photographic yarn appearance standards for the purpose of grading cotton yarn with the help of expert photographers and for determining the width, dry breaking strength and turns per metre of nylon gill net twines and trawl net twines for including these requirements in standards on nylon twines. Investigations were in progress to evolve a suitable method of test for evaluating the performance quality of fillets for take-up rollers. Tests were carried out for evaluating constructional particulars and breaking load of cotton fabrics for reinforcement of rubber hoses and hessians used as packing material for determining their hardness; sample of braided nylon rope for mountaineering purposes of high tenacity nylon yarn was tested for evaluating its constructional particulars, angle of sag, etc, and practical trials on that sample were conducted at the High Altitude Warfare School (HAWA). Tests were also carried out to ascertain whether or not it would be necessary to prescribe in the standards on rayon velvet, colour fastness to agencies, such as water and light.

INTERNATIONAL ACTIVITIES

1. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

1.1 Out of 119 technical committees of the International Organization for Standardization (ISO), as on 31 March 1968, ISI was a Participating Member of 86 technical committees and an Observer Member of 28 others. In addition, the Institution also held the Secretariat of 4 technical committees, 3 subcommittees and 8 working groups dealing with subjects of interest to India.

1.2 ISO General Assembly — The 7th meeting of the General Assembly of ISO held in Moscow on 26-27 June 1967 under the presidency of Shri Jehangir J. Ghandy. The General Assembly was attended by representatives of 42 member countries; India was represented by Dr A. N. Ghosh and Shri K. N. P. Rao. Shri F. Sunter (Turkey) was elected President of ISO for the three-year term starting 1 January 1968; Member-bodies of Germany, Poland, Netherlands, Peru and USSR were elected members of the ISO Council for a three-year term beginning 1 January 1968.

1.3 ISO Council — The Council met on 22-23 June 1967 under the chairmanship of Shri Jehangir J. Ghandy. Shri H. A. R. Binney, Director, British Standards Institution, was re-elected Vice-President for another term of three years. The highlight of the Council meeting was the proposal to constitute an Executive Committee to look after the day-to-day work of the Central Secretariat, superseding a number of administrative committees, such as Finance Committee, Supervisory Committee and Organization Committee, which would now be dissolved. Dr A. N. Ghosh, Director General, ISI was appointed as ISO Liaison Officer with Economic Commission for Asia and Far East (ECAFE) in succession to Dr Lal C. Verma.

1.4 ISO Planning Committee (PLACO) — PLACO, which discusses plans and co-ordinates the technical work of over 100 technical committees

of ISO, met in Moscow on 14 and 15 June 1967 under the chairmanship of Dr Lal C. Verman. It discussed the various technical points raised about new committees, dissolution of old committees, re-working of the scope of committees and amalgamation of old two or more committees. As Dr Lal C. Verman expressed his desire to retire, Shri N. Ludwig (Germany) was appointed the new Chairman and Dr A. N. Ghosh was made a member in place of Dr Verman.

1.5 ISO Development Committee (DEVCO) and Development Conference (DEVCONF) — The Development Committee (DEVCO), in addition to its regular meeting, organized, in co-operation with and with the financial assistance of United Nations Industrial Development Organization, a Development Conference. Along with the other countries, 15 developing countries not members of ISO or IEC were also invited to participate in the Conference. A number of papers including one from Dr A. N. Ghosh were presented. Dr Ghosh was appointed Chairman of the Working Group set up by the Development Conference which made certain recommendations and which were later adopted by DEVCO and accepted by the Council.

1.6 ISO Standing Committee for the Study of Scientific Principles of Standardization (ISO/STACO) — STACO met on 21 June 1967 in Moscow under the chairmanship of Shri T. R. B. Sanders. Out of the many scientific principles of standardization discussed in the meeting, the main point of interest to India, for the present, was the study of economic consequences of international standardization for which there was a concerted move by some members of STACO, particularly, Netherlands for the establishment of an Economic Section in the ISO Central Secretariat. In view of the precarious financial position of ISO and the backlog of work, India expressed doubts about the advisability of initiating such studies at present, especially. The Organization Committee (ORCO) also recognized the financial difficulties and recommended that the establishment of an Economic Section in ISO should be dropped for the present.

1.7 ISO Organization Committee (ORCO), Finance Committee (FINCO), Council — Dr A. N. Ghosh, Director General, ISI attended the meeting of Organization Committee and Finance Committee of ISO held in Geneva from 23-26 February 1968 and also an informal meeting of ISO Council on 27 February 1968 in Geneva. The matters considered at these meetings included evaluation of the efficiency of the working of the Central Secretariat and the ways and means to meet the increasing expenditure at ISO. India's views, particularly, with regard to keeping the expenses within the limits of anticipated income and increasing efficiency at the Central Secretariat found favour in the meetings.

1.8 ISO Technical Committees — A brief report on the work of ISO technical committees, subcommittees and working groups of interest to India is given in the following paragraphs.

ISO/TC 5 Pipes and Fittings — (Sectt : Switzerland) — Draft ISO Recommendation for pipes and fittings for the dairy industry was received for comments and approved on behalf of India. Another four draft ISO Recommendations were received for comments. These related to stainless steel tubes — dimensions, tolerances and conventional masses per unit length; steel tubes — outside diameter larger than 419 mm (16½ in); steel tubes butt welding bends 5D (90° and 180°); and boiler tubes — dimensions, tolerances and conventional masses per unit length.

ISO/TC 5/SC 2 Cast Iron Pipes, Fittings and Their Joints — (Sectt : France) — Draft ISO Proposal for ductile iron pipes, fittings and accessories for pressure pipe lines was approved on behalf of India.

ISO/TC 5/SC 3 Non-ferrous Metal Pipes — (Sectt : France) — Third meeting, 5-6 December 1967, Paris. India was not represented. Revision of ISO Recommendation No. 274 'Copper tubes of circular section—metric series' was considered.

ISO/TC 11 Boilers and Pressure Vessels — (Sectt : USA) — 18-25 October 1967, New York. India was represented by Shri S. C. Dey, Chief Inspector of Boilers, Government of Assam, Shillong; Shri M. V. Patankar, Director (MED), ISI; and Shri H. R. S. Rao, Bharat Heavy Electricals Ltd, Tiruchirapalli. The Committee recognized the urgent need for an International Pressure Vessel Code to facilitate international trade in pressure vessels. Consequently, the documents relating to material, design and workmanship of pressure vessels, prepared by the concerned Sub-committees and Working Groups were reviewed. It was decided that the Secretariats of the Subcommittees and Working Groups would prepare revised documents based on the decisions arrived at during the discussions and submit them to the TC 11 Secretariat for incorporation in draft ISO proposal, which would then be circulated to member-bodies for review and comments. Items of administrative nature like foreword, scope, registration, procedure and responsibilities were dealt with by the TC 11 Secretariat and important agreements reached. Two new Working Groups—WG 4 Safety Valves with Mr Chipperfield of UK as the Chairman, and WG 5 Testing and Inspection and Certification and Stamping with Mr Clarke of USA as the Chairman—were formed and initial meetings held.

Regarding the materials for boilers and pressure vessels it was agreed that all ISO Recommendations for steels to be used will be established by ISO/TC 17 Working Group 10 Steel for Boilers and Pressure Vessels, but with the consent of TC 11. DR 851 Rules for Construction of Stationary Boilers was expected to be published as ISO Recommendation by April 1968. It was, however, agreed that on the completion of the pressure vessels the boiler code should be reviewed and brought up-to-date and into accord with the relevant provisions of the proposed pressure vessel code, reflecting the latest thinking.

ISO/TC 12 Quantities, Units, Symbols, Conversion Factors and Conversion Tables — (Sectt: Denmark) — The following documents were circulated to all the Member-Bodies by ISO Central Secretariat:

- a) Draft ISO Recommendation No. 838 — Quantities and Units of Atomic and Nuclear Physics, and
- b) Draft ISO Recommendation No. 839 — Quantities and Units to Nuclear Reactions and Ionizing Radiations.

ISO/TC 12/SC 1 Procedure for Inter-Conversion of Values from one System of Units to Another — (Sectt: India) — The Secretariat prepared the third draft proposal on procedures for inter-conversion of values from one system of units to another (Doc: 12/1 N 27) and circulated it to the members of ISO/TC 12/SC 1 for their approval and comments. The draft proposal was also circulated to the members of ISO/TC 12 for their comments.

ISO/TC 12/SC 2 General Rules for the Use of SI Units, Their Multiples and Sub-multiples in the Various Industries — (Sectt: Denmark) — Second meeting, 22-24 June 1967, Moscow. No delegate from India could attend the meeting.

The document ' Rules for the use of units of the international system of units and a selection of the decimal multiples and sub-multiples of the SI unit ' was circulated by the ISO Central Secretariat as Draft ISO Recommendation No. 1557 to all the ISO Member-Bodies as well as ISO Council Members.

ISO/TC 17 Steel — (Sectt: UK) — Ninth plenary meeting, 19-23 June 1967, Moscow under the chairmanship of Mr G. Weston, Associate Director, British Standards Institution. The meeting was attended by about 102 delegates from 21 countries. Besides these, three representatives—one each from AICMA. International Institute of Welding and Union Internationale des Chemins de Fer—participated at the meeting.

Shri B. S. Krishnamachar, Deputy Director General, ISI; and Shri K. N. P. Rao of Tata Iron & Steel Co Ltd, Jamshedpur, attended this meeting on behalf of India.

At this meeting, 25 draft ISO Proposals relating to chemical analysis of steel, methods of mechanical testing, structural steel, heat-treated steels, methods of tests (other than mechanical and chemical analysis), dimensions of hot-rolled steel sections and tinplate were considered and finalized for publication as Draft ISO Recommendations.

During the year, 26 Draft ISO Recommendations were received for comments, out of which 19 were approved on behalf of India and the remaining 7 were in circulation to the concerned technical committees.

ISO/TC 17/WG 8 Dimensions of Hot-Rolled Steel Sections — (Sectt: India) — Sixth meeting, 14-17 June 1967, Moscow. Forty-six delegates from 16 countries participated in this meeting. As India, being the Secretariat of this Working Group, could not provide a Chairman for this meeting, Dr Ing. H. Schmitz of West Germany was elected to the chair. Shri B. S. Krishnamachar and Shri K. N. P. Rao attended this meeting on behalf of India. Shri Krishnamachar acted as the Secretary.

At the meeting, draft proposal on dimensional tolerances for hot-rolled equal and unequal leg angles (metric and inch series) was finalized and approved for submission to ISO/TC 17 Steel for further processing as a Draft ISO Recommendation.

In addition, draft proposals on I-beam sections (metric series), I-column sections (metric series), and dimensions of hot-rolled channels (inch series) were also discussed.

ISO/TC 17/WG 9 Tinplate and Black Plate — (Sectt: UK) — Fifth meeting, 4-6 July 1967, London. Recommendations regarding preparation of draft ISO Proposals for cold reduced tinplate and cold reduced black plate in coil form were adopted.

The draft ISO proposal prepared on the basis of the recommendations adopted, has been forwarded to all member countries for their examination and comments.

ISO/TC 17/WG 10 Steel for Pressure Vessels — (Sectt: Germany) — Third meeting, 25-28 September 1967, Aachen under the chairmanship of Dr H. Schmitz of Fachnormenausschuss Fur Eisen Und Stahl. At the meeting, apart from reviewing the work done by its three subgroups, the Working Group discussed in detail, draft ISO proposals for plates, tubes and forgings. Also, it was decided to collect more data from member countries regarding elevated temperature proof stress values, before the same could be included in the relevant documents. Proposal formats for collecting the above data were forwarded to all member countries.

ISO/TC 18 Zinc and Zinc Alloys — (Sectt: Belgium) — Four draft ISO Recommendations for zinc ingots; chemical analysis of zinc, photometric determination of copper; polarographic determination of cadmium in zinc; and photometric determination of iron, were received for comments and were approved on behalf of India.

ISO/TC 20 Aircraft — (Sectt: UK) — Fourteenth meeting, 19-21 June 1967, Moscow. India did not attend the meeting. Draft ISO Recommendation received for comments related to methods of test for general purpose electric cables with aluminium or aluminium alloy conductors for aircraft.

ISO/TC 24 Sieves, Sieving and Other Sizing Methods — (Sectt: Germany) — The following Subcommittees met on the dates

shown against each:

ISO/TC 24/SC 1 Test Sieves	22 January 1968
ISO/TC 24/SC 2 Test Sieving	25-26 January 1968
ISO/TC 24/SC 3 Industrial Screening	23 January 1968

Draft ISO Recommendation No. 805 was printed as ISO/R 565 'Woven wire cloth and perforated plates in test sieves — nominal sizes of apertures'.

ISO/TC 25 Cast Iron — (Sectt: UK) — Fourth meeting, 11-12 April 1967, London. India did not attend this meeting. Five draft ISO Recommendations for whiteheart malleable cast iron, blackheart malleable cast iron, pearlitic malleable cast iron, designation of the microstructure of graphite in cast iron, and beam unnotched impact test for grey cast iron were considered. Third draft ISO proposal for spheroidal graphite or nodular graphite cast iron was also considered.

Two draft ISO Recommendations, namely, designation of the microstructure graphite in cast iron; and beam unnotched impact test for grey cast iron were received for comments and approved on behalf of India.

ISO/TC 26 Copper and Copper Alloys — (Sectt: Germany) — Six draft ISO Recommendations relating to special copper alloys, designations for copper and copper alloys, temper designation for copper and copper alloys, wrought coppers, cast copper alloys and phosphorus-deoxidized copper refinery shapes, were received for comments out of which five were approved on behalf of India and one is under the consideration of the relevant Technical Committee.

ISO/TC 27 Solid Mineral Fuels — (Sectt: UK) — Eighth meeting, 19-22 June 1967, Moscow, under the chairmanship of Shri D. Flint of British Coal Utilisation Research Association, UK. The Committee approved three draft ISO proposals for determination of the gross calorific value of coal with an adiabatic bomb calorimeter, calculation of net calorific values, and calculation of coal results to other bases.

ISO/TC 30 Measurement of Fluid Flow in Closed Conduits — (Sectt: France) — Working Group 1 — Venturi tubes — met in Paris on 11-12 April 1967; and Working Group 2 — Steering group for the activities of TC 30 — met in Paris on 13-14 April 1967 and again on 7-8 February 1968 in Paris.

Draft ISO Recommendation No. 541 was accepted by the Council and was printed.

Modified text of draft ISO Recommendation No. 1157 'Venturi tubes' was approved by the requisite majority of the member-body.

ISO/TC 33 Refractories — (Sectt: UK) — Three draft ISO Recommendations for classification of dense refractory products; dimensions

of refractory arch bricks, and Pyrometric reference cones were received for comments and approved on behalf of India.

ISO/TC 33/WG 2 Methods of Test for Refractoriness and Refractoriness Under Load — (Sectt: UK) — Draft ISO proposal for the determination of refractoriness under load of refractory products was received for comments.

ISO/TC 34 Agricultural Food Products — (Sectt: Hungary) — Sixth plenary meeting, 26-27 June 1967, Moscow, under the chairmanship of Prof Dr Telegdy Kovats of the Technical University, Budapest, Hungary. India was represented by Dr Y. K. Subrahmanyam, Deputy Director General, Union Ministry of Health and Family Planning, and Dr Hari Bhagwan of ISI. The Committee considered the reports of its 8 subcommittees.

ISO/TC 34/SC 1 Propagation Materials — (Sectt: France) — Third meeting, 21-23 June 1967, Moscow. India was not represented. The Subcommittee considered the draft proposal on method of checking cows milk in the light of comments received as a result of voting by correspondence by the 'P' members. The amendments suggested by SC 1 were accepted by ISO/TC 34 at the meeting which followed. The amended draft proposal will now be submitted for final voting.

A Working Group was set up to study the characteristics of capacity for use of peat pots or pots or both of other vegetable matter (WG 1). Norway was requested to hold its Secretariat.

Subject to confirmation by members of SC 1, the following four Working Groups will be set up to look after the respective work:

- i) Specifications for the quality of agricultural seeds (WG 2) — (Sectt: USSR);
- ii) Specifications for the quality of seeds of trees and shrubs (WG 3) — (Sectt: USSR);
- iii) Terminology, specifications, methods of test, etc, relating to vegetative propagated materials (WG 4) — (Sectt: Hungary); and
- iv) Problems raised by the artificial insemination of various animals to be reared (WG 5) — (Sectt: USSR).

The Secretariat was requested to prepare draft proposals on the milk recording of goats and sheep.

ISO/TC 34/SC 2 Oleaginous Seeds and Fruits — (Sectt: Rumania) — Fifth meeting, 15-16 June 1967, Moscow. Methods for determination of free acidity in oilseeds, and determination of protein and oil content in oilseed residues were considered.

ISO/TC 34/SC 2/WG 1 Sampling (of Oleaginous Seeds and Fruits) — (Sectt: UK) — Fourth meeting, 14-15 June 1967, Moscow. No delegate from India could attend the meeting.

Sampling of Crude Vegetable Oils and Fats — Secretariat was requested to prepare a revised version of the document 34/2/1 N 25, taking into account the decisions reached at the fourth meeting.

Sampling of Oilseed Residues — The WG 1 Secretariat was requested to prepare a revised version of the document 34/2/1 N 19, taking into account the decisions reached at the fourth meeting.

ISO/TC 34/SC 3 Fruits, Vegetables and Their Derived Products — (Sectt: Poland) — Seventh meeting, 24 June 1967, Moscow. Dr Hari Bhagwan of ISI represented India. Draft proposals relating to the storage of apricots, fresh pineapples, table grapes and tomatoes were considered on the basis of the recommendations made by the relevant Working Group.

A new Working Group (WG 4) — Dry and Dried Fruits, with Iran as Secretariat, was set up to study nuts, nut kernels, dried fruits and dehydrated fruits. India would participate as an active member of WG 4.

ISO/TC 34/SC 4 Cereals and Pulses — (Sectt: Hungary) — Sixth meeting, 19-20 June 1967, Moscow. India was represented by Shri T. S. Nagarajan of the Brooke Bond (India) Limited, Calcutta. The Subcommittee considered draft proposals concerning method of assessment of fitness for storage of cereals and pulses, determination of glycosidic hydrocyanic acid of pulses, determination of ash content in cereals and pulses, general directives for the determination of nitrogen (using the Kjeldahl method for the destruction of organic matter), and determination of test weight of cereals. Three new subjects relating to determination of vitreousness of grain, methods of analysis for particle size of flour, and determination of amyolytic power of cereals and cereal products were taken up for inclusion in the future programme of work.

ISO/TC 34/SC 6 Meat and Meat Products — (Sectt: Germany) — Fifth meeting, 10-11 November 1967, Berlin. No delegate from India could attend the meeting. Meetings of Working Groups 1 and 2 also took place in Berlin in November 1967. Detailed report is awaited.

ISO/TC 34/SC 7 Spices and Condiments — (Sectt: India) — Fifth meeting, 19-21 June 1967, Moscow, under the chairmanship of Dr Y. K. Subrahmanyam, Deputy Director General, Ministry of Health and Family Planning, Government of India. Besides the Chairman, the Indian delegation comprised Dr Hari Bhagwan of ISI, who also acted as the Secretary for meeting. Following subjects were considered: Specifications for (a) Curry powder; (b) Saffron; (c) Cinnamon; (d) Cloves; (e) Coriander seed; and (f) Methods of sampling and test for milling products of red pepper (*Paprika*).

The documents would be revised in the light of the discussions held and processed further.

ISO/TC 34/SC 8 Stimulant Foods — (Sectt: India) — Third meeting, 17 June 1967, Moscow, under the chairmanship of Dr Y. K. Subrahmanyam (India); Dr Hari Bhagwan of ISI acted as Secretary. Reports of three Working Groups on tea, coffee and cocoa were considered. It was felt that the methods of sampling were being considered by all the three Working Groups and India had offered good comments on all of them. It was, therefore, decided that SC 8 Secretariat should prepare a document on the guiding principles which could hold good for all the three Working Groups. However, the three Working Groups would continue to work on their documents to cover details.

ISO/TC 34/SC 8/WG 1 Tea — (Sectt: UK) — Second meeting, 15 June 1967, Moscow, under the chairmanship of Shri G. W. U. Liddle (UK), Dr Y. K. Subrahmanyam, Shri T. S. Nagarajan, Shri D. G. S. Marsh and Dr Hari Bhagwan of ISI, attended the meeting on behalf of India. The subjects considered at the meeting related to methods of test for tea, sampling and specifications for tea, glossary of terms relating to tea trade, preparation of infusion for taste test, etc.

ISO/TC 34/SC 8/WG 2 Coffee — (Sectt: Argentina) — Second meeting, 14 and 17 June 1967, Moscow, under the chairmanship of Prof Telegdy Kovats (Hungary). Dr Y. K. Subrahmanyam, Shri T. S. Nagarajan and Dr Hari Bhagwan of ISI, attended the meeting on behalf of India. The subjects considered included methods of test for green coffee beans, determination of moisture content (basic reference method) and determination of moisture content (routine method), sampling of green coffee, and terminology of green coffee.

ISO/TC 34/SC 8/WG 3 Cocoa — (Sectt: France) — First meeting, 16 June 1967, Moscow, under the chairmanship of Shri M. Coste (France). Dr Y. K. Subrahmanyam and Dr Hari Bhagwan of ISI attended the meeting on behalf of India. The subjects considered included specification for cocoa beans, sampling of cocoa beans, test methods of cocoa beans, tests on the uniformity of size of ship of cocoa beans, and methods of determination of moisture content of cocoa beans.

ISO/TC 36 Cinematography — (Sectt: USA) — Draft ISO Recommendations received for comments related to luminance of screens for 35 mm projection of indoor theatres, direction of winding for motion-picture film perforated one edge, magnetic striping on 8 mm motion-picture film and cinematography picture areas for films and slides for television.

ISO/TC 37 Terminology (Principles and Co-ordination) — (Sectt: Austria) — The following draft ISO Recommendations were approved for submission to the ISO Council:

- a) ISO/DR 1189 International unification for concepts and terms
- b) ISO/DR 676 Naming principles

The draft ISO Recommendation No. 769 was approved by the ISO Council for publication as an ISO Recommendation, namely, ISO/R 639-1967 'Symbols for languages, countries and authorities'.

ISO/TC 38 Textiles — (Sectt: UK) — Draft ISO Recommendations received from the Central Secretariat of ISO related to designation of yarn structures, method of test for wool fibre length using a comb sorter, permeability method for measuring the mean diameter of wool fibres, tests for colour fastness of textiles (fifth series), determination of dimensional change of woven fabrics subjected to laundering near the boiling point and netting yarns — designation in the tex system.

