

Shri Bhagwan Sahay, Governor of Kerala, lighting the traditional JYOTI to mark the inauguration of the Tenth Indian Standards Convention held at Ernakulam in December 1966.



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T W E N T I E T H
**ANNUAL
REPORT**
APRIL 1966—MARCH 1967

INDIAN STANDARDS INSTITUTION

Manak Bhavan

9 Bahadur Shah Zafar Marg, New Delhi 1

Free to Members



Price Rs 2⁰⁰

THIS REPORT WILL BE PRESENTED BY THE EXECUTIVE COMMITTEE
TO THE GENERAL COUNCIL OF ISI AT ITS NEXT ANNUAL MEETING

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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 and other organizations and individuals 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

The year 1966-67 saw the completion of two decades of existence of the Indian Standards Institution during which period it was able to establish itself firmly in the service of industrial and economic development of the country through standardization and quality control. The year under review also marked the beginning of the Fourth Five-Year Plan of ISI. Some departments were shifted to Manakalaya, the second building of ISI Headquarters, the need for which had been strongly felt for the last few years owing to rapidly expanding activities of the Institution.

ISI continued to pursue its multifarious activities in respect of formulation and implementation of Indian Standards, certification marking of goods, helping Indian industries organize in-plant standardization, training standards engineers, and co-ordination with and participation in standardization work at international level.

The activities of the Institution, during the year under review, registered a marked increase over those of the last year. Thirty percent more Indian Standards were published. Many new items of consumer and general interest were brought within the purview of the ISI Certification Marks Scheme and the ISI Mark was recognized by the Government of India for a number of products for export purposes. The ISI Laboratory was moved to Manakalaya and was expanded to cope with the increasing demand on its services in connection with the testing of products for the formulation of standards and issue of licences.

Concerted efforts were made to ensure implementation of Indian Standards by various organizations in the public and private sectors. Different media were utilized for establishing effective public relations with all the organizations and individuals concerned with research, development, production, distribution and consumption of economic goods and services.

ISI also assisted neighbouring countries in the establishment and promotion of standards activity and actively participated in the work of organizations engaged in standardization at international level.

The General Council of the Institution held its twenty-second meeting on 27 March 1967 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 re-elected Vice-Presidents of ISI for another term of one year ending 31 March 1968. The Executive and Finance Committees held six meetings each during the year.

Standards Published — The number of Indian Standards in force, including those under print but excluding those withdrawn, on 31 March 1966 was 3 363. During the year under report, 592 new standards, as against 458 during the previous year, were sent to press and 10 existing standards were withdrawn. Thus, the total number of Indian Standards in force, including those under print, on 31 March 1967 was 3 945.

In addition to the 592 new standards, the Institution issued during the year 139 revisions of existing standards, thereby raising the total of the Indian Standards issued during 1966-67 to 731 as against 562 during 1965-66. ISI also issued Hindi translation of one standard in the year under review. New and revised standards and standards withdrawn during the year are listed in Appendix A (see P 91).

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

	<i>As on 31 March '67</i>	<i>As on 31 March '66</i>
a) New licences granted during the year	188	185
b) Total number of licences issued since the inception of the Scheme	1 423	1 235
c) Applications received during the year for the grant of licences	464	469
d) Total number of applications received since the inception of the Scheme	2 903	2 439
e) Annual value of goods covered under the Scheme	Rs 3 650 million (Approx)	Rs 3 500 million (Approx)

New items covered under the Scheme included ac contactors, adhesive cellulose tape, aircraft and marine plywood, automotive brake lining, basic carbonate of lead (white lead) for paints, β -oxynaphthoic acid, bicycle rubber tubes, calcined magnesite, copper plate, sheet and strip for industrial purposes, direct-on-line motor starters, deformed bars for concrete reinforcement, fibre hardboards, flashlights, fittings for aluminium

- d) *Poultry Feed and Animal Feed* — The Directorate General of Technical Development advised the manufacturers of cattle and animal feeds that assistance in procuring raw materials would be given to such units only as had obtained ISI Mark for their products.
- e) *Steel Wire Ropes* — The Chief Inspector of Mines decided to include in the approved list of wire ropes suppliers the names of such manufacturers only as covered their wire ropes under the ISI Certification Marks Scheme.

Recognition of Other Standards as Indian Standards — Defence specification IND/SL/7061 (b) Desiccant and Desiccant with Indicator was recognized as IS : 3401-1966 'Indian Standard specification for desiccant silica'.

Extension of ISI (Certification Marks) Act — On the suggestion of the Certification Marks Advisory Committee, the Central Government, vide notification published in the Gazette of India, Part II, Section 3(i) dated 6 August 1966, under GSR No. 1205 dated 28 July 1966, extended the ISI (Certification Marks) Act, 1952 (36 of 1952) to the Union territories of Goa, Daman and Diu.

ISI Laboratory — The ISI Laboratory which completed five years of its working during 1966-67, was shifted, as planned, to the basement and first floor of Manakalaya, the second ISI Headquarters building. However, the laboratory for testing water meters and sanitarywares, including flushing cisterns, continues to function in Manak Bhavan.

There was a considerable increase in the quantum of work. The progress made in testing work during the year under report is as under:

	<i>During 1966-67</i>	<i>During 1965-66</i>	<i>Since Setting up of the Laboratory</i>
a) Samples received	3 502	2 599	10 556
b) Samples tested	3 300	2 754	9 961
c) Indian standard specifications covered	38	97	313
d) Value of testing work done	Rs 292 959.50	Rs 238 986.75	Rs 897 155.60

The progress of work done in the ISI Laboratory since its inception is graphically represented in Fig. 2.

In addition to testing work a number of investigational problems referred to by the technical divisions as well as those arising out of the testing work done in the Laboratory were taken up. During the year under review, the Laboratory took up 37 investigational research problems of which 25 were completed. Of the investigational problems undertaken, special mention may be made of the following:

- a) Breaking strength test of hessian-based bitumen felt;

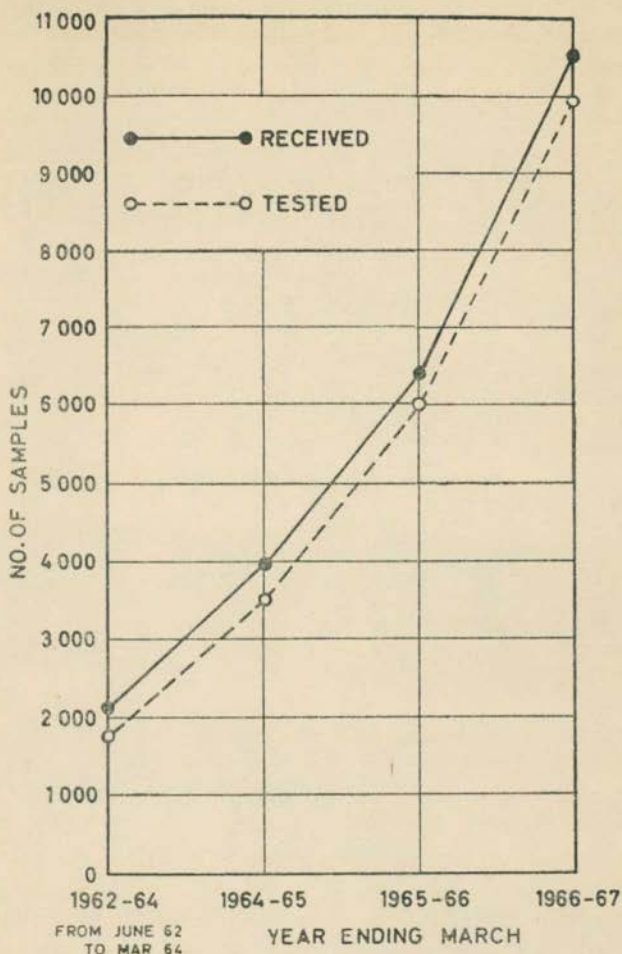


FIG. 2 PROGRESS OF TESTING IN ISI LABORATORY

- b) Comparative test evaluation of lampholder made of brass and aluminium;
- c) Corrosion of acetic acid and formic acid on galvanized armoured wire and tape in heavy duty cables;
- d) Impact test of gun metal for use in pressure gas valves;
- e) Determination of softening temperature of sealing compound used in 5-A tumbler switches;
- f) Standardization of modified column chromatographic technique for the estimation of gamma isomer content in BHC;

- g) Suspending ability of DDT water-dispersible powders;
- h) Laboratory analysis of samples of oil of palmarosa authentically distilled at Purandad Essential Oil Plantation (Industry), Doiwala;
- j) Collaborative study of method for the determination of DDT content by hydrolyzable chlorine method;
- k) Collaborative study of pH value on dye-based fountain pen ink;
- m) Evaluation of the method of sieving test for seed dressing formulations; and
- n) Determination of pH values of cosmetic, face and body talc powder.

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

<i>Laboratory</i>	<i>Product</i>
Eskaps (India) Pvt Ltd, Calcutta	Jute products
Bharat Heavy Electricals (India) (Tiruverumbur Unit) Tiruchirapalli	Iron, steel and steel products
Chemical Laboratory, Directorate of Industries & Civil Supplies, Government of Rajasthan, Jaipur	Pesticides
Madras Veterinary College, Director of Animal Husbandry, Government of Madras, Madras	Poultry feed
Industrial Research Laboratory, Government of Gujarat, Baroda 2	Chemical and chemical products

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 electric motors in ISI Laboratory.