ISO/TC 38/SC 4 Systematic Restriction in the Number of Yarn Counts — (Sectt: Netherlands) — Fifth meeting, 24 and 25 October 1967, Timperlay (UK). India was not represented. The Committee recommended to change its title from 'Systematic Restriction in the Number of Yarn Counts' to 'Implementation of Tex System'. Draft ISO Recommendation on intermediate steps leading to the complete introduction of the second stage of tex system was recommended to be withdrawn and replaced by a new document. The use of the submultiple, decitex was accepted and the Secretariat was asked to prepare the draft revisions of ISO/R 138 'Universal yarn count system' and ISO/R 271 'Implementation of the tex system for designating the size of textile fibres, yarns and similar structures' in which decitex will be given a similar status as that of millitex and kilotex. The Committee decided to refer the documents on twist coefficient in tex system to members for seeking their views.

ISO/TC 39 Machine Tools — (Sectt: France) — Ninth meeting, 11-14 October 1967, Turin (Italy). India was represented by Shri R. Yogeshwar of Hindustan Machine Tools Ltd, Bangalore. Draft ISO Recommendations relating to cotter slots; test conditions for parallel lathes, and test conditions for milling machines were adopted.

A new Subcommittee, ISO/TC 39/SC 1 was set up for oil hydraulic and pneumatic transmissions. Besides, it was also decided to set up two Working Groups — one to study the standardization of unit heads and the other to study the lubrication of machine tools.

ISO/TC 43 Acoustics — (Sectt: UK) — Tenth plenary meeting, 25 and 27 April 1968, Vedback (Denmark). The following ISO recommendations were issued since the ninth meeting of ISO/TC 43:

ISO/R 495-1966 General requirement for the preparation of test codes for measuring noise emitted by machines.

ISO/R 507-1966 Procedure for describing aircraft noise around an airport.

ISO/R 532-1966 Method for calculating loudness level.

A large number of draft secretariat proposals were circulated for comments on subjects, such as standard reference zero for the calibration of pure tone audiometers, test code for the measurement of the airborne noise emitted by rotating electrical machinery, measurement of reverberation time in auditoria, reference quantities for acoustical levels, proposal for noise assessment for hearing conservation purposes, proposal for noise assessment with respect to annoyance, and revision of ISO Recommendation No. 507 'Procedure for describing aircraft noise around an airport'. These documents will be considered at the forthcoming tenth plenary meeting of ISO/TC 43. At this meeting, the Secretariat's proposal for reorganization of ISO/TC 43 also will be considered.

ISO/TC 44 Welding — (Sectt: France) — Eight draft ISO Recommendations relating to dimensions of tubular electrode holders for spot welding machines, standardization of solid wires for gas-shielded metal arc welding of mild steel, dimensions and pitching of slots on platens for projection welding machines, radiographic image quality indicators, radiographic inspection of fusion welded butt joints for steel plates and pipes, definitions of radiographic terms, code of symbols for covered electrodes, dimensions of straight spot welding electrodes, were received for comments and approved on behalf of India.

ISO/TC 44/SC 6 Resistance Welding Equipment — (Sectt: UK) — Draft ISO Recommendations received for comments related to dimensions of tubular electrode holders for spot welding machines, dimensions and pitching of slots on platens for projection welding machines and dimensions of straight spot welding electrodes (for loads greater than 1 500 kgf).

ISO/TC 44/SC 7 Symbolic Representations of Welds on Drawings — (Sectt: France) — Meeting of the expert group appointed by the Subcommittee, 30-31 January 1968, Paris. India was not represented. Document on symbolic representation of welds on drawings was considered.

ISO/TC 44/SC 8 Gas Welding Equipment — (Sectt: Germany) — Meeting, 24-26 October 1967, Berlin. India was not represented. Second draft proposal for welding and cutting blow pipes, definitions, connections, marking, nominal range was considered.

ISO/TC 44/WG 2 Unification of Requirements in the Field of Metal Welding — (Sectt: Germany) — Second meeting, 5-8 February 1968, Berlin. India was not represented. The scope of the Working Group and the first draft proposal of quality safeguarding for welding work and the comments thereon were considered.

ISO/TC 45 Rubber — (Sectt: UK) — Fifteenth meeting, 23-30 September 1967, Milan, was held under the chairmanship of Shri R. C. Moakes. 141 delegates and observers from 16 countries as well as from the International Rubber Research and Development Board and

International Institute of Synthetic Rubber Products Inc participated. Dr D. Banerjee, Director, National Rubber Manufacturers Ltd, Calcutta (*Leader*); Shri Lalit Mohan Jamnadas, Managing Director, Cosmos India Rubber Works Pvt Ltd, Bombay (*Member*); Shri M. M. Patel, Technical Service Manager, Synthetic and Chemicals Ltd, Bombay (*Member*); Shri W. G. Desai, Technical Manager, Indian Rubber Regenerating Co Ltd, Bombay (*Member*); Shri K. M. Phillip, Chairman, Indian Rubber Regenerating Co Ltd, Bombay (*Observer*) represented India. 13 draft ISO Recommendations and 37 draft ISO proposals were approved. 21 documents were approved as draft ISO proposals.

ISO/TC 46 Documentation — (Sectt: Germany) — Eleventh meeting, 24-27 June 1967, Moscow. The documents to be issued as ISC Recommendations were the ' International code for the abbreviation of titles of periodicals ', ' Abbreviations of generic names in titles of periodicals ', ' Bibliographical references — essential and supplementary elements ', and the ' International system for the transliteration of Cyrillic characters '. The documents ' Title-leaf of a book ' and ' Index of a publication ' reached the final stage and were submitted as draft ISO Recommendations for consideration.

Library statistics, international standard for library directories; terminology of classification; book numbering; patents; and full and short references, their elements and terminology of documentation were taken up as the new subjects.

ISO/TC 46/SC 1 Documentary Reproduction — (Sectt: France) — One draft ISO Recommendation, namely, ' Microcopies legibility tests description and use of the ISO micromire for checking a reading apparatus ' was submitted for acceptance as an ISO Recommendation. Other subjects under consideration were glossary of documentary reproduction, 35 mm and 16 mm microfilms, spools and reels and A6 size transparent microfiche.

ISO/TC 46/SC 2 Conversion of Written Languages — (Sectt: USA) — The revision of ISO/R 9 ' International system for the transliteration of Cyrillic characters ' has already been put to vote for approval as an ISO Recommendation. Some of the subjects taken up for consideration were international system for the transliteration of Arabic characters (revision of ISO/R 233), conversion of yiddish, romanization of Japanese, etc.

ISO/TC 55 Sawn Timber — (Sectt: USSR) — Fifth plenary meeting, 14-19 June 1967, Moscow. The following draft ISO Recommendations were approved by the member-bodies and referred to the Council members for approval:

- i) ISO/TC 55 (Secretariat-29) 60E (Rev) Draft ISO Recommendation No. 874 ' Coniferous sawn timber. Sizes. Methods of measurement '.

- ii) ISO/TC 55 (Secretariat-31) 62E (Rev) Draft ISO Recommendation No. 875 ' Coniferous sawn timber. Sizes. Values of shrinkage and division '.

The following draft recommendations were referred to member-bodies for approval:

- i) ISO/TC 55 (Secretariat-49) 131 E/F/R (Rev) Draft ISO Recommendation No. 1256 ' Coniferous sawn timber. Defects. Classification '.
- ii) ISO/TC 55 (Secretariat-50) 132E/F/R (Rev) Draft ISO Recommendation No. 1257 ' Coniferous sawn timber. Defects. Measurements '.
- iii) ISO/TC 55 (Secretariat-51) 133 E/F/R (Rev) Draft ISO Recommendation No. 1258 ' Coniferous sawn timber. Defects. Terms and definitions '.
- iv) ISO/TC 55 (Secretariat-54) 136 E/F/R (Rev) Draft ISO Recommendation No. 1259 ' Coniferous sawn timber. Sizes. Terms and definitions '.

The following ISO proposals were circulated by the ISO/TC 55 Secretariat for consideration, and will be discussed in the next meeting:

- i) ISO/TC 55 (Secretariat-78) 162 ' Wood. Sampling method and general requirements for physical and mechanical tests (first ISO Draft proposal) '.
- ii) ISO/TC 55 (Secretariat-67) 151 ' Wood. Method for determination of moisture content in physical and mechanical tests (first ISO Draft proposal) '.
- iii) ISO/TC 55 (Secretariat-69) 153 ' Wood. Method of determination of conventional ultimate strength in local compression perpendicular to grain (first ISO Draft proposal) '.
- iv) ISO/TC 55 (Secretariat-66) 150 ' Wood. Method for determination of density in physical and mechanical tests (first ISO Draft proposal) '.
- v) ISO/TC 55 (Secretariat-68) 152 ' Wood. Method for determination of ultimate strength in static bending (first ISO Draft proposal) '.

ISO/TC 56 Mica — (Sectt: India) — Draft proposal on bridge mica received from USSR member-body was circulated to members of the Committee for consideration.

ISO/TC 59 Building Construction — (Sectt: France) — Fourth meeting 22-26 May 1967, Brussels.

The following documents were circulated to member-bodies for approval:

ISO/DR 1426 'Architecture and building drawings — Vocabulary'. India has approved with minor comments of editorial nature.

ISO/DR 1427 'Architectural and building drawings; Preservation of drawings — Scales'.

The following documents were circulated to the member-bodies for comments:

- i) 'Modular co-ordination, Vocabulary' — Doc. 187E.
- ii) ISO/TC 59 (Sectt-96) 190E 'Dimensions of swing doors' (first ISO Draft proposal) was referred to member-bodies for comments.

ISO/TC 61 Plastics — (Sectt : USA) — Seventeenth meeting, 9-14 October 1967, Utrecht, Netherlands. Nine working groups and various task groups held multiple sessions. 154 delegates from 18 countries participated. 7 draft ISO Recommendations and 21 draft ISO proposals were approved.

ISO/TC 65 Manganese Ores — (Sectt : USSR) — Sixth plenary meeting, 23-27 June 1967, Moscow. India was not represented. One draft ISO proposal on methods of sampling manganese ores, Part II Methods of sampling manganese ores not loaded in wagons was considered. Member-bodies of TC 65 were requested to furnish their views on a proposal made by USSR to set up a new Technical Committee on chromium ores or to include this subject in the programme of TC 65.

ISO/TC 67/WG 5 Casing, Tubing and Drill Pipes — (Sectt : France) — First meeting, 21 June 1967, Moscow and second meeting, 27-28 November 1967, Paris. India did not participate in these meetings. Draft ISO proposals on casing, tubings and drill pipes; casing and tubing of C-75 steel grade, and casing and tubing with high resistance were considered.

ISO/TC 69 Statistical Treatment of Observations — (Sectt : France) — Working Group ISO/TC 69/WG 1 Terminology and Symbols, held its first meeting at Paris on 9 and 10 November 1967. The following recommendation was approved for publication:

ISO/R 645-1967 'Statistical vocabulary and symbols'. First series of terms and symbols. Part I: Statistical Vocabulary. The Working Group also considered draft proposals relating to statistical vocabulary and symbols and second series of terms and symbols, 69 N 122.

ISO/TC 72 Textile Machinery and Accessories — (Sectt : Switzerland) — Sixth meeting, 24 and 28 April 1967, Paris. India was not represented. The Committee agreed to the following programme of work

of the various subcommittees in order of priority indicated below:

TC/72/SC 1 Spinning Preparatory, Spinning and Doubling (Twisting) Machinery:

Warp tubes 1 : 38 — Lengths over 400 mm
 Metal travellers for spinning and doubling
 Revision of ISO/R 95 to 97 — Rings for spinning and doubling
 Revision of ISO/R 94 — Spindle gauges
 Drafting systems — Terminology
 Spinning machinery — Terminology
 Condenser bobbins

TC/72/SC 2 Winding and Weaving Preparatory Machinery:

Paper cones for yarn winding, taper $3^{\circ}30'$
 Preparation for weaving; terms and definitions
 Weaving preparatory machinery; terms and definitions
 Wound packages — Terminology
 Packages without former terminology
 Cop wound yarns, basic terminology
 Cylindrical tubes for man-made fibre yarns
 Amendment of ISO/R 326 — Wood cones for cross winding, nominal half angle of cone $5^{\circ}57'$
 Working width of sectional warping machines
 Horizontal and vertical pitch of warping creels

TC/72/SC 3 Weaving Machinery:

Lingoes for healds for jacquard weaving
 Twin wire healds with flat-oval inset mails
 Serrated bars
 Pirns for box loaders and for winding at the loom
 Handing of shuttles
 (All these subjects to be dealt with at the next meeting of WG C)

TC/72/SC 4 Dyeing and Finishing Machinery:

Nomenclature of dyeing and finishing machinery
 Vocabulary of dyeing and finishing machinery

Draft ISO Recommendations on flyer bobbins for spindle diameters of 25 mm or more and lifts of 300 mm and over and weft pirns for box loaders for automatic looms were circulated by the ISO Central Secretariat to its member-bodies for approval as ISO Recommendations.

The following draft ISO Recommendations were also received for comments:

- a) Cylindrical tubes for draw-stretch-twisters;
- b) Cylindrical sliver cans. Height over 1 000 mm;
- c) Cylindrical sliver cans on castors;
- d) Sectional beams for warp knitting machines; terminology, dimensions;
- e) Definition of right and left sides of dyeing and finishing machines;
- f) Nominal working widths of dyeing and finishing equipment;
- g) Classification of dyeing and finishing machinery; and
- h) Beams for dyeing fibres and yarn.

ISO/TC 72/SC 1 Spinning Preparatory, Spinning and Doubling (Twisting) Machinery — (Sectt: Switzerland) — Sixth meeting, 24 April 1967, Paris. India was not represented. The Committee agreed to submit the following documents, modified in the light of the decisions taken in the meeting, to TC 72 for postal ballot:

- a) Cylindrical tubes for draw-stretch-twisters;
- b) Cylindrical sliver cans, heights over 1 000 mm;
- c) Cylindrical sliver cans on castors; and
- d) Flyer bobbins for spindle diameters of 25 mm or more and lifts of 300 mm and over.

It was also agreed that the document on metal travellers for spinning and doubling machines, modified in the light of the comments received, be circulated to the traveller manufacturers before submitting it to SC 1.

ISO/TC 72/SC 2 Winding and Weaving Preparatory Machinery — (Sectt: Germany) — Fifth meeting, 25 and 26 April 1967, Paris. India was not represented. The Committee agreed to submit the following documents, modified in the light of the decisions taken, for postal ballot to the Subcommittee:

- a) Packages for yarns and intermediate products, basic terms;
- b) Wound yarns, basic terms; and
- c) Formers, types.

It was also agreed that these documents, after approval by the Subcommittee, be submitted to TC 72 for circulation as draft ISO Recommendations.

ISO/TC 72/SC 3 Weaving Machinery — (Sectt: UK) — Sixth meeting, 27 April 1967, Paris. India was not represented. The following documents were considered at the meeting:

- a) Healds for automatic drawing-in machines,

- b) Closed-end drop wire for drawing-in machines,
- c) Serrated bars,
- d) Terminology for shuttles,
- e) Lingoos, and
- f) Numbering of heald frames.

ISO/TC 72/WG E Sectional Beams for Warp Knitting Machines — (Sectt: Germany) — Fourth meeting, 26 April 1967, Paris. India was not represented. The Committee agreed to submit the document 'Sectional beams for warp knitting machines, terminology, dimensions', prepared in the light of the decisions taken, to TC/72 for postal ballot. In respect of ISO Recommendation on Sectional beams, the Committee agreed that a new clause relating to dynamic balancing be added.

ISO/TC 74 Hydraulic Binders — (Sectt: Belgium) — The following ISO Draft Recommendations were received for acceptance by member-bodies and are now under print:

- i) ISO/DR 771 'Definitions and terminology of cements'.
- ii) ISO/DR 772 'Method of testing strength of cements compressive and flexural strengths of plastic mortar (Rilem-Cembureau method)'.
- iii) ISO/DR 737 'Chemical analysis of cement. Main constituents of portland cement'.
- iv) ISO/DR 774 'Chemical analysis of cement. Minor constituents of portland cement'.
- v) ISO/DR 775 'Chemical analysis of cement. Determination of sulphur as sulphide'.

ISO/TC 79 Light Metals and Their Alloys — (Sectt: France) — Nine Draft ISO Recommendations relating to chemical analysis of aluminium and aluminium alloys, photometric determination of manganese, tensile testing of light metal and light metal alloy tubes and wires, drift expanding test on light metal and light metal alloy tubes, simple bend test for light metal and light metal alloy sheet and strip of thickness between 0.2 mm and 7 mm, flattening test of aluminium and aluminium alloy tubes, simple torsion test and wrapping test for aluminium and aluminium alloy wire and verification of Rockwell superficial N and T scale hardness testing machines were received for comments. Out of these eight have been approved on behalf of India and one is in circulation to the concerned committee.

ISO/TC 81 Common Names for Pesticides — (Sectt: UK) — Seventh meeting, 26-29 September 1967, London. India was represented by Shri G. J. Hedley of Tata Fison Industries Ltd, Bombay.

ISO/TC 85 Nuclear Energy — (Sectt: USA) — Fourth meeting, 10 November 1967, Geneva (Switzerland). India was not represented. The Committee reviewed the work done by various subcommittees since its last meeting held in May 1960. The plenary session of the Committee was followed by the meetings of various subcommittees. Subcommittee 3 'Reactor Safety' decided to set up 3 Study Groups to study the following:

- a) Future work in the field of steel containment structures and to recommend particular area which appear likely to enable profitable study and the production of ISO Recommendations;
- b) Nature and scope of standardization work in the area of prestressed concrete pressure vessels and prestressed containment structures; and
- c) The possibility of collecting and statistically analyzing information concerning faults relating to reactors and their equipment.

ISO/TC 87 Cork — (Sectt: Portugal) — The Draft ISO Recommendation No. 733 (revised text) 'Cork. Glossary' was submitted to the ISO Council members for approval as an ISO Recommendation and the ISO has decided to accept this as an ISO Recommendation for publication under the reference ISO/R 633-1967 'Cork. Glossary.'

ISO/TC 89 Boards Made from Wood of Other Lignocellulosic Fibrous Materials — (Sectt: Germany) — Fourth plenary meeting, 20-24 October 1967, Bucharest. Revised text of six draft ISO Recommendations for 'Fibre building boards', four draft ISO Recommendations for 'Particle boards' and five draft ISO Proposals for 'Plywood' were adopted unanimously.

ISO/TC 89/SC 1 Fibre Building Boards — (Sectt: Germany) — Draft ISO Recommendations for 'Fibre building Boards — definition, classification, determination of dimensions of test pieces, determination of moisture content, determination of bending strength, determination of water absorption and swelling in thickness after total immersion in water, and determination of density' were adopted by ISO/TC 89 at its fourth plenary meeting held in Bucharest.

ISO/TC 89/SC 2 Particle Boards — (Sectt: Germany) — Draft ISO Recommendations for 'Particle boards—definition, classification, determination of dimensions of test pieces, determination of density, and determination of moisture content' were adopted by ISO/TC 89 at its meeting in Bucharest.

ISO/TC 89/SC 3 Plywood — (Sectt: Germany) — Fourth meeting, 17-19 October 1967, Bucharest. ISO Draft Proposals on 'Plywood—classification, terminology, determination of dimensions of panels, general requirements and dimensions and tolerances' were adopted at ISO/TC 89 meeting, for transmission of the documents to the ISO Central Secretariat.

In addition, five draft ISO Proposals were adopted for submitting to ISO Central Secretariat for voting by correspondence of the 'P' members of the ISO/TC 89 and of the ISO member-bodies.

ISO/TC 90 Apparatus for Testing Milk and Milk Products — (Sectt: Germany) — According to the decision of PLACO, this Committee was disbanded and the work would be carried on within ISO/TC 34/SC 5 'Milk and milk products'.

ISO/TC 92 Fire Test on Building Materials and Structures — (Sectt: UK) — Fifth plenary meeting, 9 November 1967, Hague. The following two new working groups were formed:

- i) ISO/TC 92/WG 7 To discuss problems of reaction to fire and fire resistance.
- ii) ISO/TC 92/WG 8 To review the possible need for revising ISO Draft Recommendation No. 1060 'Fire resistance tests of structures'.

Draft ISO Recommendation No. 1060 'Fire resistance test of structures' was received from the ISO Central Secretariat for our approval and was duly approved.

ISO/TC 99 Semi-Manufacturers of Timber — (Sectt: Geneva) Third meeting, 25-26 October 1967, Bucharest. The following Draft Recommendations were circulated to ISO member-bodies for their approval for printing:

- i) Draft ISO Recommendation No. 756 (revised text) 'Mosaic parquet panels'.
- ii) Draft ISO Recommendation No. 1324 'Classification of parquet strips of solid oak'.

ISO/TC 96 Cranes, Lifting Appliances and Related Excavator Equipment — (Sectt: UK) — Second plenary meeting, 20-22 June 1967, Moscow. The scope of the Committee was clearly defined by changing the title of the Committee to 'Cranes, Lifting Appliances and Related Excavator Equipment'.

As a recommendation of the Working Group 1, the committee established a new programme of work giving priority to important subjects like terminology, classification of equipment, range of capacity and selection of ropes for cranes, stability requirements, testing procedures and general design principles.

The Committee set up the following three new Working Groups:

- WG 2 — Terminology (Sectt: USSR),
- WG 3 — Selection of Ropes (Sectt: UK), and
- WG 4 — Testing Procedures (Sectt: USSR),

Working Group 1 will under a feasibility study into the question of preparing a document on general design principles.

ISO/TC 102 Iron Ores — (Sectt: Japan) — Two draft ISO proposals on sampling and preparation of samples of iron ores were received for comments. These draft proposals were not approved by India.

ISO/TC 102/SC 1 Sampling of Iron Ores — (Sectt: Japan) — Fourth meeting, 16-20 June 1967, Moscow. India was not represented. One draft ISO proposal on moisture determination of iron ores was considered in detail. Consideration of two other draft ISO proposals on method for evaluation of quality variation of iron ores and experimental methods for check sampling of iron ores was postponed to the next meeting due to late circulation of these documents to the member countries.

ISO/TC 102/WG 1 Methods of Physical Tests of Iron Ores — (Sectt: USA) — Second draft ISO proposals relating to methods of tumbler test for pallets, sinters and sized iron ores was received for comments.

ISO/TC 106 Dentistry — (Sectt: UK) — Third plenary meeting, 6-7 July 1967, Paris. Also, the first joint meeting of ISO/TC 106 with the Federation Dentaire Internationale, FDI Commission on Dental Materials, Instruments, Equipment and Therapeutics was held on 5 July 1967. Col N. N. Bery, Chairman of Dental Equipment Sectional Committee, CPDC 15 and Dental Instruments Sectional Committee, CPDC 21, who was in Paris at that time in connection with meetings of International Dental Congress, attended the joint meeting on 5 July 1967 and the inaugural session of ISO/TC 106 on 6 July 1967.

It was decided to prepare documents on elastomeric impression materials and acrylic resin teeth. The Committee also agreed to circulate documents on terminology to member countries.