Implementation of Indian Standards — Implementation of Indian Standards in industrial and commercial practices of the country continued to receive serious attention during the period under review. To pursue systematically the various possible lines of approach and to assess the success of such approaches, a constant vigil was kept by the Implementation Department for ensuring adherence to decisions taken by the Central and different State Governments as regards implementation of Indian Standards.

Adoption of Indian Standards — A high level of adoption of Indian Standards was maintained by central purchase organizations of the

Government of India. The position of adoption of Indian Standards by various departments of the Government of India is as under:

DEPARTMENT	NUMBER OF INDIAN STANDARDS ADOPTED		AS ON 31 MARCH 1967
	Up to 31 March 1966	From 1 April 1966 to 31 March 1967	
Directorate General of Supplies & Disposals (DGS&D)	2 352	136	2 488
Department of Defence Production, Ministry of Defence (DDP)	1 188	168	1 356
Research, Designs & Standards Organization (Railways) (RDSO)	1 097	52	1 149
Posts & Telegraphs Department (P & T)	244	333	577

In addition, Ministry of Food & Agriculture, Chief Inspector of Mines, various state electricity boards, municipal corporations, production units and others intimated 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.

Standards Departments/Cells — At the instance of the Secretary to the then Union Ministry of Industry, the Secretary to the Government of Kerala advised all public undertakings in the State to consider the setting up of company or in-plant standards departments or cells to develop company standards (based on national standards, wherever available) to guide all kinds of activities, such as process and inventory control, design, production, elimination of wastage and variety reduction. They were also advised to take steps to join ISI Certification Marks Scheme in order to ensure the quality of their production.

List of Manufacturers Operating to Indian Standards — As an aid to implementation, 43 inquiries covering 388 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, inquiries relating to various items covering 163 Indian

Standard Codes of practice, methods of tests, etc, were sent to different purchasers and consumers.

Mention of Indian Standards in Tender Notices — For ensuring the implementation of Indian Standards, tender notices in different daily newspapers and journals were scrutinized and the cases in which Indian Standards existed but were not quoted as the basis of purchase were referred to the original indentors. In many cases, the indentors agreed to purchase goods on the basis of Indian Standards.

Company Standardization — During the year under report, the Institution continued to render assistance to industries in developing their in-plant standardization activity; for this purpose, seminars and symposia were organized.

Company Standardization Seminar — To provide detailed training in standardization techniques for promoting and developing organized in-plant standardization activity in industries and to assess and improve the standardization practice wherever it already exists, three seminars were held at the following places, in collaboration with the National Productivity Council and the Local Productivity Councils:

<i>Place</i>	<i>Period</i>
Bangalore	21 Mar to 29 Apr 1966
Baroda	11 Jul to 19 Aug 1966
Poona	5 Sep to 14 Oct 1966

Seventy-eight persons representing 51 organizations participated in the seminars. As a practical benefit to the participating companies, the participants prepared specimen company standards of their own choice. These company standards were scrutinized by ISI. The participants were also given guidance for preparing reports bringing out the recommendations of their own managements indicating the present status of company standardization in the company and possible improvement and benefits that might accrue if the work was properly organized.

Symposium on Company Standardization Practices — To provide opportunities to participants of earlier programmes for exchange of views on best solutions to practical problems leading to further development of their in-plant standards activity, two-day symposia on company standardization practices were organized at Bombay and Calcutta during April and July respectively in collaboration with the local Chapters of Standards Engineers Society. These symposia, which were attended by over 100 participants from all over the country, discussed basic engineering standards; numbering system; standardization of parts, procedures and methods; standards for manufacturing control and services; and company standards organization. At the concluding session of each symposium need was felt for having a forum where persons engaged in company

standardization activity could meet periodically for exchange of their views and experiences.

Other Seminars and Courses — Dr A. K. Gupta, Director, Implementation Department, delivered a series of lectures on variety rationalization and standardization at the following seminars and courses:

<i>Function</i>	<i>Venue & Period</i>	<i>Conducted by</i>
Seminar on import substitution	Bangalore—April 1966	Institution of Production Engineers, Bangalore Section
Course on productivity techniques	Delhi—May 1966	National Productivity Council
Introductory course on industrial management	Delhi—Sep 1966	National Productivity Council
Seminar on import substitution	Bombay—Oct 1966	Maharashtra State and Bombay IPY Committee
Special function under the auspices of IPY 1966	Madurai—Jan 1967	Madurai Productivity Council

During these lectures, he stressed the role of company standardization as an organizational means for the adaptation of imported know-how to the needs of the country.

Participants in the course on productivity techniques, led by Brig Joginder Singh, also visited ISI. They were taken round Standards Exposition Hall and shown films on standardization.

Institute of Standards Engineers — As a mark of interest in standardization technology, delegates to the Tenth Indian Standards Convention held at Ernakulam, decided to establish a professional body under the aegis of which persons working in the field of industrial standardization could meet and discuss their problems. The Institute of Standards Engineers (SEI) so formed has the following objectives:

- a) To promote better understanding and appreciation of the principles, techniques and other aspects of standardization;
- b) To provide means by which standards engineers and others interested in standardization may, in meetings and publications of the Institute and through other media, discuss the various aspects of standardization;
- c) To further standardization as a means of enhancing productivity, efficiency and quality in industry, commerce, agriculture and related fields; and

- d) To promote the use of approved international, national and other standards issued by regularly constituted standardizing bodies, but exclude the development and issuance of standards by the Institute.

Industrial Safety Advisory Committee — The Industrial Safety Advisory Committee (ISAC) held its third meeting on 4 October 1966 at New Delhi under the chairmanship of Shri N. S. Mankiker, Director General, Directorate General of Factory Advice Service and Labour Institute. The Committee's recommendations *inter alia* included:

- a) Approval for the publication of Indian Standard method for computation of frequency and severity rates for industrial injuries and classification of industrial accidents; and
- b) Setting up of a small panel under the convenership of Shri S. R. Bhise of the Directorate General of Factory Advice Service and Labour Institute to undertake a study for evaluating the entire range of needs for protection against known hazards in industrial premises so as to re-orient in a rational manner, if required, the work of various ISI Sectional Committees dealing with safety. The terms of reference of the panel are as under:
 - 1) To study, classify and document the various types of personal safety equipment necessary for protection against different hazards and recommend the entire range of standards that should be prepared to ensure such protection; and
 - 2) To examine the standards on personal safety equipment which have been published and are on the programme of the various Divisions and to recommend any rationalization that may be necessary in the light of study referred to under (1) and the best manner in which the entire programme can be developed with special reference to the needs of users of personal safety equipment.

Training of Standards Engineers — The Institution has, for the past many years, been operating its own training scheme under which young graduates in different fields of science and technology with good academic career are recruited and given extensive and intensive training in the basic principles of industrial standardization through a course of lectures and practical training. With the object of helping the developing countries of Asia and Africa in the field of standardization, this training scheme was extended to trainees from neighbouring countries under the Colombo Plan and Special Commonwealth African Assistance Plan. The first batch of seven trainees from neighbouring countries received training in ISI in 1964-65.

During the year under report, a batch of eight technical personnel — three from Philippines, two from Thailand and three from the United

Arab Republic — was given training through a course of lectures and study tours to organizations and factories in different parts of the country.

Technical Library and Information Services — The Headquarters Library moved to Manakalaya, the second ISI building, where sufficient floor area has been provided besides an independent reading room. With these facilities, the Library which is equipped with standards and specifications from more than 50 countries is now in a position to provide better services to all those concerned with the formulation and implementation of standards.

The Libraries of the Institution at the Headquarters and branch offices at Bombay, Calcutta, Kanpur and Madras continued to provide useful service to ISI subscribers, committee members and others in disseminating technical information on national and overseas standards, specifications and other related subjects.

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

a) New publications accessioned and processed during the year	15 073
b) Total number of standards and other publications available in the Library	162 182
c) New journals subscribed to during the year	21
d) Total number of scientific and technical journals received in the Library	520
e) Bibliographies and documentational lists prepared	94
f) Publications loaned out or consulted in the Library	50 000

An activity of special importance was the publication of a bibliography of standards on foundry practice on the occasion of the Thirty-Third International Foundry Congress held at New Delhi in November 1966.

Membership — As reported last year, two new classes of subscribing membership, namely, Patron and Donor, were introduced and subscription rates of the three existing categories revised with effect from 1 January 1966 with a view to augmenting the financial resources of the Institution. Although it was not possible to enrol, during the year under review, many members in the new classes of membership owing to difficult economic conditions in the country, one organization from private sector joined as Patron and five others, four from public sector and one from private sector, besides five States, joined as Donor members.

The position of subscribing membership of the Institution on 31 March 1967, as compared to that on 31 March 1966, was as follows:

<i>Class of Membership</i>	<i>As on 31 March 1967</i>	<i>As on 31 March 1966</i>
Patron	2	1
Donor member	11	1
Sustaining member	2 073	2 195
Associate member	1 280	1 104
Individual member	414	523
Total number of members	3 780	3 824
Membership subscription collected	Rs 1.50 million	Rs 1.03 million

It will be observed that though there was a slight decline in the subscribing membership, the total revenue realized from this source registered a considerable increase.