ISO/TC 107 Metallic and other Non-organic Coatings — (Sectt: Italy) — Second plenary meeting, 10-12 April 1967, Budapest. Eight draft ISO proposals for measurement of metal and oxide coating thicknesses by microscopic examination of cross sections; electroplated coatings of nickel plus chromium, of copper-nickel-chromium on steel and of nickel; guiding principles for protection against corrosion by hot-dip galvanizing; determination of the mass per unit ore of hot-dip galvanized coatings on ferrous materials by chemical dissolution of the coating-gravimetric method; requirements for hot-dip galvanized coating on fabricated ferrous products, and a method for the evaluation of the results of accelerated corrosion tests on electrodeposited coatings cathodic to the basis metal, were considered.

ISO/TC 107/WG 1 Terminology — (Sectt: Switzerland) — Third meeting, 14-15 March 1968, Torino. India was not represented. Two draft ISO proposals for general classification of terms relating to surface

treatment and metallic coatings and glossary of terms relating to electroplating were considered.

ISO/TC 107/WG 2 Methods of Inspection and Co-ordination of Test Methods — (Sectt: Italy) — Third meeting, 11-13 March 1968, Turin (Italy). India was not represented. Four draft ISO proposals relating to definition of minimum and average thickness of metallic and other non-organic coatings, measurement of the thickness of metallic coatings by the anodic dissolution method, measurement of thicknesses by instruments based on the magnetic principles, and measurement of the thickness of non-conductive layers of metal coatings by the Eddy current method, were considered.

ISO/TC 107/WG 3 Electrodeposited Coatings — (Sectt: UK) — Meeting, 13-15 November 1967, London (UK). India was not represented. Four draft ISO proposals relating to electroplated coatings of zinc on iron and steel, cadmium on iron and steel, tin, and 65/35 tin-nickel alloy, were considered.

ISO/TC 113 Measurement of Liquid Flow in Open Channels — (Sectt: India) — ISO Recommendation—ISO/R 555-1966 'Liquid flow measurement in open channels dilution methods for measurement of steady flow: Part I Constant rate of injection method' was printed. The following draft ISO Recommendations were submitted to the Council for acceptance and approval for pringing:

- a) ISO/DR 948 'Liquid flow measurement in open channels by velocity area methods'.
- b) ISO/DR 954 'Vocabulary of terms and symbols used in connection with the measurement of liquid flow with a free surface'.

Further, draft ISO Recommendation No. 1140 'Liquid flow measurement in open channels by slope area method' was approved by the requisite majority of the member-bodies and was in the process of submission to the Council. Draft ISO Recommendation No. 1438 'liquid flow measurement in open channels using thin plate weirs and venturi flumes' was submitted to the central Secretariat for circulation to the member-bodies. Draft ISO Recommendations 995 and 1071 on 'Instructions for collection of data and the stage discharge relation', respectively, were approved by a majority of the member-bodies, and were being processed further.

ISO/TC 117 Methods of Testing Industrial Fans — (Sectt: UK) — The following Subcommittee and Working Groups of ISO/TC 117 held their meetings on the dates mentioned against each:

	<i>Date</i>	<i>Place</i>
ISO/TC 117/SC 1 Fan Performance Testing	24 April 1967	London

	<i>Date</i>	<i>Place</i>
ISO/TC 117/SC 1/WG 1 Rules for Fan Performance Testing	25-26 April 1967 21-24 Nov 1967	London Paris
ISO/TC 117/SC 1/WG 2 Methods for Fan Performance Testing with Standardized Airways	27-28 April 1967	London
ISO/TC 117/SC 1/WG 3 Site Testing of Fans	12-14 June 1967	Bruzelles

India did not attend these meetings.

Draft ISO proposals relating to aeraulic characteristics of fans and their determination, matters of principle and recommendations about aerodynamic performance test methods in a test stand of the industrial encased fans, adaptation of a fan and a fan performance test circuit, testing of fans, and acceptance and performance tests on fans were discussed at these meetings.

ISO/TC 122 Packaging — (Sectt: USA) —

ISO/TC 122/SC 2 Freight Containers — Fifth plenary meeting, 22, 23, 24 and 26 June 1967, Moscow. The most important task of the Committee was to reach international agreement on the design of corner fittings to be specified for series 1 containers and the Committee unanimously adopted the proposal of one of its working groups on the subject. The Committee also unanimously adopted the draft proposals covering ' Specification in testing series 1 and series 2 containers ' (the dimensions and rating of which have already been specified in DR-804 and have been ratified by member countries). The draft ISO Recommendation on this subject was decided to be submitted for the approval of all ISO member-bodies. Further, a working group was set up to deal specifically with small containers (series 3) and with a rating of 5 ton or less.

In view of the special circumstances raised by the Secretariat of ISO/TC 122 (USA) and bearing in mind the present practices requiring successive processing of draft recommendations through Subcommittees and Technical Committees, the Council by a resolution decided to re-establish ISO/TC 104 ' Freight containers '.

ISO/TC 122/SC 3 Methods of Test and Quality Requirement for Packaging — (Sectt: UK) — First meeting, 28-30 November 1967, London. It was agreed that the Subcommittee would concern itself with performance requirements and tests for field transport packages.

2. INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

2.1 As on 31 March 1968, there were 64 IEC technical committees, 82 subcommittees, 4 expert committees and 124 working groups of the

International Electrotechnical Commission (IEC). India participated in the work of almost all technical committees and subcommittees and a few working groups. In addition, India held the Secretariat of and provided chairmanship for the technical committee on electric fans.

2.2 A brief report of the working of various IEC committees, which met during the period under review, is given in the following paragraphs.

ANNUAL GROUP MEETINGS AT PRAGUE (CZECHOSLOVAKIA)

About 42 Technical Committees, Subcommittees, Working Groups and Advisory Committees, and the Committee of Action met at Prague (Czechoslovakia) from 11-25 July 1967.

Dr A. N. Ghosh, Director General, ISI, represented India at these meetings.

Council (20 July 1967) — The General Secretary presented the Central Office Report for 1966 which was cogent and precise. As in the past meetings, the need for increasing the finances was discussed at great length when the Treasurer explained the problems facing the IEC and the need for increasing the subscriptions.

The question of liaison with ISO was explained by Prof R. Radulet, President of IEC, Mr H. A. R. Binney, Vice-President of ISO, and Mr C. H. Sharpston, Secretary General of ISO.

Mr Pierre Ailleret, President of French National Committee was unanimously elected as President of IEC for a period of three years 1967-1970; while Mr J. O. Knowles was re-elected as the Treasurer for the same period.

Committee of Action (13 and 25 July 1967) — The Committee of Action considered the reports received from various committees which had met in Israel in 1966. A point of special interest discussed at the meeting was whether it would be possible to standardize conduits. It was finally agreed that TC 23 Electrical Accessories should take up this work. Another subject of special interest to India was the question of taking up work on wiring rules. A subcommittee first considered this question in detail, discussing the preliminary document prepared by UK, and then the Committee of Action set up a new Technical Committee, namely, ' Electrical Installations of Buildings ', for preparing recommendations on this subject.

The Committee of Action also considered a request from ISO/TC 95 concerning electrical requirements of office machines.

Concerning the British proposal to start work on integrated circuits, it was decided that TC 47 Semiconductor Devices should be invited to examine this matter at its next meeting and that ACET also should give the matter a further thought before making recommendations to the Committee of Action for a final decision in 1968.

TC 8 Standard Voltages, Current Ratings and Frequencies — (Sectt: Italy) — The Committee discussed an important point concerning the unification of 220/380 and 240/415 V, and decided that it may be considered again by the Working Group to see whether a reference voltage for utilization equipment could be found in the range of voltages above 1 000 V. It was also agreed to have a separate table of nominal voltages and highest voltage of equipment for industrial applications included in IEC Pub 38 'Standard system voltages'.

TC 12 Radio-Communication — (Sectt: Netherlands) — The Committee received reports of its three Subcommittees, namely, SC 12A, 12B and 12C. A large number of documents recommended by them were approved for circulation under the six-months' rule. In addition, the Committee also considered a document on symbols for information on terminal devices and controls for radio-communication equipment and electronic devices employing similar techniques.

SC 12A Radio Receiving Equipment — (Sectt: Netherlands) — In addition to receiving reports of various Working Groups, the Subcommittee recommended the following for circulation under the six-months' rule:

- a) Methods of measurement of oscillator voltage in the frequency range 30 Mc/s to 1 000 Mc/s at the aerial terminals of a radio receiver (to be issued as supplement to IEC Pub 106); and
- b) Methods of measurement on radio receivers for various classes of emission for modifications and additions to be applied to radio-frequency measurements on receivers for amplitude-modulation transmissions, of the full-carrier double-side band type.

The Subcommittee discussed various documents relating to measurement of radio receiving equipment, such as measurement of MF stereo receivers, measurement of time-base radiations, immunity of television receivers to the entry of signals and interference by paths other than the aerial, professional FM receivers.

The Committee also constituted a new Working Group SSMP for radio and television receivers to deal with the standard measuring methods for performance of radio receivers.

SC 12B Safety — (Sectt: Netherlands) — The documents relating to (a) Mechanical strength of electronic equipment, (b) Requirements for splash-proof equipment, (c) Permissible change in resistance of resistors, (d) Requirements for professional radio receivers, (e) Test circuit and switch for surges, (f) Requirements and tests for mains cords and for external cords with live conductors, (g) Monitor for ionizing radiation, (h) Requirements for battery eliminators, (j) Requirements and tests for safety capacitors, and (k) Requirements for apparatus with more than one supply possibility, were recommended for circulation under the six-months' rule.

Revised Secretariat documents on a number of subjects, such as implosion test methods, moisture, treatment, wood as insulating material, test methods for insulating layers, mechanical stability of equipment, additional requirements of printed wiring and switches of microgap construction used as mains switches, will be issued for further consideration.

A Working Group was set up for the preparation of test methods for capacitors, short-circuiting of which may cause fire hazard.

SC 12C Radio Transmitting Equipment — (Sectt: Netherlands) — The following documents were recommended for circulation under the six-months' rule: (a) Methods of measurements for radio transmitters — Part 7: Wanted and unwanted modulation of radio transmitters for various classes of emission — Section One: Modulated emissions; (b) Methods of measurements for radio transmitters — Part 7: Wanted and unwanted modulation of radio transmitters for various classes of emission — Section Two: Characteristics of transmitters particular to modulation; (c) Methods of measurements for radio transmitters — Part 7: Wanted and unwanted modulation of radio transmitters for various classes of emission — Section Three: Deterioration of the carrier caused by modulation; and (d) Methods of measurements for radio transmitters — Part 7: Wanted and unwanted modulation of radio transmitters for various classes of emission — Section Four: Unwanted modulation, including hum and noise modulation.

Documents relating to (a) measurement of amplitude/frequency characteristics and non-linearity distortion of transmitters for radio-telephony and sound broadcasting, and (b) measurements particular to transmitters and transposers for monochrome and colour television will be circulated as Secretariat documents.

TC 13 Measuring Instruments — (Sectt: Hungary) — The Committee received and approved the report from its Subcommittees and Working Groups; and recommended a large number of documents for circulation under the six-months' rule. In addition, second draft on electro-technical vocabulary on scientific and industrial measuring instruments in relation to the definitions proposed by OIML was considered.

The Committee discussed the reorganization of SC 13C Electronic Measuring Instruments and decided unanimously to propose to the Committee of Action the formation of a new Technical Committee for electronic measuring equipment, such as oscillators, generators and microwave apparatus. The Committee also recommended that the present SC 13C should be maintained with the restricted scope to deal with the electronic measuring instruments mainly intended to replace electrical measurements, such as electronic voltmeters and for other electronics covering the need for SC 13A Integrating Meters and SC 13B Indicating Instruments.

SC 13A Integrating Meters — (Sectt: Hungary) — Document relating to telemetering for consumption and demand was recommended

for circulation under the six-months' rule, the document on symbols for meters for consideration was agreed to be revised at the next meeting, and document on alternating-current watt-hour meters was postponed for consideration at the next meeting. It was also decided to ascertain the interest of National Committees on statistical control of meters and a Working Group was appointed in drawing up the outline for this work.

SC 13B Indicating Instruments — (Sectt: Hungary) — Document relating to indirect acting instruments was recommended for circulation under the six-months' rule and the German proposal relating to precision to resistors was agreed to be circulated as Secretariat document. The Subcommittee also considered the Swedish proposal to standardize dimensions for switchboard and panel instruments and decided to re-examine this subject after collecting necessary information on the work being done in ISO.

SC 13C Electronic Measuring Instruments — (Sectt: Hungary) — The Committee considered the reports received from various Working Groups and recommended for issue under the six-months' rule the documents on cathode-ray oscilloscopes and specification for signal generators.

SC 17C High Voltage Enclosed Switchgear and Controlgear (Sectt: Germany) — The documents on: (a) Co-ordination of rated voltages, rated short-time currents and rated normal currents for high voltage meter enclosed switchgear and controlgear; (b) Requirements and test methods for shutters, partitions and inspection windows of insulating material; and (c) Weatherproofing test, were discussed at this meeting. It was decided that these drafts, which supplemented the main document on high-voltage metal enclosed switchgear and controlgear, would be circulated for approval under the six-months' rule.

TC 25 Letter Symbols and Signs — (Sectt: USA) — The documents on: (a) Letter symbols for telecommunications and electronics, (b) Letter symbols for 2-part networks, (c) Rules for subscripts, (d) Recommended subscripts, and (e) Additional letter symbols to Pub 27 'Letter symbols' to be used in electrical technology were recommended for issue under the six-months' rule.

SC 31G Intrinsically Safe Apparatus — (Sectt: UK) — The Committee discussed the proposal of the German National Committee regarding the layout and test for intrinsically safe electrical equipment, in particular the test apparatus. It was decided to issue revised draft under the six-months' rule. A working group was appointed to go into the question of test methods as also the definitions.

TC 32 Fuses — (Sectt: France) — Apart from receiving the reports of the Subcommittees and Working Groups, the Committee discussed the type designations of fuse-links for miniature and low-voltage fuses and concluded that it was not possible to reach an agreement concerning either

the use of symbols or the possibility of achieving common symbols for all Subcommittees and that the use of symbols to indicate the general characteristics of fuse-links should remain within the scope of the individual Subcommittees for the time being.

SC 32A High Voltage Fuses — (Sectt: France) — The Committee decided to recommend the draft on high voltage expulsion and similar fuses for circulation under the six-months' rule.

SC 32B Low Voltage Fuses — (Sectt: Germany) — A draft of the questionnaire to be put to the National Committees, to get a larger basis for the future discussion on 'non-interchangeability', was discussed. The Subcommittee also discussed the problems involved in standardizing the characteristics and dimensions of fuses, and it was felt that domestic fuses and industrial fuses up to 100 A capacity should be studied separately, and two working groups were formed with the Secretariat of SC 32B as the Secretariat of both the Working Groups.

SC 32C Miniature Fuses — (Sectt: Netherlands) — The Subcommittee discussed the standard sheets on time-lag low breaking capacity and quick-acting low breaking capacity fuses. The revision of IEC Publication 127 ' Cartridge fuse links for miniature fuses ', was taken up during this meeting and it was decided to prepare a final Secretariat document.

TC 33 Power Capacitors — (Sectt: Netherlands) — The Committee discussed in detail the document on coupling capacitors and capacitor dividers and recommended it for approval under six-months' rule.

TC 36 Insulators — (Sectt: Italy) — Documents relating to: (a) Characteristics of string insulators units of cap and pin type; and (b) Locking devices for ball and socket coupling of string insulators, were approved for circulation under the six-months' rule and the two-months procedure, respectively. The Committee also received and approved the reports of its Subcommittees.

SC 36C Insulators for Sub-stations — (Sectt: Sweden) — The Subcommittee included the following subjects in its future programme of work:

- a) Insulators for HVDC,
- b) Insulators to withstand switching surges,
- c) Pollution tests,
- d) Radio interference tests,
- e) Insulators of organic materials, and
- f) Testing of small, hollow porcelains.

A Working Group was set up for the subjects (a) to (d).

TC 40 Capacitors and Resistors for Electronic Equipment — (Sectt: Netherlands) — The Committee recommended for circulation under the six-months' rule, the documents relating to: (a) Specification for air dielectric rotary variable capacitors; (b) Guide to the use of testing of variable capacitors; (c) Terms and methods of test for fixed capacitors; (d) Dimensions for ceramic dielectric capacitors of the plate type; (e) Case sizes of aluminium electrolyte capacitors; (f) Specification for NTC thermistors; (g) Fixed wire-wound resistors, Type 2 with relatively small temperature coefficients and close tolerances; and (h) Terms and methods of test for potentiometers.

The Committee also considered the report of SC 40A and discussed a large number of documents relating to resistors and capacitors, revised drafts of which will be considered at the next meeting.

SC 40A Variable Capacitors — (Sectt: UK) — The Subcommittee recommended the specification for air dielectric variable capacitors, and guide on the use of testing of variable capacitors for circulation under the six-months' rule. After discussing the difficulties involved in the preparation of article sheets, it was agreed that a Secretariat questionnaire should be circulated. An *ad hoc* Working Group was constituted to discuss the specification of solid dielectric variable capacitors having interleaving rotating vanes. It was agreed to request the USA National Committee to make a detailed proposal for ceramic rotary trimmers.

TC 44 Electrical Equipment of Machine Tools — (Sectt: Switzerland) — The drafts on: (a) Referencing letters for diagrams, and (b) Illuminated push-buttons were discussed and recommended for circulation under the six-months' rule. It was further decided to prepare a Secretariat document on other symbols for submission to TC 3 Graphical Symbols. Three Working Groups were formed: WG 1 (Sectt: Switzerland) to continue the work on diagrams and other appendices for IEC Publication 204; WG 2 (Sectt: France) to continue the work on current carrying capacity of conductors for machine tools; and WG 3 (Sectt: Germany) to define the scope of TC 44 to cover other machines for which IEC Pub 204-1, 204-2 and 204-3 apply as they stand or with only minor modifications.

SC 48C Switches (Sectt: UK) — The Committee discussed the document on classification of switches and decided to redraft this document. The Committee also recommended the document on push-button switches for circulation under six-months' rule.

TC 49 Piezo-Electric Crystals and Associated Devices — (Sectt: USSR) — Documents relating to: (a) Small crystal holders; (b) Testing for mechanical stress and cracks in glass crystal holders; (c) Transmission test circuit method for measurement of frequency and equivalent resistance of crystal units, mechanical, climatic and storage tests for crystal filters; and (d) Terms and definitions for piezo-electric filters, were approved for circulation under six-months' rule. Documents on few other types of holders,

glass holders, guide for transmission tests for measurement of frequency and equivalent crystal units, sealing test, test method for piezo-electric filters, guide to the piezo-electric were approved for circulation as Secretariat documents for further consideration.

TC 56 Reliability of Electronic Components and Equipment — (Sectt: USA) — The Committee recommended the document on time grid for reliability tests and data acquisition for circulation under the six-months' rule. The draft on guide for the collection of reliability data from field performance of electronic equipment was agreed to be circulated to the various National Committees with a request for approval for its circulation under the six-months' rule without waiting for its being reconsidered at a meeting.

The Committee also agreed to issue an amendment on managerial aspect of reliability under six-months' rule subject to the condition that it should be issued as IEC report only.

TC 57 Line Traps — (Sectt: Germany) — The Committee approved a draft recommendation for line traps for circulation under the six-months' rule.

TC 59 Performance of Household Electrical Appliances (Sectt: France) — A new Subcommittee 59G for small motor operated kitchen appliances was set up. In addition, the Committee received and considered the reports of the Subcommittees 59A, 59B, 59C, 59D, 59E and 59F.

SC 59A Electric Dishwashers — (Sectt: USA) — The Subcommittee discussed about the soiling procedure, evaluation of washed dishes and items and dimensions of place settings to be incorporated in the draft recommendations for measurement of performance characteristics of electric dishwashers.

SC 59B Cooking Appliances — (Sectt: Germany) — Various proposals on measuring methods of a few characteristics, such as heat distribution, grilling surface, energy consumption and surface protection, to be included in the draft on test methods for the performance of household electrical ranges and ovens, were discussed. The original draft was also separately discussed by the Subcommittee and the Secretariat would prepare the final draft.

SC 59E Ironing and Pressing Appliances — (Sectt: Japan) — The Subcommittee recommended for circulation the draft on method of measuring characteristics of domestic electric irons under the six-months' rule.

SC 59F Floor Treatment Appliances — (Sectt: Sweden) — The Subcommittee discussed the documents on performance testing of (a) domestic vacuum cleaner, and (b) floor polishers. The problem of standardization of the test carpet for vacuum cleaner was discussed at length and it

was felt that no international standardization was possible in this respect. It was decided that each country should choose its own test carpet.

MEETINGS AT OTHER PLACES

TC 2 Rotating Machinery — (Sectt: UK) — 29 September 1967, Baden-Baden (Germany). Shri Y. S. Venkateswaran, Director (Electrotechnical), ISI, attended the meeting as an Indian delegate. The Committee received the report of several preparatory Working Groups entrusted with work on measurement of temperature-rise by the method of superposition, terms and definitions, temperature-rises, noise limits, terminals and acceptable limits of balance. In addition, reports of Subcommittees were also received. The document on protection of rotating electrical machinery against environmental conditions was briefly discussed in relation to the directive of the Committee of Action to keep in mind IEC Pub 68. It was agreed that SC 2H should examine this document again, taking into account appropriate part of IEC Pub 68. Another important point discussed was the UK proposal to take up work on insulation systems for rotating machines. At the suggestion of Indian delegate it was agreed to await the recommendations of Insulation Systems TC 63 but, in the meanwhile, requirements of rotating machinery could be collected for passing on to that Committee. The suggestion from Yugoslavia to take up work on classification of methods of construction of rotating machines was accepted and the subject was allotted to SC 2H.

SC 2B Dimensions of Rotating Electrical Machines — (Sectt: Denmark) — 27-29 September 1967, Baden-Baden (Germany). Shri Y. S. Venkateswaran, Director (Electrotechnical), ISI, represented India. Documents on dimensions of large foot-mounted machines, output ratings of electric machines and the draft revision of both IEC Publications 72-1 and 72-2 were recommended for issue under the six-months' rule.

SC 2H Degrees of Protection of Enclosures—Methods of Cooling — (Sectt: France) — 25-27 September 1967, Baden-Baden (Germany). Document on methods of cooling of rotating machinery was recommended for circulation under the six-months' rule.

SC 10A Insulating Hydrocarbon Oils — (Sectt: Belgium) — 17-18 January 1967, London. Draft specification for insulating oils for transformers and switches was recommended for circulation under the six-months' rule. An item of special interest to all countries was the question of power factor (\tan) on which no agreement could be reached and which has, therefore, been left out of this specification for further investigation.

SC 10C Gaseous Insulants — (Sectt: France) — 30-31 October 1967, Bucharest. Specification for sulphur hexafluoride was discussed. On the basis of the decisions taken, a new Secretariat document would be issued to the National Committees.

TC 14 Power Transformers — (Sectt: UK) — 11-12 October 1967, Zagreb. Document for loading guide for oil-immersed transformers was approved for circulation under the six-months' rule. In addition, document on methods of measuring magnetic, electrical and mechanical properties of magnetic sheets, recommended by SC 14A Magnetic Steel, was also approved for issue under the six-months' rule. A preparatory Working Group was set up to revise the Chapter on transformers of the International Electrotechnical Vocabulary.

TC 15 Insulating Materials — (Sectt: Italy) — 11, 15, 20 September 1967, Warsaw. The Committee received and approved reports of the Subcommittees and also discussed about the future work. In view of the formation of a separate Technical Committee 63 Insulation Systems, the work of this Committee would be only concerning insulating materials. At the request of SC 15B and SC 15C, it was agreed to reduce the number of standard atmospheres to one, namely, 23°C and 50 percent R.H. The possibility of the formation of a new Subcommittee SC 15D to handle the work on thermal indices of insulating materials which, in effect, would be revision of IEC Publication 85 was also discussed.

SC 15B Endurance Tests — (Sectt: USA) — 11-20 September 1967, Warsaw. Two documents on thermal evaluation of varnish and bond test were approved for issue under the six-months' rule. As a result of discussion on many other subjects including thermal index, radiation index, discharge index, and internal discharge flexible insulating materials, it was decided to prepare the revised Secretariat documents.

TC 17 Switchgear and Controlgear — (Sectt: Sweden) — 20 and 28 January 1967, Paris. The Committee received and considered the reports of Subcommittees 17A, 17B and 17C, and recommended the definitions proposed by the Working Group for circulation under the six-months' rule. Arising out of discussion on questionnaire from TC 17 regarding work in the field of low voltage metal and non-metal enclosed switchgear, it was decided to form a new Subcommittee 17D with Germany holding its Secretariat, to deal with the subject.

The Committee also discussed the questionnaire from TC 17 regarding voltage limits for high voltage and low voltage switchgears, and it was decided that 1 000 V ac should be regarded as a low voltage and not a high voltage.

SC 17A High Voltage Switchgear and Controlgear — (Sectt: Sweden) — 21-27 January 1967, Paris. Documents relating to general purpose switches; co-ordination table, specifications for high voltage switches — tests for single capacitor bank; switching; specification for high voltage switches — tests for cable charging breaking capacity; and specification for high voltage switches — field tests for line charging breaking capacity, were recommended for circulation under the six-months' rule.

The Subcommittee also discussed the document on rating of alternating-current circuit-breakers and it was decided that this document should not be sent out under the six-months' rule for the time being.

Another meeting of SC 17A was held from 25-29 September 1967 at Baden-Baden (Germany) — Documents relating to design and construction, routine tests and selection of circuit-breakers for service were recommended for circulation under the six-months' rule.

SC 17B Low Voltage Switchgear and Controlgear — (Sectt: France) — 16-19 January 1967, Paris. Draft specification for low-voltage ac motor starters was discussed partly and the rest of the document was left to Working Group 2 for finalization. It was decided to recommend this document for approval under the six-months' rule after it has been rewritten by the Working Group without having been examined again by SC 17B. Draft specification for low voltage control switches, Part I, was discussed and Working Group 3 was instructed to elaborate a new draft on the basis of discussion for the next meeting of SC 17B.

The Subcommittee also examined in detail the proposals on recommendations for moulded-case circuit-breakers. It was felt that no separate publication for moulded-case circuit-breakers is necessary. A Working Group was appointed to write down a specification dealing with both moulded-case circuit-breakers and non-moulded-case circuit-breakers in a single document taking into account the provisions of the IEC Pub 157-1 Circuit-Breakers, and the proposals for non-moulded-case circuit-breakers.

TC 20 Electric Cables — (Sectt: UK) — 1-2 November 1967, Ankara. Besides noting the report from SC 20B Low Voltage Cables, the document on methods of test for PVC insulation sheath was recommended for approval under the six-months' rule. Another important decision taken was the adoption of the symbol 'U' for voltage in all the cable specifications in place of symbol 'E'.

SC 21A Alkaline Accumulators — (Sectt: Germany) — 10-11 May 1967, London. The Subcommittee decided to issue revised documents for: (a) standardization of output terminals (connections) for cylindrical rechargeable nickel-cadmium cells; (b) drafts — recommendation for the dimensions of cylindrical cells not included in the various tables of RM 912/SC 21A (Item IX of RM 966/SC 21A); and (c) choice of final dimensions of the cylindrical cells in Table II of RM 912/SC 21A (Item VIII of RM 966/SC 21A).

TC 27 Electro-Heating — (Sectt: Poland) — 16-18 May 1967, Brussels. Drafts on classification of industrial electro-heating appliances and recommendation for test methods for induction furnaces with submerged channels were discussed and it was decided to circulate the latter document with a note to the effect that should no important points be affected by National Committees' comments, the Chairman would approve this document for circulation under the six-months' rule.

TC 37 Lightning Arresters — (Sectt: USA) — 16-19 January 1967, Paris. The Committee approved for circulation under the six-months' rule the document relating to revision of IEC Pub 99-1 'Non-linear resistor type arresters for alternating current systems'.

TC 38 Instrument Transformers — (Sectt: UK) — 23-26 January 1967, Paris. Drafts on capacitor voltage transformers, single-phase protective voltage transformers and terminal markings for voltage transformers were approved for circulation under the six-months' rule.

SC 39A Microwave Tubes and Valves — (Sectt: UK) — 18-22 September 1967, New Haven. Documents relating to methods of measurements on microwave amplifier tubes, methods of measurements on high-power klystrons used as oscillators and amplifiers and methods of measurement of microwave gas filled switching devices were approved for circulation under the six-months' rule. The Subcommittee also considered and agreed to circulate the revised documents relating to methods of measuring noise in microwave tubes and valves, methods of measurement of Type 'O' backward travelling-wave tubes, methods of measurements of 'M' type backward wave oscillators, classification of microwave tubes and valves based on USA proposal, and pulse measurement of microwave tubes and valves. Further the Subcommittee took up on priority basis work on terminology used in microwave tubes and valves.

TC 43 Electric Fans — (Sectt: India) — 25-26 September 1967, Baden-Baden (Germany). Shri Y. S. Venkateswaran acted as the Secretary and in the absence of Shri S. N. Mukerji, Chairman, Prof J. K. Choudhury from India was elected to the Chair. The Committee recommended for circulation under the six-months' rule, documents on safety requirements of electric fans and regulators and the draft on electric fans and regulators for use in ships. The document on electric ventilating fans and regulators for non-industrial use was discussed in detail and all aspects except the method of test for air delivery were finalized. This particular problem was left to a Working Group for making recommendations to the Technical Committee.

SC 59C Small Heating Appliances — (Sectt: Netherlands) — 9-10 March 1967, Arnhem. The Subcommittee discussed the British proposal for methods to determine the performance of water heater and decided that the Secretariat would prepare the revised draft for discussion at the next meeting.

SC 59D Home Laundry Appliances — (Sectt: France) — 6-8 March 1967, Arnhem. Major points of discussion were the method of determination of the rising efficiency, determination of wear suffered by linen and determination of drying efficiency. It was decided that the Secretariat would prepare a completely new draft on determination of the performance of domestic washing machine taking into account the various decisions taken on these points.

TC 61 Safety of Household Electrical Appliances — (Sectt : USA) — 6-10 February 1967, New York. The following scope was suggested by the Committee for approval by Committee of Action:

To prepare safety requirements for electrical appliances for household and similar purposes.

The Committee decided to develop its work in two parts — Part I consisting of general requirements common to all household appliances, and a series of Part II's for specific appliances beginning with those at present under consideration by TC 59 Performance of Electro-Domestic Appliances. Two Working Groups were formed to work separately on thermal aspect and electrical aspect.

Advisory Committee on Electronics and Telecommunications (ACET) — 9-10 November 1967, Geneva. The Committee discussed the recommendations of Committee of Action made at its Prague meeting for the creation of a new technical committee on electronic equipment for measurement (IEC/TC 66) and the division of work between the new committee and SC 13C Electronic measuring instruments. It was agreed to recommend that SC 13C should deal with electronic measuring apparatus equivalent to the instruments dealt with by SC 13B Indicating instruments, while TC 66 will deal with electronic apparatus for measuring, generating and observing other than those used in the field of heavy current. On safety matters, ACET recommended to the Committee of Action, that the Advisory Panel on Safety Matters (APSM) should be asked to arrange for a discussion on the general organization of safety work with the Chairman and Secretariats of those IEC Committees active in the field of safety of electronic equipment, the Chairman and Secretariat of TC 61 being invited to the meeting. The Committee also agreed to broadening the scope of TC 49 to include ceramic filters but exclude piezo-electric transducers dealt with by other IEC committees. This matter was referred to the Committee of Action for acceptance.

The Committee considered the proposal made by the Indian National Committee to take up work on transformers and coils for use in electronic equipment and requested TC 51 to investigate this matter further, taking into account the Indian Standards existing on the subject. In addition, co-ordination of work with other ACET committees and other general aspects, ACET discussed the question of constituting a new technical committee to take up work on integrated circuits, in the light of the report received from TC 47 Semiconductor Devices which is at present handling the subject. It was finally decided to keep open for the present the question of formulating a new technical committee.

3. WORKING GROUP ON STANDARDIZATION AND THE ASIAN STANDARDS ADVISORY COMMITTEE OF ECAFE

3.1 The first meeting of the Asian Standards Advisory Committee (ASAC) was held in Bangkok on 25-27 November 1967 under the chairmanship

of Mr Manoon Prachankhadee, Deputy Director General of Thailand's Ministry of Industry. This was preceded by a meeting of the Working Group on Standardization held from 20-24 November 1967. Dr A. N. Ghosh attended both these meetings as a representative from India. The Advisory Committee accepted all the 17 recommendations made by the Working Group, the important ones being formation of a study team to recommend the type of assistance required to establish or develop national standards bodies, United Nations help to augment existing facilities to train standardization personnel, and the exchange of literature and technical personnel among the countries of the region. The Advisory Committee also appointed a five-member Consultative Group consisting of representatives from Australia, Japan, Iran, India and Thailand to be made available to the ECAFE Secretariat for consultation in carrying out the Committee's policies on standardization.

PART IV

APPENDICES

APPENDIX A

(See pages 6 and 27)

INDIAN STANDARDS PUBLISHED AND IN PRESS
DURING 1967-68

(This list gives the new Indian Standards published during 1967-68 and those which were under print on 31 March 1968. It does not include standards which were under print on 31 March 1967 and printed during the year under report. The latter were included in a similar list published as Appendix A in last year's Annual Report.)

Sl
No.

Rs

AGRICULTURAL AND FOOD PRODUCTS

Abattoir

- | | | | | |
|----|--|-----|-----|------|
| 1. | IS: 4393-1967 Basic requirements for an abattoir | ... | ... | 5-00 |
|----|--|-----|-----|------|

Animal Feeds

- | | | | | |
|----|---|-----|-----|------|
| 2. | IS: 1664-1968 Mineral mixtures for supplementing cattle feeds (<i>first revision</i>) | ... | ... | 8-00 |
| 3. | IS: 1942-1968 Bone-meal as livestock feed supplement (<i>first revision</i>) | ... | ... | 6-00 |
| 4. | IS: 4193-1967 Guar meal as livestock feed | ... | ... | 2-00 |
| 5. | IS: 4307-1967 Fish meal as livestock feed | ... | ... | 5-00 |

Animal Housing and Equipment

- | | | | | |
|----|---|-----|-----|------|
| 6. | IS: 4466 (Part I)-1967 Recommendations for farm cattle housing for plain areas with medium rainfall: Part I Cattle shed for an average farmer | ... | ... | 3-50 |
| 7. | IS: 4466 (Part II)-1967 Recommendations for farm cattle housing for plain areas with medium rainfall: Part II Cattle shed for a rural milk producer | ... | ... | 3-50 |

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Sl No.		Rs
Beverages and Alcoholic Drinks		
8.	IS : 3752-1967 Methods of test for alcoholic drinks	7-00
9.	IS : 3753-1967 Methods of sampling for alcoholic drinks	2-50
10.	IS : 4100-1967 Gin	2-00
11.	IS : 4449-1967 Whiskies	2-00
12.	IS : 4450-1967 Brandies	2-00
Cereals and Pulses		
13.	IS : 4333 (Part I)-1967 Methods of analysis for foodgrains: Part I Refractions	2-50
14.	IS : 4333 (Part II)-1967 Methods of analysis for foodgrains: Part II Moisture	2-50
15.	IS : 4333 (Part III)-1967 Methods of analysis for foodgrains: Part III Determination of hectolitre weight	2-50
Coffee Products		
16.	IS : 4074-1967 Grading of monsooned coffee	2-00
Dairy Equipment		
17.	IS : 1373-1967 Tinned mild steel milk cans (<i>second revision</i>)	5-00
18.	IS : 1392-1967 Glass milk bottles (<i>first revision</i>)	5-00
19.	IS : 4192-1967 Aluminium farm milk cooling tanks	5-50
Dairy Products		
20.	IS : 1165-1967 Milk powder (whole and skim) (<i>first revision</i>)	8-00
21.	IS : 4079-1967 Canned <i>RASOGOLLA</i>	9-50
22.	IS : 4238-1967 Sterilized milk	5-00
23.	IS : 4421-1967 Malted skimmed milk food	2-00
Edible Starch and Starchy Products		
24.	IS : 1006-1967 Arrowroot starch (<i>first revision</i>)	3-50
25.	IS : 4287-1967 Glossary of terms relating to starch	4-00
Farm Implements and Machinery		
26.	IS : 4358-1967 Sickles	3-50
27.	IS : 4366-1967 Agricultural tillage discs	5-50
28.	IS : 4468-1967 Dimensions for three-point linkage of agricultural wheeled tractors	5-00
Fish and Fishery Products		
29.	IS : 4302-1967 Dry-salted mackerel	2-50
30.	IS : 4304-1967 Tuna canned in oil	3-50
Fish Industry, Sanitary Conditions		
31.	IS : 4303 (Part I)-1967 Code for sanitary conditions, handling and trans- port in fish industry: Part I Pre-processing stage	2-50
32.	IS : 4303 (Part II)-1967 Code for sanitary conditions, handling and trans- port in fish industry: Part II Sanitary conditions for fish processing units	2-50

Sl No.	Rs
Food Additives	
33. IS : 4446-1967 Chlorophyll	4-00
34. IS : 4447-1967 Sodium benzoate, food grade	4-00
35. IS : 4448-1967 Benzoic acid, food grade	4-00
36. IS : 4467-1967 Caramel	2-50
Fruits and Vegetables	
37. IS : 4232-1967 Turnip	2-50
38. IS : 4233-1967 Beets	2-50
39. IS : 4234-1967 Sweet potato	2-50
40. IS : 4235-1967 Chillies, fresh	2-50
41. IS : 4243-1967 Mandarins	4-00
Meat and Meat Products	
42. IS : 4352-1967 Pork luncheon meat, canned	4-00
Pesticidal Formulations	
43. IS : 1506-1967 Copper oxychloride dusting powder (<i>first revision</i>)	5-00
44. IS : 4322-1967 Endosulfan dusting powders	5-50
45. IS : 4323-1967 Endosulfan emulsifiable concentrates	6-00
46. IS : 4324-1967 Endosulfan water dispersible powder concentrates	5-50
47. IS : 4325-1967 Binapacryl emulsifiable concentrates	6-00
Pesticides, Technical Grade and General	
*48. IS : 885-1967 Common names for pesticides (<i>first revision</i>)	—
49. IS : 1321-1967 Methyl bromide (<i>first revision</i>)	5-50
50. IS : 4320-1967 Thiram, technical	5-50
51. IS : 4321-1967 2, 4-D, technical	5-00
52. IS : 4344-1967 Endosulfan, technical	4-00
53. IS : 4345-1967 Binapacryl, technical	5-00
54. IS : 4451-1967 Toxaphene, technical	7-00
Propagation Materials	
55. IS : 4194-1967 Mustard and rape seed for propagation purposes	2-00
56. IS : 4195-1967 Wheat seed for propagation purposes	2-00
57. IS : 4196-1967 Maize seed for propagation purposes	2-50
58. IS : 4197-1967 Rice seed for propagation purposes	2-00
Safety Standards	
59. IS : 4015 (Part II)-1967 Guide for handling cases of pesticide poisoning: Part II Symptoms, diagnosis and treatment	8-50
Spices and Condiments	
60. IS : 4403-1967 AJOWAN	2-00
61. IS : 4404-1967 Cloves, whole	2-00
62. IS : 4405-1967 Cloves, powder	2-00
63. IS : 4452-1967 Dehydrated onions	2-50

*Under print.

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SL No.		Rs
Tea		
64.	IS: 3611-1967 Method of sampling of tea packed in containers ...	2-00
65.	IS: 4541-1968 Glossary of tea terms	6-50
Tobacco and Tobacco Products		
66.	IS: 4463-1967 <i>HOOKA</i> tobacco, manufactured	4-00
67.	IS: 4469-1967 Code of practice for construction of flue-curing tobacco barns	4-00
Transport of Live Animals		
68.	IS: 3699 (Part II)-1967 Code for the transport of monkeys by land: Part II Transport from railhead to the nearest airport	2-00
69.	IS: 3907 (Part II)-1967 Code for the transport of laboratory animals: Part II Transport of snakes	2-50
70.	IS: 3907 (Part III)-1967 Code for the transport of laboratory animals: Part III Transport of frogs	2-00
71.	IS: 4157 (Part I)-1967 Code for the transport of livestock: Part I Transport of equines (horses, mules and donkeys) by rail, road and sea ...	2-50
CHEMICAL		
Adhesives		
72.	IS: 4185-1967 Gummed paper tapes	2-50
Alcohols and Allied Products		
73.	IS: 170-1966 Acetone (<i>first revision</i>)	5-00
74.	IS: 517-1967 Methanol (methyl alcohol) (<i>first revision</i>)	8-00
75.	IS: 695-1967 Acetic acid (<i>first revision</i>)	6-50
*76.	IS: 3506-1967 Tables for alcoholometry (by Pyknometer method) ...	—
77.	IS: 4117-1966 Alcohol denaturants	9-50
Alkalis		
78.	IS: 1540 (Part I)-1967 Quick lime and hydrated lime for chemical industries: Part I Quick lime (<i>first revision</i>)	8-00
Brushware		
79.	IS: 4208-1967 Brush, stencil	4-00
80.	IS: 4214-1967 Brushes, boiler tube (without shank)	3-50
81.	IS: 4301-1967 Brushes, foundry, flat	3-50
82.	IS: 4517-1967 Brush, welder's	3-50
Chemical Hazards		
83.	IS: 4155-1966 Glossary of terms relating to chemical and radiation hazards and hazardous chemicals	7-00
84.	IS: 4167-1966 Glossary of terms relating to air pollution	5-50

*Under print.

SL No.		Rs
85.	IS: 4209-1966 Code of safety for chemical laboratories ...	7-00
86.	IS: 4262-1967 Code of safety for sulphuric acid ...	3-50
87.	IS: 4263-1967 Code of safety for chlorine ...	6-00
88.	IS: 4264-1967 Code of safety for caustic soda ...	3-50
89.	IS: 4312-1967 Code of safety for lead and its compounds ...	2-50
Chemicals, Inorganic (Miscellaneous)		
90.	IS: 255-1967 Sodium sulphate, anhydrous (<i>first revision</i>) ...	5-50
91.	IS: 258-1967 Potash alum, technical (<i>first revision</i>) ...	5-00
92.	IS: 332-1967 Chromium potassium sulphate (chrome alum) (<i>first revision</i>) ...	3-50
93.	IS: 380-1967 French chalk, technical (<i>first revision</i>) ...	6-00
94.	IS: 797-1967 Common salt for chemical industries (<i>first revision</i>) ...	3-50
95.	IS: 1109-1968 Borax (<i>first revision</i>) ...	5-00
96.	IS: 1314-1967 Calcium chloride (<i>first revision</i>) ...	7-50
97.	IS: 4150-1967 Potassium chloride, technical ...	5-50
98.	IS: 4200-1967 Sodium aluminate ...	5-50
99.	IS: 4222-1967 Coloured chalks, moulded ...	3-50
100.	IS: 4256-1967 Hydrated calcium sulphate from marine brine ...	2-00
101.	IS: 4408-1967 Sodium chloride, analytical reagent ...	5-50
102.	IS: 4505-1968 Sodium formaldehyde sulphonylate ...	5-00
Chemicals, Organic (Miscellaneous)		
103.	IS: 4105-1967 Styrene (vinyl benzene) ...	8-00
104.	IS: 4306-1967 Hexamethylenetetramine (hexamine) ...	5-50
Coal and Coke		
105.	IS: 4286-1967 Processed solid smokeless domestic fuel ...	2-00
106.	IS: 4311-1967 Method for the determination of mineral matter in coal ...	2-50
107.	IS: 4433-1967 Method for the determination of the hardgrove grindability index of coal ...	2-50
Coal Carbonization Products		
108.	IS: 537-1967 Toluene, pure, nitration grade (<i>first revision</i>) ...	8-00
Cosmetics and Toilet Goods		
109.	IS: 1462-1967 Talc for cosmetic industry (<i>first revision</i>) ...	6-00
110.	IS: 1463-1967 Kaolin for cosmetic industry (<i>first revision</i>) ...	5-00
111.	IS: 4011-1967 Methods for dermatological tests for cosmetics ...	5-00
112.	IS: 4236-1967 Glyceryl monostearate for cosmetic industry ...	6-00
Drying Oils		
113.	IS: 74-1966 Methods of sampling and test for drying oils for paints (<i>first revision</i>) ...	11-00
114.	IS: 75-1967 Linseed oil, raw and refined (<i>first revision</i>) ...	2-50
Dye Intermediates		
115.	IS: 4265-1967 4-4' Diaminostilbene 2-2' disulphonic acid ...	4-00
116.	IS: 4334-1967 o-Chloroaniline ...	5-00

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Sr No.							Rs
117.	IS : 4335-1967	<i>m</i> -Chloroaniline	5-00
118.	IS : 4336-1967	<i>p</i> -Chloroaniline	5-50
119.	IS : 4425-1967	<i>p</i> -Nitrotoluene <i>o</i> -sulphuric acid	...	...	...	...	4-00
120.	IS : 4523-1968	Acetoacetanilide	...	...	...	...	4-00
121.	IS : 4524-1968	Acetoacet- <i>o</i> -chloroanilide	...	...	...	...	4-00
*122.	IS : 4525-1968	<i>p</i> -Aminoacetanilide	...	...	...	...	—
123.	IS : 4526-1968	2, 5-Dichloroaniline	...	...	...	...	5-00
124.	IS : 4527-1968	2-Nitro-4-chlorotoluene	...	...	...	...	5-00
125.	IS : 4528-1968	4, 4'-Dinitrostilbene-2, 2'-disulphonic acid (disodium salt )	...	...	...	...	5-00
Electroplating Chemicals							
126.	IS : 1880-1967	Zinc oxide for electroplating	...	...	...	...	6-00
Explosive and Pyrotechnic Materials							
127.	IS : 4396-1967	Barium nitrate for explosive and pyrotechnic compositions...	...	...	...	...	5-00
Fertilizers							
128.	IS : 826-1967	Ammonium sulphate, fertilizer grade (<i>first revision</i>)	...	...	...	...	4-00
Fillers, Stoppers and Putties							
129.	IS : 419-1967	Putty, for use on window frames (<i>first revision</i>)	...	...	...	...	2-00
Footwear							
130.	IS : 4128-1967	Fireman's leather boots	...	...	...	...	5-50
*131.	IS : 4512-1967	Footwear lasts, wooden	...	...	...	...	—
Glass and Glassware							
132.	IS : 490-1967	Vaccine phials (<i>first revision</i>)	...	...	...	...	3-50
Inks and Allied Products							
133.	IS : 4174-1967	Typewriter ribbons	...	...	...	...	2-50
134.	IS : 4175-1967	Correcting fluid	...	...	...	...	2-50
135.	IS : 4395-1967	Glossary of terms relating to ink and allied industries	...	...	...	...	2-00
KATTHA, Vegetable Tans and Allied Products							
136.	IS : 3967-1967	Cutch	...	...	...	...	3-50
137.	IS : 3968-1967	Wattle bark	...	...	...	...	5-00
138.	IS : 3969-1967	GORAN bark	...	...	...	...	5-00
139.	IS : 4359-1967	KATTHA	...	...	...	...	7-00
Laboratory Glassware, Thermometers and Related Apparatus							
140.	IS : 1672-1967	Floating dairy thermometers (<i>first revision</i>)	...	...	...	...	3-50
141.	IS : 1997-1967	Burettes (<i>first revision</i>)	...	...	...	...	5-00
142.	IS : 4161-1967	Nessler cylinders	...	...	...	...	2-50
143.	IS : 4162-1967	Graduated pipettes	...	...	...	...	5-00
144.	IS : 4426-1967	Methods of sampling laboratory glassware and medical glass instruments	...	...	...	...	2-50
145.	IS : 4529-1968	Glass tubes for medical thermometers	...	...	...	...	3-50

*Under print.