A graphical representation of the position of subscribing membership since 1951 is given in Fig. 3.

Public Relations — The Institution has been making efforts to establish good public relations with all organizations and individuals which are concerned with research, development, production, distribution and consumption of goods and services.

Different publicity media were utilized and a number of steps taken, during the period under report, to publicize 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.

Publicity

- a) *Press Notes* — In all, 991 press notes were issued on published and draft Indian Standards and other important activities of ISI.
- b) *Advertising campaign* — An advertising campaign highlighting the importance of ISI Certification Marks Scheme was launched through press advertisements in English and language papers as well as in language periodicals. Besides, cinema slides were displayed in various cinema halls of important towns and cities of the country.
- c) *Press Advertising on Co-operative Basis* — Press advertising campaign, financed through donations collected in cash and advertisement space from ISI licensees, was launched and advertisements released to newspapers and journals.

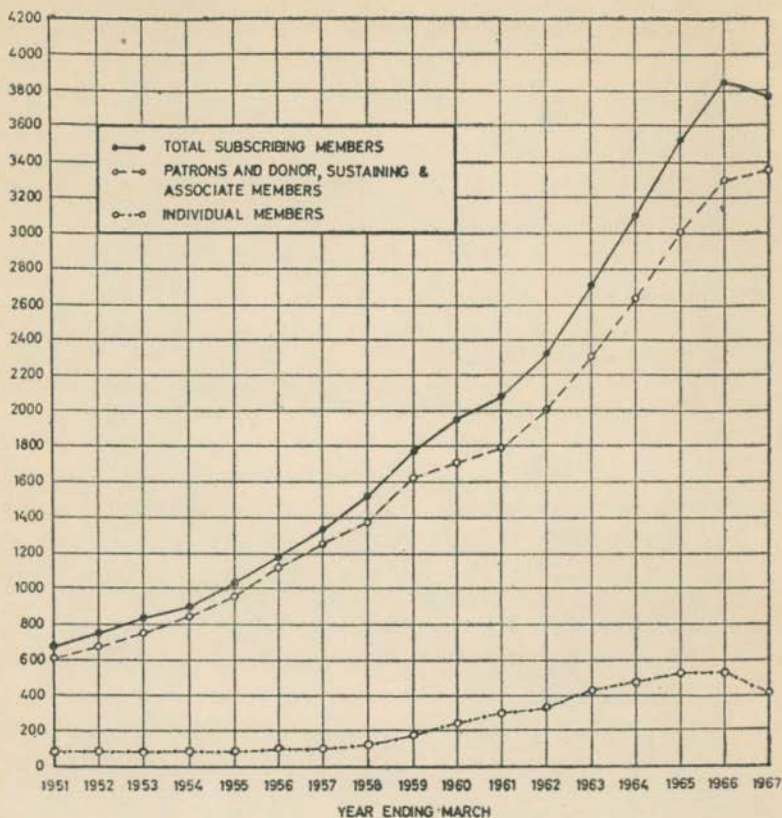


FIG. 3 ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS

- d) *Press Conferences and Press Interviews* — A number of press conferences and press interviews were held on different occasions.
- e) *Talks and Lectures* — Talks and lectures were delivered by ISI officers to important gatherings at several places during the course of which activities of the Institution and importance of standardization were explained.
- f) *Articles, Reviews, Write-ups, etc* — A number of articles, resumes, reviews and write-ups on different aspects of standardization and activities of ISI were contributed to newspapers, journals, souvenirs, reference publications and directories.
- g) *Exhibitions* — The Institution participated, during the period under review, in some exhibitions at which the importance of

standardization and quality control, contribution made by ISI in these fields and operation of the ISI Certification Marks Scheme were explained through charts, photographs and write-ups. The details of these exhibitions are as under:

- 1) *Small Industries Exhibition* — organized by the Small Industries Service Institute on 15 December 1966 at Calcutta.
 - 2) *International Leather Fair* — organized by the Central Leather Research Institute at Madras from 31 Jan 1967 to 6 Feb 1967.
- h) *Literature* — Two pamphlets, one each in English and Malayalam, on Indian Standards Institution were brought out and distributed on the occasion of the Tenth Indian Standards Convention at Ernakulam. Besides, a folder on Indian Standards for leather industry was distributed at the International Leather Fair at Madras.
- j) *Talks and Features on AIR* — With a view to enlightening the public on the importance of standardization and publicizing ISI Certification Marks Scheme, the following programmes were broadcast from All India Radio:

1) Talks and Interviews

<i>Sl No.</i>	<i>Date</i>	<i>Subject</i>	<i>Broadcast By</i>	<i>Station</i>	<i>Language</i>
i)	31 Aug and 1 Sep 1966	ISI — Its work in national and inter- national spheres	Dr A. N. Ghosh, Director General, ISI	Delhi (External Services Division)	English
ii)	16 Sep 1966	Standardization and the common- man	Shri A. P. Banerji, Director, Cal- cutta Branch Office	Calcutta	English
iii)	7 Nov 1966	Indian Standards Institution	Dr A. N. Ghosh, Director General, ISI	Trivandrum/ Calicut/ Trichur	English
iv)	25 Dec 1966	Tenth Indian Standards Con- vention	Dr A. N. Ghosh, Director General, ISI	Trivandrum/ Calicut/ Trichur	English
v)	3 and 4 Feb 1967	Interview regard- ing role of ISI	Dr A. N. Ghosh, Director General, ISI	Calcutta	English
vi)	23 Feb 1967	Standardization & consumers	Dr A. N. Ghosh, Director General, ISI	Calcutta	English

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2) Features

Sl No.	Date	Subject	Occasion	Station	Language
i)	26 Dec 1966	Tenth Indian Standards Convention	Tenth Indian Standards Convention	Trivandrum/Calicut/Trichur	Malayalam
ii)	28 Dec 1966	Indian Standards Institution	Tenth Indian Standards Convention	Trivandrum/Calicut/Trichur	Malayalam
iii)	28 Dec 1966	Inaugural function of the Tenth Indian Standards Convention	Tenth Indian Standards Convention	Trivandrum/Calicut/Trichur	English
iv)	30 Dec 1966	Standardization and industrial development	Tenth Indian Standards Convention		
		Group discussion			
		<i>Participants:</i> Shri Prabhu V. Metha, Vice-President ISI; Shri Joseph Chakola, Chairman Reception Committee, Tenth Indian Standards Convention; Dr K.L. Moudgill; and Dr A. N. Ghosh, Director General, ISI.			Trivandrum/Calicut/Trichur
v)	27 Feb 1967	Standardization for self-sufficiency		Bhopal/Raipur/Jabalpur/Gwalior	Hindi

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 sets 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:

Name of the Country/ Standards Body	Presented Through	Date
Standards Institution of Malaysia (SIM)	H. E. Zaiton Ibrahim bin Ahmed High Commissioner for Malaysia in India	21 Apr 1966
Thailand	H. E. Mr Chitti Sucharitakul, Ambassador of Thailand in India	27 Oct 1966
Iraq	H. E. Mr Nizar el Kadi, Charge d'Affaires, Embassy of Iraq in India	25 Nov 1966
Philippines	Mr Rodolfo L. Aguilar, Commercial Attache, Embassy of Philippines in India	8 Mar 1967

Distinguished Visitors — During the year under review, a number of persons from India and abroad visited the Institution. The distinguished visitors included:

- a) Mr T. C. Pan, ECAFE Delegate of Chinese Development Corp, Republic of China (Taiwan);
- b) Mr L. Drucquer (President) and Dr G. C. Gainsborough (Secretary), Institution of Electrical Engineers, London;
- c) H. E. Zaiton Ibrahim bin Ahmed, High Commissioner of Malaysia in India, New Delhi;
- d) A team of British Engineers headed by Mrs Dorothy Henry, Secretary, Institution of British Engineers, London;
- e) Dr A. Allan Bates, Chief of the Division of Building Research, National Bureau of Standards, Washington;
- f) Mr Becker A. J. Guillermo, Director General, Direction de Normas, Mexico;
- g) General K. M. Cariappa, Ex-Chief of the Army Staff;
- h) H. E. Mr Chitti Sucharitakul, Ambassador of Thailand in India;
- j) H. E. Mr Nizar el Kadi, Charge d'Affaires, Embassy of Iraq in India;
- k) Dr Sayed Ramadan Haddra, Director General, National Institute for Standards, Cairo;
- m) Mr J. A. Hall, Bureau International des Poids et Mesures, France;
- n) Dr Ing. Wilhelm Thomas, Physekalisch-Technische Bundesanstalt Baraunschweig, West Germany;
- p) Mr Rodolfo L. Aguilar, Commercial Attache, Embassy of Philippines in India;
- q) Mr Juan P. Vazquez, Director of Cuban Nickel Enterprise, Hawana;
- r) Dr Van Ettingar, Director of Bouwcentrum (Building Research Centre) and Chairman of International Quality Centre, Rotterdam; and
- s) Shri V. Sundaram, Director, Cotton Technological Research Laboratory, Bombay.

The visitors, who were taken round the Standards Exposition Hall, testing laboratories and technical departments, evinced keen interest in the activities of the Institution in respect of standardization, quality control and certification marking.