Sl. No.					Rs
Leather, Leather Goods and Leather Dressings					
146.	IS : 4102-1967	Leather for shuttlecock caps	...	...	2-50
147.	IS : 4191-1967	Leather for volleyball	...	...	5-00
148.	IS : 4207-1967	Leather for football	...	...	6-00
Lubricants					
149.	IS : 495-1967	Graphite, flake, for lubricants (<i>first revision</i>)	...	...	3-50
150.	IS : 720-1967	Grease, S. hard, loco (<i>first revision</i>)	...	...	2-50
Oils and Fats, Oleaginous Seeds and Fruits					
151.	IS : 3579-1966	Methods of test for oilseeds	...	...	3-50
152.	IS : 4054-1966	Neatsfoot oil	...	...	2-00
153.	IS : 4055-1966	Maize (corn) oil	...	...	2-00
154.	IS : 4056-1966	Fish oil for leather industry	...	...	2-00
155.	IS : 4088-1966	KUSUM oil	...	...	2-00
156.	IS : 4115-1967	Methods for sampling of oilseeds	...	...	4-00
157.	IS : 4219E-1967	Rice bran oil, edible grades	...	...	1-50
158.	IS : 4220E-1967	Solvent-extracted sesame oil	...	...	1-50
159.	IS : 4276-1967	Solvent-extracted soybean oil, refined	...	...	2-50
160.	IS : 4277-1967	Solvent-extracted sunflower oil, refined	...	...	2-50
161.	IS : 4427-1967	Grading for groundnut kernels, for oil milling and for table use	...	...	3-50
162.	IS : 4428-1967	Grading for mustard seeds for oil milling	...	...	2-50
163.	IS : 4429-1967	Grading for sesame seeds for oil milling	...	...	2-00
Paper and Allied Products					
164.	IS : 1397-1967	Kraft paper (<i>first revision</i>)	...	...	2-50
165.	IS : 1576-1967	Solid pressboard for electrical purposes	...	...	9-00
166.	IS : 2617-1967	Millboard, greyboard and strawboard (<i>first revision</i>)	...	...	3-50
167.	IS : 3413-1966	Base paper for carbon paper	...	...	2-50
Paper Products and Packaging Materials					
168.	IS : 3962-1967	Waxed paper for general packaging	...	...	2-50
169.	IS : 4006 (Part I)-1966	Methods of test for paper and pulp based packaging materials: Part I	...	...	7-00
170.	IS : 4261-1967	Glossary of terms relating to paper- and pulp-based packaging materials	...	...	5-00
171.	IS : 4356-1967	Paper cuttings	...	...	2-00
Perfumery Materials, Natural and Synthetic					
172.	IS : 4271-1967	Coumarin	...	...	2-00
173.	IS : 4272-1967	Vanillin	...	...	2-50
174.	IS : 4273-1967	isoBornyl acetate	...	...	2-00
Petroleum and Petroleum Products					
175.	IS : 1448 (P: 2)-1967	Acidity (P: 2) (<i>first revision</i>)	...	...	2-00
176.	IS : 1448 (P: 3)-1967	Aniline point (P: 3) (<i>first revision</i>)	...	...	2-50
177.	IS : 1448 (P: 8)-1967	Carbon residue by Ramsbottom method (P: 8) (<i>first revision</i>)	3-00
178.	IS : 1448 (P: 11)-1967	Freezing point (P: 11) (<i>first revision</i>)	2-00

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SL No.	Rs
179. IS: 1448 (P:12)-1967 Colour by ASTM colour scale (P: 12) (<i>first revision</i>)	2:00
180. IS: 1448 (P: 18)-1967 Distillation (P: 18) (<i>first revision</i>)	4:00
181. IS: 1448 (P: 30)-1967 Sediment by extraction (P: 30) (<i>first revision</i>)	1:00
182. IS: 1448 (P: 37)-1967 Tetraethyl lead (TEL) by chlorate oxidation method (P: 37) (<i>first revision</i>)	2:00
183. IS: 1448 (P: 38)-1967 Lead antiknock compounds in gasoline by gravimetric method (P: 38) (<i>first revision</i>)	2:00
184. IS: 1448 (P: 39)-1967 Vapour pressure by Reid method (P: 39) (<i>first revision</i>)	3:00
185. IS: 1448 (P: 40)-1967 Water by distillation (P: 40) (<i>first revision</i>)	2:00
186. IS: 1448 (P: 41)-1967 Water and sediment by centrifuge (P: 41) (<i>first revision</i>)	2:00
187. IS: 1448 (P: 60)-1967 Method of test for consistency of lubricating grease by cone penetrometer (P: 60)	2:50
188. IS: 1448 (P: 63)-1967 Benzene and toluene by ultraviolet spectrophotometry (P: 63)	2:50
189. IS: 1448 (P: 65)-1967 Oxidation test for lubricating oils (P: 65)	2:00
190. IS: 1448 (P: 67)-1967 Foaming characteristics (P: 67)	2:00
191. IS: 1448 (P: 68)-1967 Evaporation loss in greases (22-hour drying) (P: 68)	1:50
192. IS: 1571-1967 Aviation turbine fuels, kerosene type (<i>first revision</i>)	5:50
193. IS: 1587-1967 Aviation turbine fuels, high flash point type (<i>first revision</i>)	4:00
194. IS: 1588-1967 Aviation turbine fuels, wide cut gasoline type (<i>first revision</i>)	4:00
195. IS: 1604-1967 Aviation gasoline (<i>first revision</i>)	2:50
196. IS: 1745-1966 Petroleum hydrocarbon solvents (<i>first revision</i>)	2:00
Photographic Chemicals	
197. IS: 4173-1967 4-Methylaminophenol sulphate	5:00
Pigments and Extenders	
198. IS: 50-1967 Leads and scarlet chrome (<i>second revision</i>)	5:00
199. IS: 51-1966 Zinc chromes for paints (<i>second revision</i>)	6:00
200. IS: 3574 (Part II)-1966 Organic pigments: Part II Phthalocyanines	3:50
Rubber and Rubber Products	
201. IS: 3400 (Part VI)-1967 Methods of test for vulcanized rubbers: Part VI Resistance to liquids	6:00
202. IS: 3400 (Part VII)-1967 Methods of test for vulcanized rubbers: Part VII Resistance to flex cracking	4:00
203. IS: 3400 (Part VIII)-1967 Methods of test for vulcanized rubbers: Part VIII Resistance to crack-growth	2:50
204. IS: 3400 (Part IX)-1967 Methods of test for vulcanized rubbers: Part IX Relative density and density	2:00
205. IS: 4135-1967 Hospital rubber sheetings	5:00
206. IS: 4148-1967 Surgical rubber gloves	3:50
207. IS: 4149-1967 Post-mortem rubber gloves	3:50
208. IS: 4511 (Part I)-1967 Methods of tests for styrene-butadiene rubber (SBR) latices: Part I Determination of dry polymer, total solids, coagulum, pH, surface tension, density, viscosity, residual styrene, bound styrene and soap content	8:50
209. IS: 4518 (Part I)-1967 Methods of tests for styrenebutadiene rubbers (SBR): Part I Determination of volatile matter, total ash, organic acid, soap, antioxidants, bound styrene and mooney viscosity	8:50

Sl. No.		Rs
Soaps and Other Surface Active Agents		
210.	IS : 4199-1967 Liquid soap	2-00
Treated Fabrics		
211.	IS : 4355-1967 Fire resistant brattice cloth	5-00
212.	IS : 4501-1967 Aprons, rubberized, acid and alkali resistant	2-50
Varnishes and Lacquers		
*213.	IS : 524-1968 Varnish, finishing, exterior, synthetic (<i>first revision</i>)	—
214.	IS : 525-1968 Varnish, finishing, exterior, and general purposes (<i>first revision</i>)	3-50
Water and Water Treatment		
215.	IS : 4221-1967 Quality tolerances for water for tanning industry	2-00
216.	IS : 4251-1967 Quality tolerances for water for processed food industry	4-00
217.	IS : 4343-1967 Code of practice for treatment of water for high pressure boilers	5-00
Unclassified		
*218.	IS : 4048-1966 Density-composition tables for aqueous solutions of sulphuric acid	—
219.	IS : 4284-1967 Method for volumetric determination of iron	2-00
220.	IS : 4285-1967 Method for volumetric determination of calcium	1-50
CIVIL ENGINEERING		
Aggregates		
221.	IS : 3182-1967 Broken brick (burnt clay) fine aggregate for use in lime mortar	2-50
Bricks and Blocks		
222.	IS : 2185-1967 Load bearing hollow concrete blocks (<i>first revision</i>)	6-50
223.	IS : 4139-1967 Sandlime bricks	4-00
Builder's Hardware		
224.	IS : 362-1968 Parliament hinges (<i>second revision</i>)	3-50
Cement		
225.	IS : 269-1967 Ordinary, rapid-hardening and low heat Portland cement (<i>second revision</i>)	4-00
226.	IS : 455-1967 Portland blastfurnace slag cement (<i>second revision</i>)	4-00
227.	IS : 1489-1967 Portland-pozzolana cement (<i>first revision</i>)	4-00
228.	IS : 3466-1967 Masonry cement (<i>first revision</i>)	2-50
Concrete Testing		
229.	IS : 2770 (Part I)-1967 Methods of testing bond in reinforced concrete: Part I Pull-out test	3-50

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Construction Equipment									
230.	IS: 4183-1967	Metal hand rammers	2.50
231.	IS: 4184-1967	Steel wheel barrows (with two wheels)	3.50
232.	IS: 4198-1967	Emulsion spraying machines for roads	...	...	...	...	...	...	5.00
Doors and Windows									
233.	IS: 4020-1967	Methods of tests for wooden flush doors: type tests	...	...	...	...	...	...	5.00
234.	IS: 4021-1967	Timber door, window and ventilator frames	...	...	...	...	...	...	5.50
235.	IS: 4351-1967	Steel door frames	...	...	...	...	...	...	5.00
Drawing, Estimation and Measurement									
236.	IS: 962-1967	Code of practice for architectural and building drawings (first revision )	...	...	...	...	...	...	14.00
237.	IS: 1200 (Part VIII)-1967	Method of measurement of building and civil engineering work: Part VIII Steelwork and ironwork (second revision )	...	...	...	...	...	...	4.00
Drawing Office Equipment									
238.	IS: 4204-1967	Drafting chairs	...	...	...	...	...	...	2.00
239.	IS: 4205-1967	Drafting stools	...	...	...	...	...	...	2.00
240.	IS: 4212-1967	Drafting tables and reference tables for drawing offices	...	...	...	...	...	...	2.50
Fire Fighting Equipment									
241.	IS: 933-1967	Portable chemical fire extinguisher, foam type (first revision )	...	...	...	...	...	...	6.50
242.	IS: 934-1967	Portable chemical fire extinguisher, soda acid type (first revision )	...	...	...	...	...	...	4.00
243.	IS: 935-1967	Portable chemical fire extinguisher, carbon tetrachloride type (first revision )	...	...	...	...	...	...	4.00
244.	IS: 949-1967	Emergency tender for fire brigade use and rescue tender for general purposes (first revision )	...	...	...	...	...	...	6.00
245.	IS: 957-1967	Control van for fire brigade use	...	...	...	...	...	...	5.00
246.	IS: 4151E-1967	Protective helmets for scooter and motor cycle riders...	...	...	...	...	...	...	4.00
247.	IS: 4308-1967	Dry powder for fire fighting	...	...	...	...	...	...	2.50
Fire Safety									
248.	IS: 3594-1967	Code of practice for fire safety of industrial buildings: general storage and warehousing including cold storages	...	...	...	...	...	...	4.00
249.	IS: 3595-1967	Code of practice for fire safety of industrial buildings: coal pulverizers	...	...	...	...	...	...	4.00
250.	IS: 4226-1967	Code of practice for fire safety of industrial buildings: aluminium powder factories	...	...	...	...	...	...	5.00
Flow Measuring Instruments									
251.	IS: 4073-1967	Fish weights	...	...	...	...	...	...	2.50
252.	IS: 4080-1967	Vertical staff gauges	...	...	...	...	...	...	2.50
253.	IS: 4477 (Part I)-1967	Methods of measurement of fluid flow by means of Venturi meters: Part I Liquids	...	...	...	...	...	...	9.50

Sl No.		Rs
Foundation		
254.	IS: 2974 (Part III)-1967 Code of practice for design and construction of machine foundations: Part III Foundations for rotary type machines (reinforced concrete foundations for steam turbo generators) ...	6-00
255.	IS: 4091-1967 Code of practice for design and construction of foundations for transmission-line towers and poles	5-00
Furniture		
256.	IS: 4103-1967 Metal nesting chairs	2-50
257.	IS: 4116-1967 Wooden shelving cabinets (adjustable type)	4-00
258.	IS: 4126-1967 Wooden wardrobes (adjustable and non-adjustable type)...	4-00
259.	IS: 4414-1967 Wooden table tops	3-50
260.	IS: 4415-1967 Glossary of terms for wooden furniture	3-50
General Structural Design and Construction		
261.	IS: 1597 (Part I)-1967 Code of practice for construction of stone masonry: Part I Rubble stone masonry	7-00
262.	IS: 1597 (Part II)-1967 Code of practice for construction of stone masonry: Part II Ashlar masonry	3-50
263.	IS: 3370 (Part III)-1967 Code of practice for concrete structures for the storage of liquids: Part III Prestressed concrete structures ...	4-00
*264.	IS: 3370 (Part IV)-1967 Code of practice for concrete structures for the storage of liquids: Part IV Design tables	—
265.	IS: 4090-1967 Criteria for the design of reinforced concrete arches ...	8-00
266.	IS: 4326-1967 Code of practice for earthquake resistant construction of buildings	8-50
Lime		
267.	IS: 4098-1967 Lime-pozzolana mixture	5-00
Manufacture or Processing		
*268.	IS: 401-1967 Code of practice for preservation of timber (<i>second revision</i>)...	—
269.	IS: 1849-1967 Code of practice for design and installation of lime kilns...	6-50
270.	IS: 2117-1967 Guide for manufacture of hand-made common burnt-clay building bricks (<i>first revision</i>)	6-00
Multi-Purpose River Valley Projects		
271.	IS: 4078-1967 Code of practice for indexing and storage of drill cores ...	2-50
272.	IS: 4186-1967 Guide for preparation of project report for river valley projects	6-50
273.	IS: 4247 (Part I)-1967 Code of practice for structural design of surface hydel power stations: Part I Data for design	4-00
274.	IS: 4410 (Part I)-1967 Glossary of terms relating to river valley projects: Part I Irrigation	3-50
275.	IS: 4410 (Part II)-1967 Glossary of terms relating to river valley projects: Part II Project planning	8-00
276.	IS: 4410 (Part III)-1967 Glossary of terms relating to river valley projects: Part III River and river training	5-50

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SL No.		Rs
*277.	IS: 4410 (Part IV)-1967 Glossary of terms relating to river valley projects: Part IV Drawings	—
278.	IS: 4453-1967 Code of practice for exploration by pits, trenches, drifts and shafts	5-50
*279.	IS: 4461-1967 Code of practice for joints in surface hydel power stations...	—
280.	IS: 4464-1967 Code of practice for presentation of drilling information and core description in foundation investigation	4-00
281.	IS: 4515-1967 Code of practice for boulder lining for canals	2-00
Pipes		
282.	IS: 4350-1967 Concrete porous pipes for under drainage	5-00
Planning, Regulation and Control		
283.	IS: 1256-1967 Code of building byelaws (<i>first revision</i>)	12-50
284.	IS: 4082-1967 Recommendations on stacking and storage of construction materials at site	3-50
Plaster, Paint and Allied Finishes		
285.	IS: 2338 (Part I)-1967 Code of practice for finishing of wood and wood-based materials: Part I Operations and workmanship	5-50
286.	IS: 2338 (Part II)-1967 Code of practice for finishing of wood and wood-based materials: Part II Schedules	3-50
287.	IS: 2395 (Part II)-1967 Code of practice for painting concrete, masonry and plaster surfaces: Part II Schedules	2-50
Pozzolanas		
288.	IS: 1727-1967 Methods of test for pozzolanic materials (<i>first revision</i>)	12-00
289.	IS: 4305-1967 Glossary of terms relating to pozzolanas	2-00
Reinforcement		
290.	IS: 1566-1967 Hard-drawn steel wire fabric for concrete reinforcement (<i>first revision</i>)	5-00
291.	IS: 1785 (Part II)-1967 Plain hard-drawn steel wire for prestressed concrete: Part II As-drawn wire	4-00
Roof		
292.	IS: 2115-1967 Code of practice for flat roof finish: mud <i>PHUSKA</i> (<i>first revision</i>)	3-50
Safety in Construction		
293.	IS: 4081-1967 Safety code for blasting and related drilling operations	4-00
294.	IS: 4130-1967 Safety code for demolition of buildings	4-00
295.	IS: 4138-1967 Safety code for working in compressed air	6-50
Soil Engineering		
296.	IS: 2720 (Part XXIV)-1967 Methods of test for soils: Part XXIV Determination of base exchange capacity	2-00

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Sl. No.		Rs
297.	IS: 2720 (Part XXV)-1967 Methods of test for soils: Part XXV Determination of silica sesquioxide ratio	2-50
298.	IS: 2720 (Part XXVI)-1967 Methods of test for soils: Part XXVI Determination of pH values	2-00
299.	IS: 4332 (Part I)-1967 Methods of test for stabilized soils: Part I Method of sampling and preparation of stabilized soils for testing	2-50
300.	IS: 4332 (Part II)-1967 Methods of test for stabilized soils: Part II Determination of moisture content of stabilized soil mixtures	6-00
301.	IS: 4332 (Part III)-1967 Methods of test for stabilized soils: Part III Test for determination of moisture content-dry density relation for stabilized soil mixtures	4-00
*302.	IS: 4434-1967 Code of practice for <i>in-situ</i> vane shear test for soils	—
Stones		
303.	IS: 4121-1967 Method of test for determination of water transmission rate by capillary action through natural building stones	2-00
304.	IS: 4122-1967 Method of test for surface softening of natural building stones by exposure to acidic atmospheres	2-00
305.	IS: 4348-1967 Methods of test for determination of permeability of natural building stones	3-50
Tiles		
306.	IS: 4457-1967 Ceramic unglazed vitreous acid-resistant tiles... ..	4-00
Timber		
307.	IS: 4422-1967 Willow clefts for cricket bats	2-50
308.	IS: 4423-1967 Guide for hand-sawing of timer	4-00
309.	IS: 4424-1967 Use of timber in coal mines	4-00
Timber Stores		
310.	IS: 4435-1967 Wooden ladders and trestles	6-00
Wall and Ceiling Finish		
311.	IS: 4101 (Part I)-1967 Code of practice for external facings and veneers: Part I Stone facing	6-00
312.	IS: 4101 (Part II)-1967 Code of practice for external facings and veneers: Part II Cement concrete facing	6-00
313.	IS: 4112-1967 Code of practice for fixing of polystyrene wall tiles	2-50
314.	IS: 4407-1967 Code of practice for reed walling	4-00
Waterproofing and Damp-Proofing		
315.	IS: 4365-1967 Code of practice for application of bitumen mastic for waterproofing of roofs	6-00
Water Supply, Sanitation and Drainage Fittings		
316.	IS: 780-1967 Sluice valves for waterworks purposes (<i>third revision</i>)	7-50
317.	IS: 781-1967 Sand-cast brass screw-down bib taps and stop taps for water services (<i>first revision</i>)	6-00

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Sl. No.		Rs
318.	IS: 1726-1967 Cast iron manhole covers and frames intended for use in drainage works (<i>first revision</i>)	5-50
319.	IS: 2548-1967 Plastic water-closet seats and covers (<i>second revision</i>) ...	4-00
320.	IS: 2556 (Part I)-1967 Vitreous sanitary appliances (vitreous china): Part I General requirements (<i>first revision</i>)	5-50
321.	IS: 2556 (Part II)-1967 Vitreous sanitary appliances (vitreous china): Part II Specific requirements of wash-down water-closets (<i>first revision</i>)	3-50
322.	IS: 2556 (Part III)-1967 Vitreous sanitary appliances (vitreous china): Part III Specific requirements of squatting pans and traps (<i>first revision</i>)	4-00
323.	IS: 2556 (Part IV)-1967 Vitreous sanitary appliances (vitreous china): Part IV Specific requirements of wash basins (<i>first revision</i>) ...	5-00
324.	IS: 2556 (Part V)-1967 Vitreous sanitary appliances (vitreous china): Part V Specific requirements of laboratory sinks (<i>first revision</i>) ...	2-50
325.	IS: 2556 (Part VI)-1967 Vitreous sanitary appliances (vitreous china): Part VI Specific requirements of urinals (<i>first revision</i>)	3-50
326.	IS: 2556 (Part VII)-1967 Vitreous sanitary appliances (vitreous china): Part VII Specific requirements of half-round channel (<i>first revision</i>) ...	2-00
327.	IS: 2556 (Part VIII)-1967 Vitreous sanitary appliances (vitreous china): Part VIII Specific requirements of siphonic wash-down water-closets (<i>first revision</i>)	2-00
328.	IS: 2556 (Part IX)-1967 Vitreous sanitary appliances (vitreous china): Part IX Specific requirements of bidets (<i>first revision</i>)	2-00
329.	IS: 2556 (Part X)-1967 Vitreous sanitary appliances (vitreous china): Part X Specific requirements of foot rests (<i>first revision</i>)	2-00
330.	IS: 4038-1967 Foot-valves for waterworks purposes	4-00
331.	IS: 4346-1967 Washers for water taps for cold water services	2-00

Water Supply, Drainage and Sanitation

332.	IS: 4111 (Part I)-1967 Code of practice for ancillary structures in sewerage system: Part I Manholes	5-00
333.	IS: 4111 (Part II)-1967 Code of practice for ancillary structures in sewerage system: Part II Flushing tanks	2-50
334.	IS: 4111 (Part III)-1967 Code of practice for ancillary structures in sewerage system: Part III Inverted siphon	2-50
335.	IS: 4127-1967 Code of practice for laying of glazed stoneware pipes ...	6-50

Unclassified

336.	IS: 4124-1967 Glossary of terms relating to powders	3-50
337.	IS: 4441-1967 Code of practice for use of silicate type chemical resistant mortars	2-50
338.	IS: 4442-1967 Code of practice for use of sulphur type chemical resistant mortars	2-50
339.	IS: 4443-1967 Code of practice for use of resin type chemical resistant mortars	3-50
340.	IS: 4456 (Part I)-1967 Methods of test for chemical resistant mortars: Part I Silicate type and resin type	7-50
341.	IS: 4456 (Part II)-1967 Methods of test for chemical resistant mortars: Part II Sulphur type	4-00

CONSUMER PRODUCTS**Artificial Limb and Orthopaedic Rehabilitation Appliances**

342.	IS: 4534-1968 Adapter for terminal devices, artificial limbs	2-00
343.	IS: 4535-1968 Saw-grip terminal device for artificial limbs	2-00

SL No.						Rs
Dental Equipment and Instruments						
344.	IS: 3889-1967	Dental, chisels	...	...	...	3-50
345.	IS: 3890 (Part II)-1967	Instruments, plastic filling, dental:	Part	II		
		Designation numbers 12, 20, 21, 46, 47, 153 and 183	...	...	...	4-00
346.	IS: 4313-1967	Pliers, plate, dental	...	...	...	2-50
347.	IS: 4314-1967	Pliers, cone sockets, dental	...	...	...	2-00
348.	IS: 4315-1967	Pliers, bar bending, dental	...	...	...	2-00
349.	IS: 4316-1967	Pliers, snipe nose, dental	...	...	...	2-00
350.	IS: 4319-1967	Pliers, stretching and contouring, dental	...	...	...	2-00
Domestic and Commercial Gas Burning Appliances (Pressure Type)						
351.	IS: 4246-1967	Domestic gas stoves for use with liquefied petroleum gases...				8-00
352.	IS: 4473-1967	Gas ovens for use with liquefied petroleum gases, domestic...				8-00
Domestic Hardware						
353.	IS: 4065-1967	Watering cans	...	...	...	2-00
354.	IS: 4109-1967	KADAHIES	...	...	...	2-00
355.	IS: 4119-1967	Charcoal-burning pressing irons	...	...	...	3-50
356.	IS: 4120-1967	Tubs and baths	...	...	...	4-00
357.	IS: 4230-1967	Lock, lever tumbler type	...	...	...	3-50
358.	IS: 4231-1967	Lock, Miller type	...	...	...	3-50
Fasteners for Consumer Goods						
359.	IS: 3148-1967	Metallic slide fasteners (<i>first revision</i>)	...	...	...	7-50
360.	IS: 4066-1967	Metal hooks, clips and eyes	...	...	...	2-50
361.	IS: 4084-1967	Eyelets and washers	...	...	...	4-00
362.	IS: 4108-1967	Press buttons	...	...	...	2-00
363.	IS: 4274-1967	Buckles	...	...	...	5-50
Fountain Pens and Ball Point Pens						
364.	IS: 4099-1967	Nibs for penholders for general writing purposes	...	...	...	2-50
365.	IS: 4118-1967	Penholders	...	...	...	2-50
366.	IS: 4498-1968	Nibs for fountain pens	...	...	...	2-50
Hospital Equipment						
367.	IS: 4035-1967	Trolleys, stretcher	...	...	...	2-00
368.	IS: 4036-1967	Trolleys, patient	...	...	...	2-00
369.	IS: 4037-1967	Stretcher and stretcher carriers	...	...	...	2-50
370.	IS: 4266-1967	Lockers, bedside for hospital use	...	...	...	2-00
371.	IS: 4267-1967	Stands, wash hand basin	...	...	...	2-50
372.	IS: 4455-1967	Trolleys, so'led linen	...	...	...	2-00
373.	IS: 4458-1967	Screens, bedside	...	...	...	2-50
374.	IS: 4494-1968	Tables, overbed	...	...	...	2-00
375.	IS: 4510-1968	Horizontal cylindrical high steam sterilizers, pressure type...				4-00
Hospital Utensils						
376.	IS: 3997-1967	Jars, ointment	5-00
377.	IS: 3998-1967	Cups, medicine	5-00

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SL No.								Rs
Sports Goods								
378.	IS: 4141-1967	Table tennis rackets	2-50
379.	IS: 4142-1967	Discus	2-50
380.	IS: 4143-1967	Carrom-draughts	...	...	...	...	...	2-50
381.	IS: 4144-1967	Carrom-strikers	...	...	...	...	...	2-00
382.	IS: 4385-1967	Throwing hammers	...	...	...	...	...	3-50
383.	IS: 4386-1967	Putting shots	...	...	...	...	...	2-50
384.	IS: 4387-1967	Asymmetric bars	...	...	...	...	...	4-00
Surgical and Medical Instruments								
385.	IS: 4067-1967	Tube, swab (West type), for throat	...	...	...	...	...	2-00
386.	IS: 4068-1967	Ureometer, doremus type	...	...	...	...	...	2-50
387.	IS: 4069-1967	Urinometer	...	...	...	...	...	2-50
388.	IS: 4085-1967	Knives, amputating	...	...	...	...	...	2-00
389.	IS: 4087-1967	Pipette for haemoglobinometers and blood pipette for biochemical work	...	...	...	...	...	3-50
390.	IS: 4089-1967	Forceps, clip removing, Michel pattern	...	...	...	...	...	2-50
391.	IS: 4094-1967	Forceps, sterilizer, Cheate's pattern	...	...	...	...	...	2-50
392.	IS: 4113-1967	Laryngoscopes	...	...	...	...	...	3-50
393.	IS: 4153-1967	Trolleys for gas anaesthetic apparatus	...	...	...	...	...	5-50
394.	IS: 4154-1967	Endotracheal connections	...	...	...	...	...	5-00
395.	IS: 4244-1967	Retractors skin, double ended	...	...	...	...	...	2-00
396.	IS: 4245-1967	Needle holder (gillies) combined with scissors, for plastic surgery	...	...	...	...	...	2-50
397.	IS: 4275-1967	Scissors, Killner's for plastic surgery	...	...	...	...	...	2-50
398.	IS: 4281-1967	Scissors, McIndoe's for plastic surgery	...	...	...	...	...	3-50
399.	IS: 4282-1967	Forceps, dissecting, plastic surgery	...	...	...	...	...	3-50
400.	IS: 4363-1967	Drip counter	...	...	...	...	...	2-00
401.	IS: 4364-1967	Pipettes, serological	...	...	...	...	...	2-50
402.	IS: 4444-1967	Bottles, bacteriological	...	...	...	...	...	2-50
403.	IS: 4445-1967	Filter and filter chamber for blood transfusion	...	...	...	...	...	2-00
404.	IS: 4487-1968	Forceps, tonsil artery (Birkett's pattern )	...	...	...	...	...	2-50
405.	IS: 4488-1968	Forceps, tonsil holding (Muck's and White's patterns )	...	...	...	...	...	2-50
406.	IS: 4489-1968	Forceps, nasal turbinate, Luc's	...	...	...	...	...	2-00
407.	IS: 4490-1968	Forceps, dilating, Trousseau's	...	...	...	...	...	2-00
408.	IS: 4504-1967	Forceps, peritonsillar	...	...	...	...	...	2-00
*409.	IS: 4513-1968	Scissors, surgical dressing and stitch	...	...	...	...	...	—
410.	IS: 4514-1968	Forceps, tonsil dissecting (Waugh's pattern )	...	...	...	...	...	2-50
411.	IS: 4520-1968	Forceps, punch, nasal (Citelli's antrum and Hajek's sphenoidal )	...	...	...	...	...	2-50
412.	IS: 4533-1968	Suction apparatus	...	...	...	...	...	3-50
413.	IS: 4538-1968	Refrigeration type oxygen tent units used for oxygen therapy	...	...	...	...	...	3-50
Utensils and Cutlery								
414.	IS: 1660-1967	Wrought aluminium utensils (first revision )	...	...	...	...	...	6-00
415.	IS: 4136-1967	Aluminium compartmental trays	...	...	...	...	...	2-50
416.	IS: 4536 (Part I)-1968	Composite bottom tainless steel cooking utensils: Part I Copper electrodeposited	4-00

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Sl. No.	Rs
ELECTROTECHNICAL	
Acoustics	
417. IS: 4242-1967 Method of measurement of acoustical noise emitted by ballasts for gaseous discharge lamps	2-00
418. IS: 4377-1967 General requirements for magnetic tapes for sound recording and reproduction	2-50
419. IS: 4406-1967 General requirements for hearing aids	3-50
420. IS: 4479-1967 Methods of measurements on magnetic tapes for sound recording and reproduction	6-00
421. IS: 4480-1967 Magnetic tapes for sound recording and reproduction	2-50
422. IS: 4482-1967 Hearing aids	2-00
Appliances	
423. IS: 302-1967 General and safety requirements for light electrical appliances (<i>third revision</i>)	14-00
424. IS: 4158-1967 Solid-embedded type electric heating elements	2-50
425. IS: 4159-1967 Mineral filled sheathed heating elements	2-50
426. IS: 4165-1967 Thermostats for general purpose electric ovens	5-00
427. IS: 4250-1967 Domestic electric food-mixers (liquidizers, blenders and grinders)	5-50
Automobile Electrical Equipment	
428. IS: 4050-1967 Methods of tests for horn switches for automobiles	1-50
429. IS: 4060-1967 Flashers for direction indicators for automobiles	3-50
430. IS: 4061-1967 Headlight switches for automobiles	4-00
431. IS: 4062-1967 Foot-operated headlight dip switches for automobiles	3-50
432. IS: 4063-1967 Fuse box for automobiles	2-50
433. IS: 4086-1967 Methods of test for distributors	3-50
434. IS: 4362-1967 Recommendation for lighting of number plates for automobiles	2-00
435. IS: 4373-1967 Hydraulically operated stop light switches for automobiles... ..	3-50
Batteries	
436. IS: 4268-1967 Air depolarized primary wet cells	5-00
Cinematographic Equipment	
437. IS: 4495-1968 Method of measurement of light output of cinematograph projectors (for narrow gauge film)	2-00
438. IS: 4496-1968 Screen luminance for the projection of 16 mm film by incandescent lamps	2-50
439. IS: 4497-1968 16-mm portable sound-and-picture cinematograph projectors	3-50
Codes of Practice	
440. IS: 1255-1967 Code of practice for installation and maintenance of paper insulated power cables (up to and including 33 kV (<i>first revision</i>))	15-00
441. IS: 1886-1967 Code of practice for installation and maintenance of transformers (<i>first revision</i>)	11-50

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Sl. No.		Rs
442.	IS: 2597 (Part II)-1967 Code of practice for the use of electronic valves: Part II Special quality receiving valves	3-50
443.	IS: 3914-1967 Code of practice for selection of ac induction motor starters (voltage not exceeding 1 000 volts)	12-50
444.	IS: 4051-1967 Code of practice for installation and maintenance of electrical equipment in mines	6-00
445.	IS: 4347-1967 Code of practice for hospital lighting	3-50
446.	IS: 4370-1967 Code of practice for the use of lighting and signalling devices on cars and commercial vehicles	2-50
Conductors and Cables		
447.	IS: 1753-1967 Aluminium conductors for insulated cables (<i>first revision</i>)...	4-00
448.	IS: 3035 (Part III)-1967 Thermoplastic insulated weatherproof cables: Part III Polyethylene insulated and polyethylene sheathed	5-50
449.	IS: 3961 (Part I)-1967 Recommended current ratings for cables: Part I Paper-insulated lead-sheathed cables	9-50
450.	IS: 3961 (Part II)-1967 Recommended current ratings for cables: Part II PVC-insulated and PVC-sheathed heavy duty cables	8-00
451.	IS: 4288-1967 PVC-insulated and PVC-sheathed solid aluminium con- ductored cable of voltage rating not exceeding 1 100 volts	7-00
452.	IS: 4289-1967 Lift cables	5-50
Electronic Components		
453.	IS: 3373 (Part II)-1967 Wirewound resistors, type II: Part II Vitreous enamelled	5-00
454.	IS: 3700 (Part II)-1967 Essential ratings and characteristics of semi- conductor devices: Part II Low power signal diodes	2-50
455.	IS: 3700 (Part III)-1967 Essential ratings and characteristics of semi- conductor devices: Part III Rectifier diodes	2-50
456.	IS: 4114-1967 Coded markings of values of capacitance and resistance by letters and digits	2-50
457.	IS: 4147-1967 Method of measurement on conventional receiving elec- tronic valves	9-50
458.	IS: 4317 (Part I)-1967 Aluminium electrolytic capacitors: Part I General requirements and tests	7-00
459.	IS: 4400 (Part I)-1967 Methods of measurements on semiconductor devices: Part I General	2-00
460.	IS: 4400 (Part II)-1967 Methods of measurements on semiconductor devices: Part II Low power signal diodes	6-00
461.	IS: 4411-1967 Code for designation of semiconductor devices...	2-00
462.	IS: 4493 (Part I)-1968 Hollow metallic waveguides: Part I General requirements and tests	4-00
Electronic Equipment		
463.	IS: 4309-1967 Methods of measurement of direct reading pH meters...	3-50
464.	IS: 4330-1967 Methods of measurement on cathode-ray oscilloscope (DC to 10 Mc/s)	6-00
Fans		
465.	IS: 555-1967 Electric table type fans and regulators (<i>second revision</i>)	7-00
466.	IS: 1169-1967 Electric pedestal type fans and regulators (<i>first revision</i>)	7-00
467.	IS: 2312-1967 Propeller type ac ventilating fans (<i>first revision</i>)	7-50
468.	IS: 4283-1967 Hot air fan	7-00
469.	IS: 4327-1967 Electric fans and regulators for use in ships	8-00

Sl No.	Rs
Instruments and Meters	
470. IS : 722 (Part VI)-1968 ac electricity meters: Part VI var-hour meters...	7-00
Instrument Transformers	
471. IS : 3156 (Part IV)-1967 Voltage transformers: Part IV Capacitor voltage transformers	4-00
472. IS : 4146-1967 Application guide for voltage transformers	4-00
473. IS : 4201-1967 Application guide for current transformers	6-00
Insulating Materials	
474. IS : 4248-1967 Non-ignitable and self-extinguishing boards (with mineral base) for electrical purposes	7-50
475. IS : 4249-1967 Classification and methods of tests for non-ignitable and self-extinguishing properties of solid electrical insulating materials...	7-00
476. IS : 4486-1967 Recommended methods for the determination of the pre-mittivity and dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including meter wavelengths...	9-50
Insulators	
477. IS : 3347 (Part I/Sec 2)-1967 Dimensions for porcelain transformer bushings: Part I Up to 1.1 kV bushings, Section 2 Metal parts ...	4-00
478. IS : 3347 (Part II/Sec 2)-1967 Dimensions for porcelain transformer bushings: Part II 3.6 kV bushings, Section 2 Metal parts...	4-00
*479. IS : 3347 (Part III/Sec 2)-1967 Dimensions for porcelain transformer bushings: Part III 12 and 17.5 kV bushings, Section 2 Metal parts...	—
*480. IS : 3347 (Part IV/Sec 2)-1967 Dimensions for porcelain transformer bushings: Part IV 24 kV bushings, Section 2 Metal parts ...	—
*481. IS : 3347 (Part V/Sec 2)-1967 Dimensions for porcelain transformer bushings: Part V 36 kV bushings, Section 2 Metal parts ...	—
482. IS : 4257-1967 Dimensions for clamping arrangements for bushings ...	6-00
483. IS : 4318-1967 Solid core porcelain insulators for overhead traction lines...	8-00
Lamps and Lamp Accessories	
484. IS : 1258-1967 Bayonet lampholders (<i>first revision</i>)	8-00
485. IS : 1534 (Part I)-1967 Ballasts for fluorescent lamps: Part I For switch start circuits (<i>first revision</i>)	8-50
Lightning Arresters	
486. IS : 4004-1967 Application guide for non-linear resistor-type lightning arresters for alternating current systems	6-50
Nomenclature and Symbols	
487. IS : 1885 (Part III /Sec 3)-1967 Electrotechnical vocabulary: Part III Acoustics, Section 3 Sound recording and reproduction	8-00
488. IS : 1885 (Part III/Sec 6)-1967 Electrotechnical vocabulary: Part III Acoustics, Section 6 Acoustical instruments	2-50

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489.	IS: 1885 (Part X)-1968 Electrotechnical vocabulary: Part X Electrical power system protection	5-00
490.	IS: 1885 (Part XIII/Sec 1)-1968 Electrotechnical vocabulary: Part XIII Telecommunication transmission lines and waveguides, Section 1 General transmission lines	3-50
491.	IS: 1885 (Part XV)-1967 Electrotechnical vocabulary: Part XV Primary cells and batteries	3-50
*492.	IS: 1885 (Part XVI/Sec 1)-1968 Electrotechnical vocabulary: Part XVI Lighting, Section 1 General aspects... ..	—
*493.	IS: 1885 (Part XVI/Sec 2)-1968 Electrotechnical vocabulary: Part XVI Lighting, Section 2 General illumination, lighting fittings and lighting for traffic and signalling	—
494.	IS: 1885 (Part XVI/Sec 3)-1967 Electrotechnical vocabulary: Part XVI Lighting, Section 3 Lamps and auxiliary apparatus	5-50
495.	IS: 1885 (Part XVIII)-1967 Electrotechnical vocabulary: Part XVIII General terms on radio communications	5-50
496.	IS: 1885 (Part XIX)-1967 Electrotechnical vocabulary: Part XIX Radio communication circuits	6-00
497.	IS: 1885 (Part XX)-1967 Electrotechnical vocabulary: Part XX Radio-wave propagation	7-00
498.	IS: 1885 (Part XXI)-1967 Electrotechnical vocabulary: Part XXI Aerials	7-50
499.	IS: 1885 (Part XXII)-1967 Electrotechnical vocabulary: Part XXII Equipments for radio communication, transmitting and receiving	7-00
500.	IS: 1885 (Part XXIII)-1967 Electrotechnical vocabulary: Part XXIII Radio telegraphy and mobile radio	2-50
501.	IS: 1885 (Part XXIV)-1967 Electrotechnical vocabulary: Part XXIV Broadcasting, sound and television... ..	8-00
502.	IS: 1885 (Part XXV)-1967 Electrotechnical vocabulary: Part XXV Radiolocation and radio-navigation	10-00
Power Converters		
*503.	IS: 4540-1968 Monocrystalline semiconductor rectifier assemblies and equipment	—
Relays		
504.	IS: 3842 (Part I)-1967 Application guide for electrical relays for ac systems: Part I Overcurrent relays for feeders and transformers	13-00
505.	IS: 4483 (Part I)-1968 Preferred panel cut-out dimensions for electrical relays: Part I Flush mounting IDMTL relays	1-50
Switchgear and Controlgear		
506.	IS: 1822-1967 ac motor starters of voltage not exceeding 1 000 volts (<i>first revision</i>)	10-00
507.	IS: 2607-1967 Air-break isolators for voltages not exceeding 1 000 volts (<i>first revision</i>)	5-00
508.	IS: 4047-1967 Heavy duty air-break switches and composite units of air-break switches and fuses for voltages not exceeding 1 000 volts	7-00
509.	IS: 4064-1967 Normal duty air-break switches and composite units of air-break switches and fuses for voltages not exceeding 1 000 volts	7-00
510.	IS: 4237-1967 General requirements for switchgear and controlgear for voltages not exceeding 1 000 V	7-00

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Wiring Accessories

511.	IS: 1293-1967	Three-pin plug and socket-outlets (<i>first revision</i>)	...	8-00
512.	IS: 4160-1967	Interlocking switch socket outlet	...	7-00

X-Ray Tubes

513.	IS: 4096-1967	Method of measurement of optical focal spot size of X-ray tubes	...	3-50
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MECHANICAL ENGINEERING**Basic Engineering Standards**

514.	IS: 1076-1968	Preferred numbers (<i>first revision</i>)	...	8-50
515.	IS: 4499-1968	Dimensions for depth of holes for studs	...	1-50

Bearings

516.	IS: 4215-1967	Needle bearings	...	4-00
517.	IS: 4216-1967	Needle cages	...	2-00
518.	IS: 4217-1967	Needle rollers	...	3-50

Chemical Engineering

519.	IS: 4092-1967	Basket type centrifuges	...	5-50
520.	IS: 4110-1967	Glossary of terms used in high vacuum technology	...	12-00
521.	IS: 4179-1967	Sizes of process vessels and leading dimensions	...	11-00
522.	IS: 4254-1967	Jaw crushers	...	3-50
523.	IS: 4255-1967	Gyratory and cone crushers	...	2-50
*524.	IS: 4503-1967	Shell and tube type heat exchangers	...	—

Engineering Metrology

525.	IS: 3073-1967	Assessment of surface roughness	...	9-00
526.	IS: 4052-1967	Spring calipers	...	2-50
527.	IS: 4083-1967	Spring dividers	...	2-50
528.	IS: 4189-1967	Firm-joint inside and outside calipers	...	2-50
529.	IS: 4210-1967	Strip feeler gauges for electrical purposes	...	2-00
530.	IS: 4211-1967	Thread pitch gauges for ISO metric screw threads (pitch range 0.25 to 6.0 mm)	...	2-00
531.	IS: 4213-1967	Vernier depth gauges	...	3-50
532.	IS: 4239-1967	Bevel protractors	...	3-50
533.	IS: 4241-1967	Engineers' parallels	...	3-50
534.	IS: 4349-1967	Precision rollers	...	2-50
535.	IS: 4440-1967	Slip gauge accessories	...	3-50
536.	IS: 4492-1968	Welded V-blocks (diameter range 300 to 2 000 mm)	...	4-00