Tenth Indian Standards Convention — The Tenth Indian Standards Convention was held at Ernakulam from 25 December 1966

to 2 January 1967. The Convention was inaugurated by Shri Bhagwan Sahay, Governor of Kerala, and Shri D. Sanjivayya, the then Union Minister for Industry and President of ISI, presided over the inaugural function. The inauguration was attended by over 1 500 persons, including delegates, industrialists and businessmen, representatives of Central and State Governments and leading citizens of Kerala. Some delegates from neighbouring countries also participated in the Convention.

Seven technical sessions were held at 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, and consumers and purchasers.

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

Delegates

Total number of delegates who attended the Convention (Gentlemen 525, Ladies 70), including six from Ceylon, Lebanon, Liberia and United Arab Republic	595
Accompanying ladies	38
Total:	<u>633</u>

Technical Sessions

- S-1 Standardization for Import Substitution
- S-2 Metric Change-over — Remaining Tasks
- S-3 Company Standardization and Productivity
- S-4 Standardization and Small-Scale Industries
- S-5 Training in Standardization Technology
- S-6 Standards for the Home
- S-7 Standards for Technical Editors and Publishers

Technical Papers

No. of technical papers	107
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Discussions in technical sessions brought out the imperative need for the implementation of Indian Standards in farms and factories, especially in the context of the urgency of optimum utilization of indigenous resources and export promotion. The serious and purposive nature of discussions permeated the entire deliberations and the high level of contribution made by the delegates bore ample testimony to the importance of standardization in the industrial economy of the country. In fact, all Indian Standards Conventions, which provide a national forum for discussion on common problems, evoke great interest among different sectors of economy.

A Reception Committee consisting of leading citizens of Kerala and other States, under the chairmanship of Shri Joseph Chakola, 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 Tenth Indian Standards Convention held at Ernakulam in December 1966 through press advertisements, press releases including features, articles and photographs, editorials, radio broadcasts and press conferences. Twenty newspapers and journals from all over the country brought out special supplements and carried features on ISI activities. In addition, a 236-page Souvenir was published by the Reception Committee during the Convention.

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

K. L. Moudgill Prize — The K. L. Moudgill Prize for 1966, of the cash value of Rs 1 000·00, was awarded to Shri G. C. L. Joneja, Commissioner of Civil Supplies, Union Ministry of Commerce, by Shri Bhagwan Sahay, Governor of Kerala, at the inaugural function of the Tenth Indian Standards Convention at Ernakulam. The Prize was awarded to Shri Joneja in recognition of his enduring contribution to consolidating India's position in international trade in the country's biggest foreign exchange earner, namely, jute and jute products, through standardization, quality control and certification marking.

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 8 277 508·53 as against an expenditure of Rs 8 133 883·30. A statement of accounts for the year 1966-67, 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 1 120 000·00.

Second ISI Building — The second ISI building, Manakalaya, was completed during the year and some departments were shifted to it. As reported last year, one of the floors was let out to the Minerals and Metals Trading Corporation of India Ltd (MMTTC).

The building, which was formally opened in December 1966 by Shri D. Sanjivayya, the then Union Minister for Industry and President

of ISI, has six floors with a total area of 94 822 sq ft. The following services still remain to be completed:

- a) Garages and staff quarters,
- b) Laboratory equipment,
- c) Electrical installation (partly), and
- d) Air-conditioning.

Owing to the general rise in cost, the total estimated expenditure on the building project, including water equipment, increased from Rs 4.65 million to Rs 5.05 million. Against this estimated expenditure, a sum of Rs 3.483 million was collected up to 31 March 1967 according to the details given below:

	<i>Rupees in millions</i>
a) Government grant	0.800
b) Interest-free deposits and overdraft	1.087
c) Donations	0.231
d) Miscellaneous	0.050
e) Advance rent	1.315
Total:	<u>3.483</u>

Fellowship of ISI — With a view to recognizing the services of technical experts associated with the formulation of Indian Standards, the Executive Committee of ISI created, for the first time, a Fellowship of the Indian Standards Institution, to which will be admitted from time to time, Chairmen and Vice-Chairmen of Division Councils, Chairmen of Sectional Committees and Chairmen of Advisory Committees of technical character, who may have retired after a distinguished service. Aimed at giving recognition to the valuable services rendered in the development and promotion of standardization in different spheres of industry, the first set of awards was given to 179 retired Chairmen of different Councils and Committees at the time of the inauguration of the Tenth Indian Standards Convention at Ernakulam on 26 December 1966.

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

<i>Sl No.</i>	<i>Name</i>	<i>Designation</i>	<i>Remarks</i>
1.	Dr Lal C. Verman	Director General	Retired from ISI service with effect from 2 Sep 1966
2.	Dr A. N. Ghosh	Director General	Promoted from Deputy Director General with effect from 3 Sep 1966

<i>Sl No.</i>	<i>Name</i>	<i>Designation</i>	<i>Remarks</i>
3.	Shri C. N. Modawal (At present on deputation as Director of Inspection & Quality Control in the Ministry of Commerce, Government of India, New Delhi)	Deputy Director General	Granted pro forma promotion from Director with effect from 3 Sep 1966
4.	Dr D. V. Karmarkar	Deputy Director General	Retired from ISI service with effect from 14 Sep 1966
5.	Shri S. K. Sen	Deputy Director General	Promoted from Director with effect from 15 Sep 1966
6.	Shri B. S. Krishnamachar	Deputy Director General	Promoted from Director with effect from 26 Sep 1966

The total strength of the Institution as on 31 March 1967 was 958 consisting of 199 officers and 759 staff members.

Dr Lal C. Verman — On the retirement of Dr Lal C. Verman, founder Director General of ISI, an illustrated supplement to the *ISI Bulletin* was issued. It contained messages and appreciation from outstanding personalities in the field of standardization in India and abroad and traced, in a pictorial form, landmarks in the development of the Institution, under the dynamic leadership of Dr Verman since 1947.

The Government of India decided that Dr Verman would continue to act as Honorary Adviser on Standardization to the Government of India in the Ministry of Industrial Development and Company Affairs even after his retirement as Director General of ISI.

In recognition of his services in the field of standardization, Dr Verman was awarded Padma Shri by the President of India on the occasion of the eighteenth anniversary of the Indian Republic.

Branch Offices — The four branch offices of the Institution at Bombay, Calcutta, Kanpur and Madras continued to render useful services to industry, trade and commerce in their respective regions by disseminating information relating to standardization through all possible means including talks to organized institutions and participation in AIR programmes, selling Indian and overseas standards, enrolling subscribing members, inspecting factories under the ISI Certification Marks Scheme and maintaining liaison with commerce and industry.

With a view to decentralizing the work in respect of certification marking, it was decided to set up a testing laboratory in Bombay Branch Office as in Calcutta, for expediting the testing, as far as practicable, of ISI certified products, including some of the exportable goods covered under the Compulsory Pre-shipment Inspection Scheme. Similarly, it was proposed to set up a testing laboratory in Madras Branch Office for the testing of pesticides, inks and chemicals.

As Bombay and Madras Branch Offices were short of space, particularly for setting up laboratories, efforts were being made to procure additional accommodation on rent. Besides, it was agreed to purchase a plot of land measuring about 670 square metres on instalment basis from Calcutta Improvement Trust for putting up a building for Calcutta Branch Office. Efforts also continued to be made for purchasing a plot of land for Madras Branch Office.

International Activities — In accordance with its policy of assisting and promoting standardization activity in different countries and at international level, the Institution continued to develop cordial and co-operative relations with standards bodies of Commonwealth and other countries.

The Institution also participated actively in the work of various technical committees and administrative bodies of the International Organization for Standardization (ISO), of which it is a founder member, and International Electrotechnical Commission (IEC). Shri Jehangir J. Ghandy, Vice-President of ISI, was the President of ISO. Of 116 ISO technical committees, India was a participating member of 83 committees and of all the 60 technical committees of IEC. Besides providing chairmanship for IEC/TC 43 Electric Fans, ISI held secretariats of the following 16 technical committees, subcommittees and working groups dealing with subjects of interest to India:

- 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

Except for short intervals, the Institution has been representing India on ISO Council and IEC Committee of Action. Dr Lal C. Verman, former Director General of ISI and now Honorary Adviser on Standardization to the Government of India, continued to serve as Chairman of the ISO Planning Committee (PLACO). Besides, ISI was represented on the ISO Standing Committee for the Study of Scientific Principles of Standardization (STACO), ISO Development Committee (DEVCO) and ISO Organizing Committee (ORCO).

The United States of America Standards Institute declared Dr A. N. Ghosh, Director General, ISI, as the Standards Personality for the month of November 1966 and decided to give him a special award. Dr Ghosh was invited to a formal presentation of the Award at the Awards Luncheon on 14 February 1967 at the Sheraton Cleveland Hotel, Cleveland Ohio (USA) but, on account of the distance and expenditure involved, he expressed his inability to go there personally. Dr Verman was also honoured in November 1966 with a similar award by the United States of America Standards Institute.

Shri G. L. Gulati, Director, Madras Branch Office, was appointed by the Economic Commission for Asia and Far East (ECAFE), Bangkok, as a Consultant for a period of about four months commencing from 8 September 1966.