Gas Cylinders and Fittings

537.	IS: 4093-1967	Non-refillable liquefied petroleum gas containers	...	2-00
538.	IS: 4152-1967	Carbon dioxide cylinders for fire fighting purposes on boardship	...	5-00
539.	IS: 4379-1967	Identification of the contents of industrial gas cylinders...	...	2-00

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Gaskets and Packings					
540.	IS : 4253 (Part I)-1967	Cork composition sheets: Part I Plain cork ...			4-00
Gears					
541.	IS : 4058-1967	Accuracy requirements for coarse quality low speed gears...			2-50
542.	IS : 4059-1967	Accuracy requirements for medium quality medium speed gears ...			2-50
543.	IS : 4071-1967	Master gears (module range 1.25 to 10) ...			2-50
544.	IS : 4460-1967	Method for rating of machine cut spur and helical gears ...			8-00
Hand Tools					
545.	IS : 704-1968	Crow-bars and claw-bars (<i>first revision</i>) ...			4-00
546.	IS : 841-1968	Hand hammers (<i>first revision</i>) ...			6-50
547.	IS : 842-1968	Smith's swages (<i>first revision</i>) ...			5-00
548.	IS : 846-1968	Smith's flatters (<i>first revision</i>) ...			3-50
549.	IS : 847-1968	Smith's fullers (<i>first revision</i>) ...			4-00
550.	IS : 2027-1967	Widths across flats for spanners (<i>first revision</i>) ...			2-00
551.	IS : 2028-1968	Open jaw spanners (<i>first revision</i>) ...			5-00
552.	IS : 4057-1967	Carpenters' bodies bench planes ...			5-00
553.	IS : 4095-1967	Carpenters' pincers ...			2-00
554.	IS : 4123-1967	Chain pipe wrenches ...			3-50
555.	IS : 4378-1967	Nippers ...			2-50
556.	IS : 4481-1968	Duckbill pliers ...			2-00
557.	IS : 4485-1968	Track spanners for railways ...			2-50
558.	IS : 4500-1967	Pipe wrenches, foot print type ...			4-00
559.	IS : 4506-1968	Ballast forks ...			3-00
560.	IS : 4508-1968	Shortened single ended open jaw spanners ...			3-50
561.	IS : 4509-1968	Shortened single ended ring spanners ...			3-55
IC Engines and Automotive Vehicles					
562.	IS : 4530-1968	General requirements for positioning and routing of engine exhaust pipes in motor vehicles ...			2-00
Instruments (Drawing, Optical and Surveying)					
563.	IS : 4328-1967	Monocular dissecting microscope ...			2-00
564.	IS : 4329-1967	Measuring (travelling) microscope ...			2-50
565.	IS : 4380-1967	Abney level ...			2-00
566.	IS : 4381-1967	Pathological microscope ...			3-50
567.	IS : 4382-1967	Non-tinted ophthalmic glass ...			3-50
Machine Tools and Small Tools					
568.	IS : 4279-1967	Dimensions for bent strap clamps ...			2-00
569.	IS : 4291-1967	Dimensions for C-washers ...			2-00
570.	IS : 4292-1967	Dimensions for strap clamps ...			2-00
571.	IS : 4293-1967	Dimensions for U-strap clamps ...			2-00
572.	IS : 4294-1967	Dimensions for jig buttons ...			2-00
573.	IS : 4295-1967	Dimensions for locking dogs (catches) ...			2-00
574.	IS : 4296-1967	Dimensions for round piercing punches ...			2-50
575.	IS : 4297-1967	Dimensions for spherical washers and conical seats ...			2-00

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Weights and Measures		
633.	IS: 1057-1968 Commercial metric carat weights (<i>first revision</i>) ...	3.50
634.	IS: 1702-1967 Spring balances (<i>first revision</i>) ...	2.50
635.	IS: 2801-1967 Accuracy requirements for bulk meters used in petroleum trade ...	2.50
636.	IS: 4070-1967 Wheel weighers ...	2.50
637.	IS: 4532-1968 Portable scale for jewellers ...	2.00
638.	IS: 4539-1968 Performance requirements for auto-rickshaw meters, distance-cum-time type ...	3.50
Wire Ropes and Wire Products		
639.	IS: 2141-1968 Galvanized stay strand (<i>first revision</i>) ...	3.50
640.	IS: 2581-1968 Round strand galvanized steel wire ropes for shipping purposes (<i>first revision</i>) ...	6.50
641.	IS: 3937-1967 Recommendations for socketing of wire ropes with molten metal ...	2.00
642.	IS: 4507-1968 Yacht ropes ...	4.00
*643.	IS: 4521-1968 Wire ropes used in oil wells and oil well drilling ...	—
Unclassified		
644.	IS: 550-1967 Safes (<i>first revision</i>) ...	5.50
645.	IS: 1286-1967 Pictorial markings for handling of goods in general (<i>first revision</i>) ...	4.00
646.	IS: 4300-1967 Box pallets for through transit of goods ...	2.50
STRUCTURAL AND METALS		
Alloy Steels and Special Steels		
647.	IS: 4397-1967 Cold-rolled carbon steel strips for ball and roller bearing cages ...	2.50
648.	IS: 4398-1967 Carbon-chromium steel for the manufacture of balls, rollers and bearing races ...	4.00
649.	IS: 4430-1967 Mould steels ...	3.50
650.	IS: 4431-1967 Carbon and carbon-manganese free cutting steels ...	5.00
651.	IS: 4432-1967 Case hardening steels ...	5.50
Copper and Copper Alloys		
652.	IS: 191-1967 Copper (<i>second revision</i>) ...	5.00
653.	IS: 306-1968 Tin bronze ingots and castings (<i>second revision</i>) ...	3.50
654.	IS: 410-1967 Rolled brass plate, sheet, strip and foil (<i>second revision</i>) ...	5.00
655.	IS: 422-1967 Brass sheet and strip for the manufacture of utensils (<i>first revision</i>) ...	3.50
656.	IS: 1385-1968 Phosphor bronze rods and bars, sheet and strip, and wire (<i>first revision</i>) ...	4.00
657.	IS: 1408-1968 Recommended procedure for inspection of copper-base alloy and castings (<i>first revision</i>) ...	5.00
658.	IS: 1550-1967 Copper sheet and strip for utensils and for the general purposes (<i>first revision</i>) ...	3.50
659.	IS: 4076-1967 Hard brass wires for springs and other special purposes ...	2.50

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660.	IS : 4077-1967	Copper-nickel shot	2-00
661.	IS : 4131-1967	Nickel-copper alloy castings	2-50
662.	IS : 4170-1967	Brass rods for general engineering purposes	...	...	2-50
663.	IS : 4171-1967	Copper rods for general engineering purposes	...	...	2-50
664.	IS : 4412-1967	Copper wires for general engineering purposes	...	...	2-50
665.	IS : 4413-1967	Brass wires for general engineering purposes	...	...	2-50
*666.	IS : 4519-1968	Copper for commulotor bars	...	...	—
Corrosion Protection					
667.	IS : 4180-1967	Code of practice for corrosion protection of light gauge steel sections used in building	...	...	5-00
Cranes and Allied Appliances					
668.	IS : 4137-1967	Code of practice for heavy duty electric overhead travelling cranes including special service machines for use in steel works	...	...	12-50
Ferro-Alloys					
669.	IS : 1170-1967	Ferrochromium (<i>first revision</i>)	...	...	2-00
670.	IS : 4182-1967	Misch metal	...	...	2-00
671.	IS : 4409-1967	Ferronickel	...	...	1-50
Foundry					
672.	IS : 1280-1967	Foundry moulding boxes of steel construction (<i>first revision</i>)	...	...	4-00
673.	IS : 1305-1967	Graphite for use as foundry facing material (<i>second revision</i>)	...	...	3-50
674.	IS : 1752-1967	Coal dust for use in cast iron foundry (<i>first revision</i>)	...	...	2-00
675.	IS : 4140-1967	Limestone for use in foundries	...	...	2-00
676.	IS : 4269-1967	Dextrin for use in foundries	...	...	5-50
677.	IS : 4475-1967	Crane-suspended hand-operated geared ladles for iron foundries	...	...	7-00
678.	IS : 4476-1967	Crane-suspended hand-operated geared ladles for steel foundries	...	...	6-00
Lead, Zinc, Tin, Antimony and Their Alloys					
679.	IS : 2258-1967	Rolled zinc plate, sheet and strip (<i>first revision</i>)	...	...	4-00
680.	IS : 4280-1967	Refined secondary tin	...	...	2-00
Light Metals and Their Alloys					
681.	IS : 734-1967	Wrought aluminium and aluminium alloys forging stock and forgings for general engineering purposes (<i>first revision</i>)	...	...	11-00
Metallic Finishes					
682.	IS : 1378-1967	Oxidized-copper finishes (<i>first revision</i>)	...	...	2-00
683.	IS : 1958-1967	Fabricated nickel anodes for electroplating (<i>first revision</i>)	...	...	2-00
684.	IS : 4252-1967	Electroplated coatings of gold for decorative purposes	2-50

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Metallography and Heat Treatment	
685. IS: 4075-1967 Methods of macrostreak flaw test for steel	2-00
686. IS: 4163-1967 Methods for determination of inclusion content in steel by microscopic method	6-00
Metal Standards	
687. IS: 1387-1967 General requirements for the supply of metallurgical materials (<i>first revision</i>)	2-00
Methods of Chemical Analysis	
688. IS: 2017-1967 Methods of chemical analysis of metallic manganese ...	7-00
689. IS: 2390-1967 Methods for chemical analysis of foundry nickel ...	5-00
690. IS: 2766 (Part I)-1968 Methods of chemical analysis of primary nickel (Part I)	6-00
691. IS: 4104-1967 Methods of chemical analysis of rutile	5-50
692. IS: 4129-1967 Methods of chemical analysis of aluminium trifluoride ...	5-00
693. IS: 4354 (Part I)-1967 Methods of chemical analysis of magnesium-alumi- nium brazing alloys: Part I Analysis of aluminium, manganese, zinc and silicon	3-50
Methods of Physical Tests	
694. IS: 3754-1967 Method for calibration of standardized blocks to be used for Rockwell B and C scale hardness testing machines	2-50
695. IS: 3803-1967 Method for elongation conversions for steel	6-00
696. IS: 4132-1967 Method for calibration of standardized blocks to be used for Brinell hardness testing machines	2-50
697. IS: 4133-1967 Method for calibration of standardized blocks to be used for Vickers hardness testing machines	2-50
698. IS: 4168-1967 Method for wrapping test of aluminium and aluminium alloy wire	1-50
699. IS: 4169-1967 Method for calibration of elastic proving device ...	3-50
700. IS: 4176-1967 Method for simple torsion test of aluminium and aluminium alloy wire	2-00
701. IS: 4177-1967 Method for flattening test of aluminium and aluminium alloy tubes	2-00
702. IS: 4258-1967 Hardness conversion tables for metals	3-50
Methods of Sampling	
703. IS: 4156-1967 Methods for sampling of barytes	5-50
704. IS: 4166-1967 Methods for sampling of ilmenite and rutile	4-00
Non-destructive Testing	
705. IS: 1182-1967 Recommended practice for radiographic examination of fusion welded butt joints in steel plates (<i>first revision</i>)	6-50
706. IS: 4225-1967 Recommended practice for ultrasonic testing of steel plates ...	2-00
707. IS: 4260-1967 Recommended practice for ultrasonic testing of welds in ferritic steel	3-50
Precious Metals	
708. IS: 2271-1967 Recommended method for spectrographic analysis of platinum	2-50
709. IS: 3088-1967 Method for assaying of fine grade palladium	1-50
710. IS: 4134-1967 Recommended colour classification of rough diamond ...	1-50
711. IS: 4548 (Part I)-1967 Methods of chemical analysis of copper-gold brazing alloys: Part I Analysis of gold and copper	3-50

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Refractories		
712.	IS: 7-1967 Moderate heat duty fireclay refractories, group 'B' (<i>third revision</i>)	2-50
713.	IS: 8-1967 High heat duty fireclay refractories (<i>third revision</i>)	2-00
714.	IS: 1522-1967 Fireclay glass tank blocks (<i>first revision</i>)	2-00
*715.	IS: 4041-1967 Glossary of terms relating to refractory materials	—
Steel Castings		
*716.	IS: 4331-1967 Comparison of Indian and overseas standards for steel castings	—
717.	IS: 4491-1968 Steel castings of high magnetic permeability	3-50
*718.	IS: 4522-1968 Heat resistant alloy steel castings	—
Steel Forgings		
719.	IS: 4367-1967 Alloy and tool steel forgings for general industrial use	4-00
720.	IS: 4368-1967 Alloy steel billets, blooms and slabs for forgings for general engineering purposes	3-50
721.	IS: 4369-1967 Carbon steel bars for forgings	2-50
Steel Tubes, Pipes and Fittings		
722.	IS: 4270-1967 Steel tubes used for water wells	5-00
723.	IS: 4310-1967 Weldable steel pipe fittings for marine purposes	3-50
724.	IS: 4516-1968 Elliptical mild steel tubes	2-50
Structural Engineering		
725.	IS: 806-1968 Code of practice for use of steel tubes in general building construction (<i>first revision</i>)	6-50
726.	IS: 4014 (Part II)-1967 Code of practice for steel tubular scaffolding: Part II Safety regulations for scaffolding	5-00
Structural Shapes		
727.	IS: 1852-1967 Rolling and cutting tolerances for hot-rolled steel products (<i>first revision</i>)	6-00
Welding, General		
728.	IS: 814-1967 Covered electrodes for metal arc welding of mild steel (<i>second revision</i>)	8-00
*729.	IS: 818-1968 Code of practice for safety and health requirements in electric and gas welding and cutting operations (<i>first revision</i>)	—
730.	IS: 1179-1967 Equipment for eye and face protection during welding (<i>first revision</i>)	6-00
731.	IS: 1181-1967 Qualifying tests for metal arc welders (engaged in welding structures other than pipes) (<i>first revision</i>)	9-50
732.	IS: 1278-1967 Filler rods and wires for gas welding (<i>first revision</i>)	7-50
733.	IS: 4353-1967 Recommendations for submerged arc welding of mild steel and low alloy steel	5-00

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Wrought Steel Products

734.	IS: 2879-1967	Mild steel for metal arc welding electrode core wire (<i>first revision</i>)	2-00
735.	IS: 4072-1967	Steel for spring washers	...	...	...	2-00
736.	IS: 4223-1967	Steel wire for umbrella ribs	...	...	...	2-00
737.	IS: 4224-1967	Steel wire for office staples	...	...	...	2-00
*738.	IS: 4454-1967	Steel wire for cold formed springs	...	...	...	—

TEXTILE**Aeronautical Textiles**

739.	IS: 4227-1967	Braided nylon cord for aeronautical purposes...	...	...	...	3-50
740.	IS: 4228-1967	Nylon tapes for aeronautical purposes	...	...	...	3-50
741.	IS: 4229-1967	Nylon sewing threads for aeronautical purposes	...	...	...	2-50
742.	IS: 4437-1967	Nylon breaking cords for personnel parachutes	...	...	...	3-50

Carpets and Druggets

743.	IS: 4361-1967	Sunn hemp drugget	...	...	...	2-50
744.	IS: 4391-1967	Hand-made sunn hemp pile carpets	...	...	...	2-50
745.	IS: 4392-1967	Hand-made <i>NAMDAS</i>	...	...	...	5-00

Chemical Test Methods

746.	IS: 2369-1967	Method for determination of absorbency of absorbent textile materials (<i>first revision</i>)	...	...	...	2-00
747.	IS: 4202-1967	Method for determination of chloride content of textile materials	...	...	...	3-50
748.	IS: 4203-1967	Method for determination of sulphate content in textile materials	...	...	...	2-50
749.	IS: 4390-1967	Method for determination of ether-soluble matter in textile materials	...	...	...	2-00
750.	IS: 4419-1967	Method for determination of dimensional stability of knitted fabrics made of synthetic fibres	...	...	...	2-50
751.	IS: 4420-1967	Method for determination of conductivity of aqueous and organic extracts of textile materials	...	...	...	2-50

Colour Fastness of Textile Materials to, Determination of

752.	IS: 2454-1967	Method for determination of colour fastness of textile materials of artificial light (xenon lamp)	...	...	...	3-50
753.	IS: 4389-1967	Method for determination of colour fastness of textile materials to hot water	...	...	...	2-00

Cotton Fabrics, Khadi

754.	IS: 4106-1967	Bunting cloth, cotton khadi, dyed	2-50
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Cotton Fabrics, Mill-Made

755.	IS: 4388-1967	Cotton fabrics for reinforcement of rubber hoses	2-50
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Dyestuffs, Determination of Strength		
756.	IS: 4360-1967 Method for determination of strength of fast bases ...	2-50
757.	IS: 4394-1967 Method for evaluating strength of homogeneous vat dyestuffs	4-00
758.	IS: 4459-1967 Method for determination of strength of direct dyestuffs by dyeing test	2-50
759.	IS: 4471-1967 Methods of determination of strength of naphthols (azoic coupling components) (gravimetric and volumetric methods) ...	3-50
Dyestuffs, Methods for Application Classes		
760.	IS: 4472 (Part I)-1967 Methods for identification of the application classes of dyes on textile materials: Part I Cotton and other cellulosic fibres	4-00
Hosiery		
761.	IS: 833-1967 Rib-knitted gents' nylon stockings	3-50
762.	IS: 4044-1967 Gents' sl'povers	3-50
763.	IS: 4046-1967 Gents' cotton knitted briefs	3-50
764.	IS: 4053-1967 Knitted puttees, dyed	3-50
765.	IS: 4375-1967 Cotton knitted sports shirts	3-50
766.	IS: 4376-1967 Plain-knitted gents' cotton short drawers	4-00
Jute Fabrics		
767.	IS: 4436-1967 Jute bagging for wrapping cotton bales	2-00
Jute Mill Accessories		
768.	IS: 4462-1967 Contact wire healds for jute weaving	2-50
Nylon Fabrics		
769.	IS: 4399-1967 Nylon fabrics for industrial and special purposes ...	2-50
770.	IS: 4401-1967 Nylon fish-net twines	2-50
Packaging		
771.	IS: 293-1967 Seaworthy packaging of cotton cloth and yarn (<i>second revision</i>)	4-00
772.	IS: 4039 (Part I)-1967 Code for packaging of ready-made garments intended for export: Part I Seaworthy packaging	3-50
Rayon Fabrics		
773.	IS: 4439-1967 Rayon velvet	2-00
Ropes and Cordages		
774.	IS: 4145-1967 Code of practice for storage of ropes	1-50
Spinning Machinery Components		
775.	IS: 4042-1967 Top rollers for speed frames	2-50
Terminology		
776.	IS: 232-1967 Glossary of textile terms—Natural fibres (<i>first revision</i>) ...	12-50
777.	IS: 3596-1967 Glossary of terms relating to hosiery	12-00
778.	IS: 4125-1967 Glossary of terms pertaining to defects in fabrics ...	7-50
779.	IS: 4402-1967 Glossary of terms relating to netting for fishing—Basic terms	2-00
780.	IS: 4474-1967 Glossary of terms relating to drafting in spinning machinery	6-00

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Textile Mill Accessories (Other than Jute Mills)		
781.	IS: 1555-1967 Pitch-bound wire reeds for use in cotton looms (first revision)	2-50
782.	IS: 4187-1967 Skewers for use on cotton speed frames	2-50
783.	IS: 4416-1967 Dobby barrels	2-50
784.	IS: 4417-1967 Weft pirns for shuttles for pirn-changing automatic cotton looms	4-00
785.	IS: 4465-1967 Metal heald frame for flat steel healds	3-50
786.	IS: 4470-1967 All-metal leasing reeds for warping	2-00
Weaving Machinery Components		
787.	IS: 4438-1967 Perforated steel strips (fillets) for take-up rollers	2-00
Wool Fabrics, Khadi		
788.	IS: 4107-1967 Blanketting cloth, wool khadi	3-50
789.	IS: 4371-1967 <i>KAMBLIES</i> , wool khadi, loomstate	3-50
790.	IS: 4372-1967 Cloth, twill, dyed, wool khadi	3-50
Yarn and Similar Structures and Hosiery		
791.	IS: 834-1967 Cotton yarn, grey, for hosiery	2-50
Unclassified		
792.	IS: 4418-1967 Guide for care labelling of textiles for laundering and dry cleaning	2-50
MISCELLANEOUS		
*793.	IS: 786-1967 Conversion factors and conversion tables (first revision)	—
794.	IS: 1358-1967 Practice for layout of library catalogue code (first revision)	3-50
HINDI TRANSLATION OF INDIAN STANDARDS		
1.	IS: 712-1964 Specification for building limes	6-50
2.	IS: 786-1967 Conversion factors and conversion tables	10-00
INDIAN STANDARDS WITHDRAWN DURING 1967-68		
1.	IS: 76-1950 Linseed oil, refined, for paints	
2.	IS: 310 (Part I)-1951 Methods of sampling and test for lubricants: Part I	
3.	IS: 310 (Part II)-1954 Methods of sampling and test for lubricants: Part II	
4.	IS: 331-1951 Chrome salt	
5.	IS: 378-1952 Potash alum, pharmaceutical	
6.	IS: 409-1952 Grease, S. No. 3	
7.	IS: 420-1953 Putty, for use on metal frames	
8.	IS: 441-1955 Methods for chemical analysis of brasses and bronzes	
9.	IS: 535-1955 Benzene, pure, nitration grade	
10.	IS: 558-1954 Linseed oil, pharmaceutical	
11.	IS: 735-1956 Wrought aluminium and aluminium alloys, forging stock for general engineering purposes	
12.	IS: 1087-1957 Single pole 5-ampere tumbler switches for ac/dc	
13.	IS: 1487-1959 Edible groundnut flour (expeller pressed)	
14.	IS: 1567-1960 Metal clad switches (current rating not exceeding 100 amperes)	
15.	IS: 2120-1963 15-Ampere tumbler switches (revised)	
16.	IS: 3474-1966 Solvent-extracted linseed oil	

*Under print.

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE			
PREVIOUS YEAR	SL No.	HEADS OF EXPENDITURE	AMOUNT
Rs			Rs
		1. Pay	
1 510 460-32	1.1	Officers	1 656 053-44
1 476 851-40	1.2	Staff	1 662 106-72
		2. Allowances	
545 172-49	2.1	Officers	626 922-96
1 019 840-94	2.2	Staff	1 326 455-43
108 045-13	3.	CHS and Other Medical Charges	126 946-32
		4. Provident Fund	
168 571-00	4.1	Contribution to CPF	171 671-00
111 569-00	4.2	Interest to CPF	127 393-00
10 101-00	4.3	Interest to GPF	14 027-00
73 758-00	5.	Pension-cum-Gratuity Fund	143 782-40
16 421-28	6.	Staff Welfare	20 454-00
		7. TA	
89 516-98	7.1	Overseas	93 717-50
306 318-49	7.2	Officers and Staff	193 340-21
43 713-75	7.3	Committee Members	42 216-21
		8. Subscription to International Organizations	
130 681-85	8.1	ISO	129 932-70
69 800-60	8.2	IEC	69 830-00
		9. Production	
322 644-02	9.1	Standards	455 317-87
284 956-10	9.2	Bulletin	269 900-29
113 712-81	9.3	Calculation Aids	43 949-07
65 273-64	9.4	Miscellaneous	58 397-15
50-00	10.	Research and Consultation	1 728-67
65 496-23	11.	Testing Fees	94 915-38
48 401-67	12.	Laboratory Apparatus and Stores	72 228-78
6 581 356-70		CARRIED OVER	7 401 336-10

DIX B

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THE YEAR ENDED 31 MARCH 1968

INCOME

PREVIOUS YEAR	SL No.	HEADS OF INCOME	AMOUNT
Rs			Rs
1 509 303-82	1.	Membership Subscription	1 589 651-98
	2.	<i>Sales</i>	
697 008-67	2.1	Standards	799 567-50
253 693-80	2.2	Calculation Aids	77 631-50
3 750-00	2.3	Bulletin Subscription	3 300-00
152 531-59	2.4	Bulletin Advertisements	166 741-46
81 223-91	3.	Sales Commission	204 605-32
1 411 695-91	4.	Certification	1 594 589-55
16 293-25	5.	CHS Contribution	17 810-25
14 077-75	6.	Conferences	12 458-00
10 000-00	7.	Training Programme	41 000-00
106 429-83	8.	Miscellaneous Receipt	58 605-51
	9.	<i>Government Grant</i>	
	9.1	From Ministry of Industrial Development & Company Affairs	4 377 000-00
3 900 000-00	9.2	From Ministry of Commerce (MDF)	
	i)	Quality Control for Export of Jute Goods	121 000-00
121 500-00	ii)	Exhibition UNCTAD	9 492-00
—			
8 277 508-53		CARRIED OVER	9 073 453-07

(Continued)

APPEN

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR	Sl No.	HEADS OF EXPENDITURE	AMOUNT
Rs			Rs
6 581 356·70		BROUGHT FORWARD	7 401 336·10
	13.	<i>Publicity</i>	
4 918·29		13.1 Exhibitions	15 442·45
99 303·28		13.2 Advertising	61 938·40
5 749·98		13.3 Miscellaneous	3 836·15
33 425·23	14.	Conferences	12 906·00
7 772·54	15.	Training Programmes	30 985·50
45 336·39	16.	Library	71 756·32
	17.	<i>Office Expenses</i>	
189 894·19		17.1 Stationery	206 491·02
155 953·26		17.2 Postage and Telegrams	168 464·16
78 879·97		17.3 Telephones	145 533·22
15 731·44		17.4 Recruitment	6 210·93
110 883·26		{ 17.5 Refreshment	14 940·56
		{ 17.6 Miscellaneous	90 816·95
	18.	<i>Furniture and Equipment</i>	
48 354·24		18.1 Furniture	72 265·12
31 455·89		18.2 Equipment	58 710·24
	19.	<i>Buildings</i>	
160 092·49		19.1 Rent and Taxes	212 295·75
105 463·31		19.2 Electricity and Water	123 221·70
50 318·87		19.3 Maintenance	56 066·07
	20.	<i>Local Transport</i>	
—		20.1 Vehicles	—
32 816·50		20.2 Maintenance	33 340·83
1 500·00	21.	Audit Fees	2 000·00
192 536·98	22.	Quality Control for Export of Jute Goods	215 537·02
182 140·49	23.	Depreciation	200 163·50
8 133 883·30			9 204 257·99
143 625·23		Add excess of income over expenditure	—
8 277 508·53		TOTAL	9 204 257·99

DIX B — Contd

THE YEAR ENDED 31 MARCH 1968

INCOME

PREVIOUS YEAR	Sl. No.	HEADS OF INCOME	AMOUNT
Rs			Rs
8 277 508-53		BROUGHT FORWARD	9 073 453-07

8 277 508-53

DEFICIT

9 073 453-07
130 804-92

8 277 508-53

TOTAL

9 204 257-99

(Continued)

A P P E N
BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL No.			AMOUNT
Rs			Rs	Rs
	1.	<i>Capital Account</i>		
	a)	As per last Balance Sheet	2 671 344-76	
	b)	Less: Excess of Expenditure over Income during the year	130 804-92	
			<u>2 540 539-84</u>	
2 671 344-76	c)	Less: Unspent balance of pre- vious year's grant adjusted	147 379-29	2 393 160-55
			<u>147 379-29</u>	
	2.	<i>Reserve and Funds</i>		
	2.1	K. L. Moudgill Prize Fund		
	a)	As per last Balance Sheet	14 001-20	
	b)	Add: Receipt during the year	1 253-18	
			<u>15 254-38</u>	
14 001-20	c)	Less: Expenditure during the year	1 060-00	14 194-38
			<u>1 060-00</u>	
	2.2	Gratuity Fund		
	a)	As per last Balance Sheet	100 615-58	
	b)	Add: Receipt during the year	40 377-75	
			<u>140 993-33</u>	
100 615-58	c)	Less: Expenditure during the year	16 040-00	124 953-33
			<u>16 040-00</u>	
	2.3	ISI Second Building & Labo- ratory Fund		
	a)	Government Grant		
	i)	As per last Balance Sheet	799 520-49	
799 520-49	ii)	Add: Receipt during the year	285 000-00	1 084 520-49
			<u>285 000-00</u>	
	b)	Interest-Free Deposits (Repayable within five years)		
	i)	As per last Balance Sheet	787 501-00	
787 501-00	ii)	Less: Refunds during the year	11 000-00	776 501-00
			<u>11 000-00</u>	<u>776 501-00</u>
4 372 983-03		CARRIED OVER		4 393 329-75

APPEN BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL NO.		Rs	Rs	AMOUNT Rs
4 372 983-03		BROUGHT FORWARD			4 393 329-75
182 686-83		c) Interest-Free Overdraft			122 488-12
		d) Donations, etc			
		i) As per last Balance Sheet	264 135-92		
264 135-92		ii) Add : Receipt during the year	40 869-88		305 005-80
1 315 843-97		e) Rent of Second Building			1 315 843-97
2 932 606-00	2.4	Contributory Provident Fund			3 321 949-60
282 688-00	2.5	General Provident Fund			433 144-00
257 143-04	2.6	Pension Fund			408 658-99
		3. <i>Current Liabilities</i>			
		3.1 Advance Subscription			
		a) For 1968			
		i) As per last Balance Sheet	100-00		
1 001 961-03		ii) Add : Receipt during the year	1 052 790-46		1 052 890-46
2 550-00	3.2	Advance Fees towards Training Programme and Conferences			—
		3.3 Sundry Creditors			
		a) Inland	182 046-27		
		b) Abroad	183 309-22		
291 701-91		c) Earnest Money	16 117-51		381 473-00
10 904 299-73		CARRIED OVER			11 734 783-69

DIX B—Contd

AT 31 MARCH 1968

ASSETS

PREVIOUS YEAR	SL No.	AMOUNT	
Rs		Rs	Rs
4 424 430-83		BROUGHT FORWARD	
	1.5 Staff Cars		4 597 125-46
	a) As per cost value up to 31-3-67	169 132-66	
	b) Additions during the year	28 396-75	
		197 529-41	
	c) Disposed of during the year	(-) 32 898-37	
	d) Depreciation w/o up to 31-3-67	(-) 72 474-13	
	e) Depreciation w/o during the year	(-) 23 893-82	
96 658-53	f) Depreciation adjusted on sales	(+) 25 312-21	93 575-30
	1.6 Library Books		
	a) As per cost value up to 31-3-67	26 209-83	
26 209-83	b) Additions during the year	2 316-25	28 526-08
	2. Investments at Cost		
1 002 535-72	2.1 Deposits with Banks		552 648-90
5 000-00	2.2 Shares of ISI Employees' Con- sumer Co-operative Store		5 000-00
11 400-00	2.3 Shares of Jay Engineering Works (A/C K.L. Moudgill Prize Fund)		11 400-00
	2.4 Contributory Provident Fund		
	a) Investments in National/ Defence Certificates	2 732 000-00	
	b) Advances to Members	220 425-00	
	c) Due from ISI	37 066-00	
2 932 606-00	d) Bank Balance	332 458-60	3 321 949-60
	2.5 General Provident Fund		
	a) Investments in National Defence Certificates	335 000-00	
	b) Advances to Members	50 779-00	
	c) Due from ISI	23 460-00	
282 688-00	d) Cash/Bank Balances	23 905-00	433 144-00
257 143-04	2.6 Pension Fund		408 658-99
9 038 671-95	CARRIED OVER		9 452 028-33

(Continued)

A P P E N
BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL NO.	Rs	Rs	AMOUNT Rs
10 904 299-73			BROUGHT FORWARD	11 734 783-69
10 904 299-73			T O T A L	11 734 783-69

I have examined the foregoing accounts and balance sheet of Indian Standards Institution and have obtained all the information and explanations that I have required, and I certify, as a result of my audit, that in my opinion these accounts and Balance Sheet are properly drawn up so as to exhibit a true and fair view of the state of affairs of the Institution according to the best of my information and explanations given to me and as shown by the books of the Institution.

Sd/-

(K. Lalit)

Accountant General

Commerce, Works & Miscellaneous, New Delhi

DIX B — Contd

AT 31 MARCH 1968

ASSETS

PREVIOUS YEAR	SL No.		Rs	Rs	AMOUNT
9 038 671-95		BROUGHT FORWARD			9 452 028-33
		3. <i>Current Assets</i>			
165 903-66	3.1	Stock of Printing Paper (at cost)			156 110-18
	3.2	Sundry Debtors			
	a)	Sale of Publications	325 505-98		
441 396-71	b)	Advertisements in Bulletin and ISO Souvenir	123 230-94		448 736-92
		4. <i>Loans and Advances</i>			
	4.1 a)	Conveyance Advances to Staff	195 692-00		
	b)	Advances for Purchases, etc	66 307-87		
260 515-61	c)	Festival Advance	498-00		262 497-87
38 250-00	4.2	Security Deposits			44 850-11
55 975-63	4.3	Prepaid Expenses			82 163-43
—	4.4	Due from Marketing Develop- ment Fund (Ministry of Commerce)			121 492-00
		5. <i>Cash and Bank Balance</i>			
888 163-27	5.1	With Bankers			1 155 539-79
6 387-81	5.2	In Hand (Including Imprest)			5 944-28
9 035-09	5.3	Postage Stamps in Hand			5 420-78
10 904 299-73		TOTAL			11 734 783-69

Sd/-

(B. L. Bhatia)

Director (Accounts)

Indian Standards Institution, New Delhi

APPENDIX C
Principal Officers of
INDIAN STANDARDS INSTITUTION
(As on 31 March 1968)

<i>General Council (GC)</i>	
President	SHRI FAKHRUDDIN ALI AHMED Minister of Industrial Development & Company Affairs, Government of India
Vice-Presidents	SHRI JEHangIR J. GHANDY SHRI PRABHU V. MEHTA
<i>Executive Committee (EC)</i>	
Chairman	SHRI JEHangIR J. GHANDY
<i>Finance Committee (FC)</i>	
Chairman	SHRI PRABHU V. MEHTA
<i>Agricultural & Food Products Division Council (AFDC)</i>	
Chairman	DR B. P. PAL
Vice-Chairman	SHRI A. C. KHANNA
<i>Chemical Division Council (CDG)</i>	
Chairman	DR G. P. KANE
Vice-Chairman	DR J. S. BADAMI
<i>Civil Engineering Division Council (CEDC)</i>	
Chairman	PROF M. S. THACKER
Vice-Chairman	SHRI C. B. PATEL
<i>Consumer Products Division Council (CPDC)</i>	
Chairman	COL R. D. AYYAR
Vice-Chairman	BRIG M. N. PATEL
<i>Electrotechnical Division Council (ETDC)</i>	
Chairman	SHRI S. SWAYAMBU
Vice-Chairman	SHRI H. V. NARAYANA RAO
<i>Mechanical Engineering Division Council (EDC)</i>	
Chairman	DR B. D. KALELKAR
Vice-Chairman	SHRI NANUBHAI AMIN
<i>Structural & Metals Division Council (SMDC)</i>	
Chairman	SHRI JEHangIR J. GHANDY
Vice-Chairman	SHRI O. S. MURTHY
<i>Textile Division Council (TDC)</i>	
Chairman	SHRI HARSHAVADAN MANGALDAS
Vice-Chairman	DR T. S. SUBRAMANIAN

<i>Certification Marks Advisory Committee (CMAC)</i>	
Chairman	SHRI PRABHU V. MEHTA
<i>Advisory Committee on Implementation of Indian Standards (ACI)</i>	
Chairman	SHRI J. S. LALL
<i>Industrial Safety Advisory Committee (ISAC)</i>	
Chairman	SHRI N. S. MANKIKAR
<i>Women's Advisory Committee (WAC)</i>	
Chairman	SHRIMATI LILAVATI MUNSHI
<i>Bombay Branch Office Advisory Committee</i>	
Chairman	SHRI PRABHU V. MEHTA
<i>Calcutta Branch Office Advisory Committee</i>	
Chairman	SHRI K. K. BIRLA
<i>Kanpur Branch Office Advisory Committee</i>	
Chairman	SHRI SITA RAM JAIPURIA
<i>Madras Branch Office Advisory Committee</i>	
Chairman	SHRI D. C. KOTHARI

STAFF

Director General: DR A. N. GHOSH

Deputy Directors General: SHRI B. S. KRISHNAMACHAR
DR SADGOPAL

Agricultural & Food Products Department

Deputy Director/Head DR HARI BHAGWAN

Chemical Department

Director SHRI D. DAS GUPTA

Civil Engineering Department

Director SHRI R. NAGARAJAN

Consumer Products Department

Director SHRI A. B. RAO

Electrotechnical Department

Director SHRI Y. S. VENKATESWARAN

Mechanical Engineering Department

Director

SHRI M. V. PATANKAR

Structural & Metals Department

Director

DR A. K. CHATTERJEE

Textile Department

Director

SHRI S. M. CHAKRABORTI

Accounts, Sales & Distribution Department

Director

SHRI B. L. BHATIA

Administrative Department

Secretary

SHRI HARBANS LAL

Certification Marks Department

Director

SHRI A. S. CHEEMA

Implementation Department

Director

DR A. K. GUPTA

Laboratory

Deputy Director/Head

DR S. GHOSH

Publications Department

Director

SHRI RAM D. TANEJA

Public Relations Department

Director/Public Relations Officer

SHRI KAVALJIT SINGH

Statistics Department

Director

DR B. N. SINGH

Bombay Branch Office

Director

SHRI S. SRINIVASAN

Calcutta Branch Office

Director

SHRI A. P. BANERJI

Hyderabad Branch Office

Deputy Director/Head

SHRI T. S. SUBRAMANIAM

Kanpur Branch Office

Deputy Director/Head

SHRI K. K. TRIPATHI

Madras Branch Office

Director

SHRI G. L. GULATI

INDIAN STANDARDS INSTITUTION

—THE NATIONAL STANDARDS ORGANIZATION OF INDIA

Indian Standards Institution (ISI) was established in 1947, the year of Indian Independence, by a Resolution of the Government of India, with the active support of industrial, scientific and technical organizations in the country.

AIMS AND OBJECTS

The aims and objects of the Institution include preparation of standards relating to products, commodities, materials, and processes and the promotion of their general adoption on national and international scale; promotion of standardization, quality control and simplification in industry and commerce; co-ordination of the efforts of the producers and users for the improvement of materials, products, appliances, processes and methods; provision of the registration of standardization marks applicable to products, commodities, etc; and circulation of statistics and other information relative to standardization in all its branches.

WORKING OF ISI

The Indian Standards Institution is an autonomous body and its overall control rests with the General Council with the Minister for Industrial Development & Company Affairs, Government of India, as its *ex-officio* President. The General Council consists of representatives from industry, Central and State Governments, scientific and technical organizations, subscribing members and Division Councils of ISI. The day-to-day administration is carried out by the Executive Committee.

The income of the Institution is received from grant-in-aid from the Government of India, subscription from members including State Governments, sale of Indian Standards and Certification Marking fees.

FORMULATION OF INDIAN STANDARDS

For the formulation of Indian Standards (which are the national standards of the country), the Institution functions through a large number of technical committees appointed by the following eight Division Councils, which are responsible for the work of standardization in their respective fields:

- a) Agricultural and Food Products Division Council,
- b) Chemical Division Council,
- c) Civil Engineering Division Council,
- d) Consumer Products Division Council,
- e) Electrotechnical Division Council,
- f) Mechanical Engineering Division Council,
- g) Structural and Metals Division Council, and
- h) Textile Division Council.

On the technical committees are taken experts representing different interests, such as manufacturers; purchasers; consumers; scientific, research and technical organizations; and Government departments, who work in an honorary capacity and evolve national standards by a consensus of opinion. The Indian Standards Institution is today the biggest *co-operative organization in the country* contributing to Nation's economic and industrial development through standardization.

A draft standard has to pass through a number of stages before it is adopted as a national document. During the wide circulation stage, the draft is circulated to all interests concerned both in India and abroad for eliciting technical comments which are considered before it is finalized as an Indian Standard.

IMPLEMENTATION OF INDIAN STANDARDS

Indian Standards, formulated with the agreement and concurrence of different interests concerned, constitute ideal solutions for various recurring problems, such as technical basis for contracts, manufacture, purchase, supply and testing.

Different departments of Central and State Governments and many local bodies have taken policy decisions to adopt Indian Standards. In addition, important industrial undertakings and purchase organizations, both in public and private sectors, have adopted Indian Standards in their manufacturing and purchase programmes.

ISI CERTIFICATION MARKS SCHEME

With the object of providing practical utility of standards to the ordinary consumer, the Institution is operating, under the authority of the ISI Certification Marks Act, 1952 (as amended in 1961) passed by the Parliament, the ISI Certification Marks Scheme. Under the Scheme, licences are issued to manufacturers, who produce goods according to the provisions laid down in the relevant Indian Standards, whereby they are permitted to apply on their products ISI Certification Mark which provides a third-party guarantee to the consumer to the effect that the goods are of standard quality. The Scheme not only gives the guarantee of quality to the consumer who neither possesses the technical know-how nor the necessary equipment for testing, but also helps the manufacturer in producing goods of quality and in reaping the advantages accruing from standardization.

For ensuring the conformity of such products to the relevant Indian Standards, a scheme, under which strict quality control and vigilance are exercised at different levels of production, forms a necessary adjunct to every licence. Regular and surprise inspections of the licensees' factories are carried out by qualified inspectors of the Institution, and samples of their products are drawn from factories as well as open market and subjected to tests in independent laboratories.

STANDARDS CONSCIOUSNESS

In order to encourage a wider implementation of Indian Standards to publicise ISI Certification Marks Scheme and to create standards consciousness among different sectors of economy, conferences at State level are held from time to time.

For focussing public attention on the importance of standardization in industrial development and for creating standards-consciousness among different interests, Indian Standards Conventions are held annually at different important industrial centres in the country. Besides, different public relations and publicity media are availed of for publicising the vital importance of standardization to the various sectors of economy.

As a result of concerted efforts, awareness about the utility of standardization is on the increase with the growing industrialization of the country.

ISI LABORATORY

ISI has set up its own Laboratory with the primary object of testing certified products manufactured in accordance with the Indian Standard Specifications, as well as those offered by applicants for the grant of licences under the ISI Certification Marks Scheme. This has helped the Institution in avoiding untoward delay in testing and also in exercising proper quality control on certified goods.

Besides testing, the ISI Laboratory carries out investigational work relating to Indian Standard Specifications and amendments to these specifications. In the light of its investigations the Laboratory suggests to the various technical committees of ISI new, simpler, economical and less time-consuming analytical techniques. In addition, it extends facilities for training in testing products according to Indian Standard Specifications.

COMPANY STANDARDIZATION

With the object of assisting Indian industries in organizing their in-plant standards activity, ISI has, since 1963, been organizing:

- Training programmes, which provide detailed training in standardization methods and techniques with a thorough indoctrination in basic principles and practices;
- Survey programmes, which arouse great interest among the participants to organize in-plant standards activity in their respective organizations;
- Conferences on management and company standardization, which are aimed at promoting company standardization activity through top management support; and
- Factory visits.

These programmes have covered a substantial number of industrial units all over the country and have led to the initiation of in-plant standards activity in many of them.

STANDARDS LIBRARY

The Institution has a well-equipped library of standards and specifications issued by different authorities in various countries. Besides, the library contains technical, scientific, research and other publications. Important scientific and technical journals published in different countries are also received. In addition, the library helps in preparing bibliographies for the use of technical personnel and experts of the Institution.

SUBSCRIBING MEMBERS

All organizations and individuals, who are interested in the aims and objects of the Institution and who want to avail themselves of the benefits accruing from standardization, can join the Institution as subscribing members of which there are five categories, namely, Patrons, Donor Members, Sustaining Members, Associate Members and Individual Members.

Depending upon the class of membership, the subscribing members of the Institution enjoy a number of privileges, such as receipt, free of charge,

of one copy each of ISI publications in which they may have registered their interest; purchase of ISI publications at a discount; access to technical library of the Institution; facility of getting information on standardization both in India and abroad and the privilege to propose new subjects for standardization.

INTERNATIONAL COLLABORATION

For furthering India's interest at international level, so far as standardization is concerned, the Institution collaborates closely with International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC)—the two international organizations devoted to standardization work. Secretariats of a number of international technical committees, sub-committees, and working groups dealing with subjects of importance to India are held by ISI. The Institution is also an active member of the Commonwealth Standards Conference (CSC) which is held periodically to review the progress made by different Commonwealth countries in respect of standardization and to discuss mutual problems. In addition, active liaison is maintained with other international organizations like Economic Commission for Asia and Far East (ECAFE) as well as with National Standards Organizations of other countries.

BRANCH OFFICES

For keeping close liaison with and for rendering efficient service to industry, trade and commerce in different regions of the country, the Institution has opened its Branch Offices in Bombay, Calcutta, Hyderabad, Kanpur and Madras.

PUBLICATIONS

The publications of the Institution include:

- a) Indian Standards,
- b) Handbooks and Reports,
- c) Handbook of ISI Publications,
- d) Sectional (Classified) Lists of Indian Standards,
- e) ISI Bulletin,
- f) Standards : Monthly Additions, and
- g) Annual Report of ISI.