Shri S. R. Kuppanna, Deputy Director, was awarded the Netherlands Government Fellowship for 1966 for post-graduate study of industrial quality control, for a period of four months commencing from 15 August 1966.

DIVISIONAL REPORTS

0. INTRODUCTION

0.1 This part of the report gives a record of the technical work done by different divisions and sections of the Institution during the year 1966-67.

It does not attempt to cover in detail all the work done and that under consideration, but gives only the more significant developments in each field. Complete lists of standards published and in press during the year are given in Appendix A.

0.2 Progress of Standards — During the period under report, 592 new Indian Standards were adopted and sent to press; 139 standards were revised (*see* Appendix A); 381 new proposals for formulation of Indian Standards were received and 371 proposals (including some made during the previous year) were accepted and referred to various committees for further processing.

The growth of Indian Standards is graphically represented in Fig. 4.

0.3 ISI Committees and Their Membership — As on 31 March 1967, 1 719 committees of the Institution, with a membership of 20 261 experts representing various interests — manufacturers, consumers, research and technical organizations, purchasers, and Government departments — were at work for the formulation of Indian Standards.

During the year 1966-67, 952 committee meetings were held for standards work.

The growth of ISI Committees, their membership and their activities is shown in Fig. 5 and 6.

0.4 Record of Work — Cumulative information about the work pertaining to different divisions or sections of the Institution is given in Table 1.

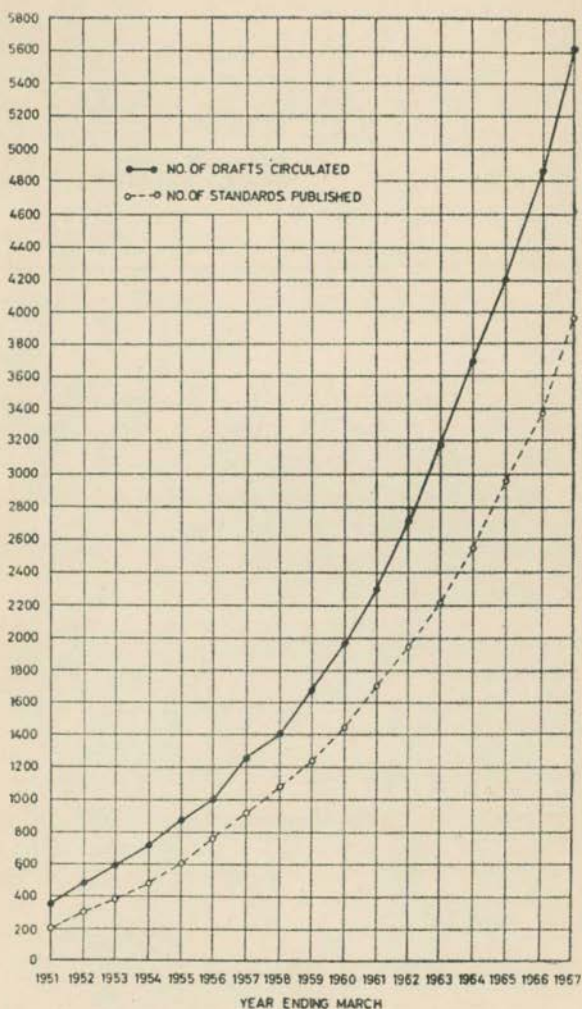


FIG. 4 GROWTH OF INDIAN STANDARDS

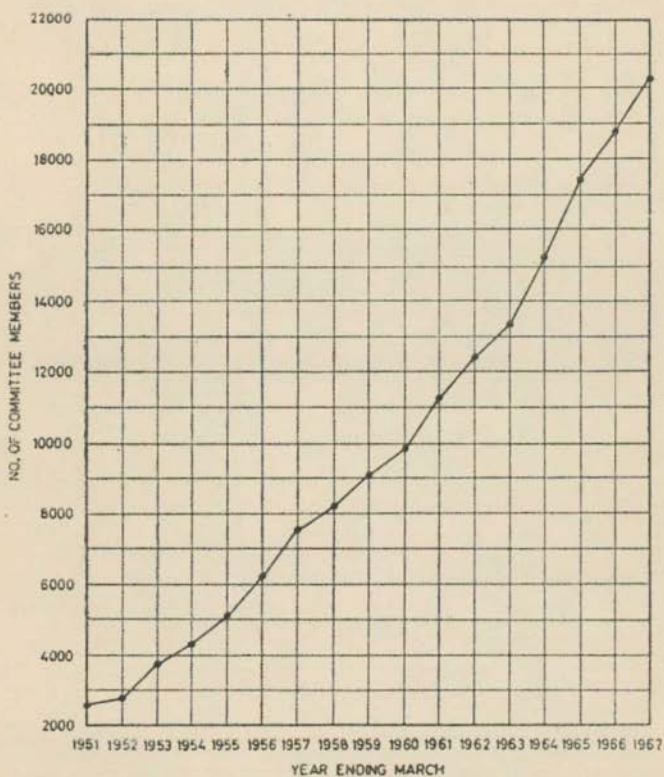


FIG. 5 GROWTH OF COMMITTEE MEMBERSHIP

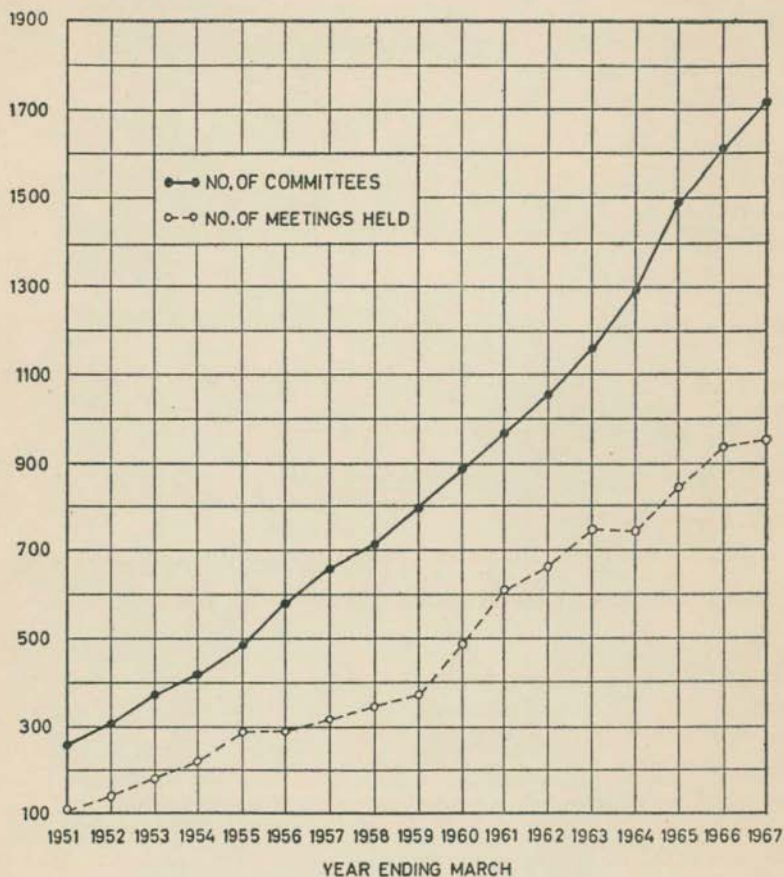


FIG. 6 GROWTH OF COMMITTEES AND THEIR ACTIVITIES

**TABLE 1 RECORD OF ISI TECHNICAL DIVISIONS AND SECTIONS
(FOR THE YEAR 1966-67)**

(For details of standards published and those under print during 1966-67,
see Appendix A)

DIVISION OR SECTION	NO. OF COMMIT- TEES	NO OF MEET- INGS	NEW AND REVISED STANDARDS PUBLISHED AND UNDER PRINT	AMEND- MENTS TO STAND- ARDS	DRAFT STAND- ARDS CIRCULATED	NEW SUBJECTS TAKEN UP
Agricultural & Food Products	131	79	76	17	68	64
Chemical	375	263	132	73	144	35
Civil Engineering	247	122	113	24	135	118
Consumer Products	100	93	52	3	69	27
Electrotechnical	144	75	91	66	97	26
Mechanical Engineer- ing	285	147	116	31	130	50
Structural & Metals	310	58	82	51	72	12
Textile	102	80	66	41	46	38
Miscellaneous	25	35	3	—	4	1
TOTAL:	1 719	952	731*	306	765	371

*This includes one Ministry of Defence specification recognized as an Indian Standard.

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 1.7*) covered items which would be helpful in promoting international trade and enhancing agricultural and dairy production in the country.

1.2 Fish and fisheries products are in great demand from overseas countries and attempts are being made to step up our export three-fold during the current Five-Year Plan. The Fish and Fisheries Products Sectional Committee, therefore, issued a number of specifications for items like frog lobster tails and mackerels which should be helpful in quality control. Similarly, in the field of spices, specifications were issued for fennel seeds, fenugreek and celery seeds which are also exported. Besides, after strenuous efforts, the Tea Sectional Committee finalized an Indian Standard specification for tea which would be helpful in checking adulteration. In addition, an Indian Standard method for grading green coffee and a specification covering coffee-chicory powder were issued; another specification for monsooned coffee is being processed.

1.3 As regards agricultural production, the major area covered by the Division continued to be pesticides where some 15 new standards were formulated. As almost the entire pesticides industry is covered under the ISI Certification Marks Scheme, the demand for these standards is met by the Division on a priority basis.

Besides, standards were issued on sugarcane seed material and seed potatoes, the former being a foreign exchange earner and the latter providing a food cereal substitute. These standards are expected to help in augmenting production of the respective crops.

The Farm Implements and Machinery Sectional Committee of the Division Council has already issued a large number of standards; to these were added specifications for disc harrow and hand maize sheller.

1.4 In the field of dairying, an Indian Standard for a model ghee refinery was finalized. It is hoped that ghee refineries in the country will be streamlined on the basis of this standard. In addition, an Indian Standard specification for mobile kit for milk testing was issued so that standardized kits are manufactured and made available for testing milk at collection centres where regular laboratory facilities do not exist.

With the establishment of solvent extraction industry in the country, the Animal Feeds Sectional Committee considered the question of formulating specifications for solvent extracted oilcakes and issued standards on solvent-extracted coconut, cotton seed and rice bran oilcakes. An Indian Standard for rice bran was also finalized.

1.5 Specifications for beer and rum were finalized for publication. These standards will fulfil the needs of public health in general and defence services in particular.

1.6 Division Council Meeting — The annual meeting of the Agricultural and Food Products Division Council was held on 28 March 1967 in New Delhi. In this meeting Dr B. P. Pal, Vice-President of the Indian Council of Agricultural Research was elected as Chairman for a term of three years ending 31 December 1969. Shri A. C. Khanna, President of the Federation of Biscuit Manufacturers of India, was re-elected as Vice-Chairman of the Council for another term of three years.

While reviewing the work of the Division, the Council decided:

- a) to set up a new Sectional Committee, Food Hygiene, Sampling and Analysis Sectional Committee, AFDC 36, under the chairmanship of Maj-Gen M. S. Boparai. This Sectional Committee will formulate Indian Standard methods of sampling and analysis that are common to various food items; it will also lay down codes for sanitary conditions of various food processing industries;
- b) to enlarge the scope of work of Livestock Housing Sectional Committee, AFDC 17, in order to cover housing of laboratory

DIVISIONAL REPORTS

animals and various equipment used in cattle sheds. This Sectional Committee was, therefore, re-designated as Animal Housing and Equipment Sectional Committee, AFDC 17;

- c) to enlarge the scope of work of Food Colours Sectional Committee, AFDC 19, so as to include the formulation of identity and purity specifications for anti-oxidants, stabilizing agents, emulsifying agents, etc, that are permitted under the Prevention of Food Adulteration Rules. This Sectional Committee has now been re-designated as Food Additives Sectional Committee, AFDC 19; and
- d) to amalgamate the Edible Starches Sectional Committee, AFDC 33, and Glucose Sectional Committee, AFDC 9, into one sectional committee, Edible Starches and Glucose Sectional Committee, AFDC 33, as it will facilitate the consideration of raw materials and end-products together.

The Division Council appointed the following as Chairmen of the sectional committees indicated against each:

<i>Name</i>	<i>Committee</i>
1. Dr H. S. Bawa, Retired Director, Animal Husbandry and Veterinary Services, Government of Orissa, Cuttack.	Meat and Meat Products, AFDC 18
2. Dr A. S. Cheema, Agricultural Production Commissioner, Government of India	Spices and Condiments, AFDC 21
3. Col C. I. Somaya, Quartermaster General's Branch, Ministry of Defence	Alcoholic Drinks, AFDC 30
4. Shri S. K. Borkar, Ministry of Health	Edible Starches and Glucose, AFDC 33

The Division Council also felt that there was great need to publicize Indian Standards and ISI Certification Marks Scheme, as also to find out the difficulties of manufacturers in implementing Indian Standards. A subcommittee was appointed to look into these matters.

1.7 A list of 76 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 report, the Chemical Division formulated a number of Indian Standards covering important fields in the chemical industry. Of them, the following deserve special mention:

- a) IS : 3470E-1966 Specification for hexane, food grade

As an essential precursor to the issue of Indian Standards on solvent-extracted vegetable oils, drafting of this specification for the solvent used for this purpose was taken up. This standard has been based on a study of the specifications issued by several international organizations like United Nations Children's fund, World Health Organization and Food & Agricultural Organization. The requirements laid down in the standard have been made as stringent as possible in order to safeguard public health because this solvent is widely used for making edible solvent-extracted oils and other food products. Indian industry is already producing this grade of the solvent.

b) Indian Standards specification for edible vegetable oils

In spite of the fact that over one hundred units in the country are engaged in the manufacture of solvent-extracted oils and a good portion of their production finds its way into the edible grades quality control is not often practised in this sphere, thus endangering public health. In formulating a series of emergency specifications for solvent-extracted oils a lead has been given to the industry to work in an organized way by using proper quality of the solvent and producing safe quality of oils. All the relevant Indian Standards have been included in the schedule attached to the Solvent-Extracted Oils, De-oiled Meals and Edible Flour Control Order 1967 issued by the Government of India on 17 March 1967. This will result in dual advantage, that of ensuring the quality of oils made available for edible purposes and enhancing the availability of more edible oils, protein-rich oilcakes, meals and flour.

c) IS : 3701-1966 Specification for rubber protective sheath (condoms)

This standard has been published as a guide for introducing quality control in the indigenous production of rubber condoms, which has been started both in public and private sectors. This specification has been published at a very opportune moment in that it has come at a time when family planning programme is receiving great attention in the country. Considerable thought has been given to the preparation of a sampling scheme based on population studies. Conventional physical test methods have been eliminated and performance-oriented tests have been included to ensure safety, as far as practicable.

d) IS : 3737-1966 Specification for safety footwear

An Indian Standard for leather safety boots for workers in heavy metal industries has been formulated to ensure safety against foot injuries that may result during working as also to protect the feet against sharp metallic particles, molten metal and heat stresses.

This specification contains functional requirements in place of conventional physical and chemical requirements besides providing a dependable guideline for the production of quality boots.

- e) IS : 3702-1966 Specification for refill for vacuum flasks

Vacuum flasks are made in a variety of shapes and sizes in our country. This standard is expected to help in a rational growth of the industry by prescribing nominal capacities and essential quality requirements for this item.

- f) IS : 3517-1965 Specification for cotton linters

Cotton linters, when properly freed from extraneous matter and graded, form an important raw material for cellulose-based products which are very useful these days for diverse uses in chemical industry. This standard is expected to ensure maximum and profitable utilization of cotton linters.

- g) IS : 3608-1966 Specification for glass alcoholometers

The adoption of metric system in the country necessitated compilation of suitable alcoholometric tables. This consideration led the relevant Sectional Committee under the Chemical Division Council to prepare IS : 2302-1962 'Tables for alcoholometry', which prescribes the method of determining the percentage of ethanol by volume in an ethanol-water mixture at 15°C, using centesimal hydrometers. For effective implementation of the tables for alcoholometry, it was essential to formulate a specification for glass alcoholometers (centesimal hydrometers) intended for determining the ethanol content in a ethanol-water mixture at 15°C. With the publication of IS : 3608-1966 by the Laboratory Glassware and Related Apparatus Sectional Committee, this need has been fulfilled. The graduations of the alcoholometers covered by this standard correlate the specific gravity-absolute density data given in the tables for alcoholometry.

- h) IS : 3521-1965 Specification for lineman's leather safety belt and strap

This forms an important safety item which was chosen after investigating a number of varieties of safety belts presently in use and that which can be indigenously manufactured.

2.2 The Standing Working Committee of the Chemical Division Council met on 23 August and 13 December 1966.

Thirty-five new subjects were approved for the formulation of Indian Standards. The following new sectional committees were set up:

- a) Raw Materials for Paint Industry, CDC 50;
- b) Explosives and Pyrotechnics, CDC 51; and
- c) Dental Materials, CDC 52.

2.3 A list of 132 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 high and medium density wood-based laminates (compregs), fly ash, current meter (cup type) for flow measurement, and burnt clay hollow blocks for walls and partitions, codes of practice for design and construction of machine foundations for impact type machines, design of structural timber in buildings, painting concrete, masonry and plaster surfaces, and operations and workmanship; safety code for excavation work, composite construction, lining of canals, and design and construction of well foundations; methods of testing concrete pipes; and guides for heat insulation of non-industrial buildings, and presentation of project reports for river valley projects.

3.3 With a view to encouraging the substitution of imported and scarce raw materials like non-ferrous metals and also for promoting better utilization of scarce materials produced in the country, emergency standards were published for water meters, sluice valves for water works purposes, plastic water closet seats and covers, and masonry cement.

3.4 Of the items taken up for the formulation of Indian Standards during the period under review, particular attention may be drawn to specifications for oil well cement, ready mixed concrete, porous concrete pipes for under drainage, precast concrete structural units for buildings and for joints in prefabricated construction; revisions of specifications for vitreous sanitary appliances, and lime pozzolana mixture; method of testing wooden flush door shutters; codes of practice for design and installation of expansion and contraction joints in buildings, and ancillary structures in sewerage system; recommendation for stacking and storage of building materials at site; methods of indexing and preservation of drill cores; and guide for the preparation of river valley projects.

3.5 During the period under report, many new subjects were approved for the preparation of new standards. Of these, special mention may be made of that relating to National Building Code which will form a comprehensive document containing regulations to be conveniently adopted for use by various departments, municipal administrations and public bodies in the field of building construction. A guiding committee was also set up for this work. Another important

subject relates to the drafting of Model Cinematograph Rules covering design and construction of cinema houses, installation of equipment, seating arrangement, public health and sanitary requirements, fire safety arrangements, etc.

3.6 A new Standing Working Committee on Projects was set up to deal with those subjects which are of special importance to the work on river valley projects. The progress of work in the field of multipurpose river valley projects continued to be maintained satisfactorily. Of the 18 sectional committees set up for covering this field, 11 met during the period under review and the rest are expected to meet in the remaining part of the year 1967.

3.7 During the period under report, 124 meetings of sectional committees, subcommittees and panels were held. The following sectional committees held their inaugural meetings during this period:

- a) Sub-surface Exploration, BDC 49;
- b) Intake Structures, BDC 51;
- c) Water Conductor System, BDC 58;
- d) Power House Structures, BDC 59; and
- e) Related Civil Engineering Works, BDC 61.

3.8 The Civil Engineering Division Council held its fifteenth meeting on 21 March 1967. Prof M. S. Thacker and Shri C. B. Patel were re-elected Chairman and Vice-Chairman respectively for another term of three years ending 31 December 1969.

3.9 A list of 113 Indian Standards formulated by the Civil Engineering Division Council and sent to press during the year under review is given in Appendix A.

4. CONSUMER PRODUCTS DIVISION

4.1 The Consumer Products Division maintained steady progress of work which can be broadly classified into two categories, namely, medical equipment and consumer products. Forty-two Indian Standards were published and sixty draft standards prepared. Out of the 23 sectional committees functioning under this Division, 9 deal with medical instruments and hospital equipment and appliances while the other 14 are related to different products of consumer interest.

4.2 During the period under review, the sectional committees dealing with surgical instruments and medical equipment made considerable progress, for which encouragement and co-operation were received from medical interests throughout the country; committee meetings were

attended by local surgeons in large numbers. Special mention may be made of the following :

- a) The Surgical Instruments Sectional Committee, CPDC 11, published standards on the more important ear, nose, throat (ENT) and plastic surgery instruments; in addition, it prepared 15 draft standards exclusively for ENT and plastic surgery instruments. Requirements of surgeons in respect of balance of surgical forceps and similar other instruments were taken due care of in published Indian Standards as well as draft standards.
- b) The Medical Glass Instruments Sectional Committee, CPDC 12, worked on glass pathological equipment with a view to developing uniform pathological apparatus for use in laboratories.
- c) The Hospital Equipment Sectional Committee, CPDC 14, brought out the much-needed standards on horizontal sterilizers, dressing drums and water stills. A number of standards were prepared on hospital furniture, such as stretcher trolleys and patient trolleys. Work was also started on operation tables as the need for an Indian Standard on the subject had been greatly felt. The performance aspects studied so far will include important functional provisions expected by hospitals and surgeons.
- d) The Dental Equipment Sectional Committee, CPDC 15, and the Dental Instruments Sectional Committee, CPDC 21, whose activities go hand in hand, were engaged in work regarding dental engines, spittoons and related equipment as also various cutting and filling instruments. Indian Standards on dental instruments are expected to help in the production of instruments of uniform types and acceptable quality.
- e) Work was initiated in the field of artificial limbs. The relevant Sectional Committee studied the performance and interchangeability of various limbs in connection with their much-needed replaceable components. The work of the Sectional Committee is expected to be useful in the production and supply of artificial limbs and components to five large rehabilitation centres being planned by the Government of India at Delhi, Madras, Hyderabad, Calcutta, and Chandigarh as also to about 35 rehabilitation units to be set up throughout the country.

4.3 Work on consumer items also progressed at a satisfactory pace. Special mention may be made of the following:

- a) The Utensils Sectional Committee, besides dealing with the general run of utensils, prepared standards on hospital utensils, such as kidney trays, spittoons, wash bowls, solution bowls, iodine cups, ointment jars and medicine measures with the object of helping in the production and supply of uniform utensils. Only

such materials and finishes as are acceptable for aseptic hospital use have been specified in Indian Standards.

- b) The Sports Goods Sectional Committee, CPDC 4, brought out Indian Standards on cricket batting gloves, boxing gloves, leg guards, etc. A draft Indian Standard on discus containing important provisions of balance and flight was also prepared.
- c) The Fountain Pens and Ball Point Pens Sectional Committee, CPDC 16, breaking an entirely new ground, brought out standards on fountain pens and ball point pens. Provisions relating to writing characteristics and duration of writing for one fill included in the standards are expected to provide the consumer with the much-needed information on their performances.
- d) The Gas Burning Appliances Sectional Committee, CPDC 23, considered two drafts on gas stoves and ovens which, besides specifying efficiency, lay down important provisions of safety.

4.4 The Standing Working Committee of the Consumer Products Division Council (SWCCP) met on 15 September 1966. The Oil and Gas Burning Appliances (Pressure Type) Sectional Committee, CPDC 3, was bifurcated into the following two sectional committees:

- a) Oil Burning Appliances (Pressure Type) Sectional Committee, CPDC 3; and
- b) Domestic and Commercial Gas Burning Appliances (Pressure Type) Sectional Committee, CPDC 23.

4.5 The Consumer Products Division Council (CPDC) held its fourth meeting in March 1967 when activities of the Division Council were reviewed and the sectional committees due for revision reconstituted.

4.6 Inaugural meetings of the following sectional committees were held during the year under report:

- a) Artificial Limbs, CPDC 20;
- b) Dental Instruments, CPDC 21; and
- c) Fasteners for Consumer Goods, CPDC 22.

4.7 A list of 52 standards formulated by Consumer Products Division Council and sent to press during the period is given in Appendix A.

5. ELECTROTECHNICAL DIVISION

5.1 During the period under review, the standards formulated and revised by the Electrotechnical Division covered a number of important subjects. Special mention may be made of Indian Standards for domestic electrical appliances, such as water boilers, portable lamp stands and brackets; saucepans, coffee percolators (non-regulator type), and call bells and

buzzers for indoor use. The Indian Standard relating to soldering irons was revised with a view to clearly defining safety requirements and also to specifying the appropriate tests.

5.2 Two Indian Standards for cables for mines, namely, rubber-insulated cables for use in coal mines and flexible trailing cables for quarries and metalliferous mines were processed for printing.

5.3 Several standards relating to illuminating engineering, such as specifications for waterproof and water-tight electric lighting fittings and code of practices for library lighting and interior illumination were published. Indian Standard code of practice for earthing brought out during the year covers both system earthing and equipment earthing. It also covers specific requirements for earthing in buildings, industrial locations, generating stations and substations as well as earthing of overhead lines and miscellaneous apparatus. The code of practice for installation and maintenance of transformers, which was revised, now covers details regarding internal inspection of transformers. The Indian Standard relating to dimensions of three-phase foot-mounted induction motors was revised for the second time to bring it in line with the present-day manufacturing trends. An Indian Standard guide for testing three-phase induction motors was also processed for printing.

5.4 In the field of electronics and telecommunications, the Indian Standard on minimum requirements of domestic radio receivers was revised to include additional facilities and a broad classification of receivers into different types based, largely, on the performance requirements. On the basis of an Indian proposal in 1958, IEC Recommendation on methods of measurement on loudspeakers and loudspeaker systems was also brought out. This standard was revised during the year under report, taking into account the latest IEC Recommendation. A proposal is being made to IEC to take up work on transformers and coils for telecommunication and equipments.

5.5 A number of standards on electrotechnical vocabulary and graphical symbols was published during the period.

5.6 Among other important items, work in hand included preparation of Draft Indian Standards on methods of measurement and performance requirements of monochrome television receivers. Preparation of a standard on magnetic tapes and hearing aids has been taken up on priority basis with a view to guiding the industry. The Semiconductor Devices Sectional Committee, ETDC 40, is considering actively a suitable designation system for semiconductor devices manufactured indigenously.

5.7 Inaugural meetings of the following sectional committees were held during the year:

- a) Illuminating Engineering, ETDC 45; and
- b) Cinematographic Equipment, ETDC 47.

5.8 The Standing Working Committee of the Electrotechnical Division Council met on 19 September 1966 and the Electrotechnical Division Council held its annual session on 16 March 1967.

The Division Council set up two new sectional committees, Electrical Instruments Sectional Committee and Integrating Meters Sectional Committee in place of the Instruments and Meters Sectional Committee, ETDC 6. Another important point discussed in the Division Council meeting related to the question of extending the field of operation of ISI Certification Marks Scheme in electrical equipment with the active co-operation of the Indian Electrical Manufacturers' Association. Some important recommendations were made on this subject.

5.9 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 part in the deliberations of the various committees of that organization. A detailed account of the activities of IEC committees of interest to India is given in Part III of this Report.

5.10 Ninety-one Indian Standards formulated by the Electrotechnical Division which were sent to press during the year under review are given in Appendix A.

6. MECHANICAL ENGINEERING DIVISION

6.1 The Mechanical Engineering Division maintained the usual pace of progress in its work through the concerted efforts of 38 sectional committees and 237 subcommittees and panels. During the period under report, 116 Indian Standards, including revisions of 9 existing standards, were published or sent to press; another 102 draft standards were finalized for publication. One hundred and thirty draft standards were circulated for comments while preliminary draft standards were prepared for 151 new subjects.

6.2 Among the standards printed, 15 related to marine engineering and shipbuilding industry, 12 to bearings, 10 to hand tools and 7 each to gas cylinders and fittings, and sewing machine components. Other standards covered subjects like machine tools and small tools, gears, threaded fasteners and rivets, wire ropes and wire products, mining, instruments (drawing, optical and surveying), refrigerators, transmission devices, engineering metrology and chemical engineering. Subjects for which standards were prepared for the first time included industrial instruments, conveyors and vertical hoists, lubricating equipment and material handling equipment.

6.3 Another important standard, brought out during the year, IS : 3616-1966 'Recommendation on the international system (SI) units' related

to the recommendation on International System (SI) units. It lays down basic and derived SI units.

6.4 The Standing Working Committee of the Mechanical Engineering Division Council (SWCE), which met on 18 August 1966, approved 76 new subjects for the formulation of Indian Standards. These subjects were allotted to the existing committees of the Division.

6.5 The Mechanical Engineering Division Council (EDC) held its annual meeting on 3 March 1967. Composition of 11 sectional committees was reviewed and, as a result, they were reconstituted.

On the recommendation of the Meteorological Department, the Division Council set up a new Sectional Committee to formulate Indian Standards on meteorological instruments. It is hoped that preparation of Indian Standards for various types of instruments required for meteorological observations will help the indigenous manufacturers in producing instruments of comparable international standards.

The Division Council also reviewed the progress of work of Marine Engineering and Shipbuilding Sectional Committee, EDC 56, which was set up in 1963 on the recommendation of the Ship Ancillary Industries Committee. In view of the expansion of work, it was decided to reorganize this Sectional Committee in order to make it possible to concentrate on the various groups of subjects involved. Accordingly, the Sectional Committee was split into three sectional committees designated as under:

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

6.6 During the period under review, thirteen new subcommittees and panels were set up under the various sectional committees. One of the panels was entrusted with the work of drafting a revision of IS : 696-1960 'Code of practice for general engineering drawings (revised)'. Another panel, set up under the Industrial Instruments Sectional Committee, EDC 60, would study details and information regarding pressure filled expansion thermometers, moisture meters, conductivity type hygrometers, automatic hydrometers, and differential pressure density meters and gas density meters.

6.7 A total of 116 Indian Standards, prepared by the Mechanical Engineering Division Council and sent for publication during the period under review, are listed in Appendix A.

7. STRUCTURAL AND METALS DIVISION

7.1 During the year under review, Indian Standards on a number of important subjects were processed for publication. Of these, special

mention may be made of the specifications for aluminized steel core wire for aluminium conductors (ACSR), for tool and die steels for hot and cold work, for steel for naval purposes, for aluminium equal and unequal leg angles, for aluminium-clad aluminium sheet, strip and coil for aircraft purposes, for refined secondary lead, for dental materials, such as wire, foil and solders, for Group A moderate heat duty fireclay refractories and for carbon steel forgings for shipbuilding; revision of IS: 1536-1961 'Specification for centrifugally cast (spun) iron pressure pipes for water, gas and sewage' to cover the use of rubber joints in place of caulking lead; codes of practice for phosphate treatment of iron and steel for protection against corrosion, for the use of structural steel in overhead transmission line towers, for the manufacture of 14 and lower carat gold alloys and for the use of metal arc welding for hull construction of merchant ships; code of recommended practice for hot-dip galvanizing of iron and steel; safety code for industrial radiographic practice; glossary of terms relating to electroplating; chemical analysis of brasses; selection and preparation of samples and test pieces for mechanical tests for wrought steel; sampling of light metals and their alloys; classification and coding of covered electrodes for metal arc welding of mild steel and low alloy high tensile steel; and comparison of Indian and overseas standards for iron castings.

7.2 As a result of standardization of steel, considerable variety reduction has been achieved. Before the Steel Economy Project of ISI was initiated, more than 1 500 varieties of steel were in use. Following a detailed study of the subject, these varieties were reduced to 156 which are included in IS: 1570-1961 'Schedules for wrought steels for general engineering purposes'. With a view to minimizing the imports and conserving the strategic alloying elements, further rationalization of steel was achieved by issuing an Emergency Amendment to IS: 1570-1961, whereby the varieties of steel have been reduced to 86.

As this work is aimed at attaining self-sufficiency and reducing dependence on imported raw materials, it is of special economic significance, for the variety reduction due to standardization will result into huge economy.

7.3 To consider the recommendations made by the National Council of Applied Economic Research (NCAER) in its report *Saving in Structural Steel Through Standardization*, a high power committee under the chairmanship of Shri N. N. Wanchoo, Secretary, Ministry of Steel and Mines, set up a permanent subcommittee under the chairmanship of Iron & Steel Controller of the Government of India. In order to expedite implementation of these recommendations, the Subcommittee set up five working groups which completed their studies and submitted their reports to the Subcommittee. The Subcommittee, at its second meeting held on 5 January 1967, considered and finalized the reports of the Working Groups for submission to the Government of India. The following action was

taken by ISI in regard to some of the recommendations made in the reports:

- a) Amendment No. 2 to IS : 808-1964 'Rolled steel beam, channel and angle sections (*revised*)' was issued and sent to press;
- b) Amendment No. 3 to IS : 808-1964 'Rolled steel beam, channel and angle sections (*revised*)' was issued and sent to press;
- c) Draft Indian Standard code of practice for corrosion protection of light gauge steel sections used in building was prepared and was under finalization;
- d) IS : 1161-1963 'Steel tubes for structural purposes (*revised*)' was being revised; and
- e) Amendment No. 4 to IS : 806-1967 'Code of practice for use of steel tubes in general building construction' was under revision.

7.4 Draft standards on a number of subjects were finalized for publication, including those for chemical analysis of primary nickel, steel for spring washers, general regulations for scaffolding, comparison of Indian and overseas standards on aluminium castings, copper, copper rods for general engineering purposes, glossary of terms relating to refractory materials, determination of inclusion content in steel by microscopic method and heavy duty electric overhead travelling cranes, including special service machines for use in steel works.

7.5 The draft standards issued into wide circulation included those for chemical analysis of foundry nickel; determination of proof stress and proving test for steel at elevated temperatures; hardness conversion tables for metals; bright bars for machining; ferrochromium; dimensions for wrought aluminium and aluminium alloys, bars, rods and sections; copper wire for general engineering purposes; spectrographic analysis of platinum alloys; covered electrodes for metal arc welding of mild steel; qualifying tests for welders engaged in welding structures other than pipes; limestone for use in foundries; foundry moulding boxes of steel construction; cold rolled carbon steel strips for ball bearing cages; heat-resisting steel castings; steel pipe fittings for marine purposes; electroplated coatings of gold for decorative purposes; ultrasonic testing of steel plates; and estimation of average grain size of metals.

7.6 Draft standards compiled during the year related to phosphating; chemical analysis of high alloy steels; abrasion resistant iron castings; refined secondary tin; chemically-bonded chrome-magnesite and magnesite-chrome refractories for general purposes; assessment of butt and fillet fusion welds in steel sheet, plate and pipes; general pipeline welding; and pattern plates for machine moulding boxes.

7.7 New subjects taken up for the formulation of standards included, among others, tensile test for copper and copper alloy sheet; design of

industrial chimneys; comparison of standard hot-rolled steel beams, channels and angles; chemical analysis of ferroniobium and misch metal; aluminium for use in bearings and busbars; hot-dip coatings on structural steel products; and welding of plastics.

7.8 The Structural and Metals Division Council held its tenth meeting on 1 September 1966 at New Delhi. At this meeting, a new sectional committee, namely, Hot Dip Metallic Coatings Sectional Committee, SMDC 28, was set up. During the year, 24 new subcommittees and panels were also set up.

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

8. TEXTILE DIVISION

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

- a) Standards for the determination of micronaire value and bundle strength testing of cotton fibre.

Fibre fineness tester of the Ahmedabad Textile Industry's Research Association (ATIRA) was recommended and included in the Indian Standard on micronaire value. An Indian Standard prescribing conversion factors and conversion tables for the inter-conversion of yarn count values from one system to another was published during the year.

- b) Standards for cotton yarn for covering conductors and viscose rayon cut staple yarn.

The specification for cotton yarn for conductors will help in promoting effective co-ordination between electrical and textile industries. In view of the increased use of staple fibre in textile industry, the specification for viscose rayon cut staple yarn is expected to safeguard the interests of those power loom weavers who do not have their own spinning units.

- c) Standards for export jute products like Hessian bags, DW-flour bags, Liverpool twill (L-twill) bags, B-twill cloth, Heavy cee cloth, Jute corn sack cloth, Liverpool twill (L-twill) cloth and DW-flour jute cloth were 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 these standards will further help augment our export trade in jute goods.

- d) Standard for the determination of water-soluble matter in textile materials.

It is hoped that the method outlined in this standard will be useful for determining the water-soluble matter which, if present beyond certain limits, affects the quality of textile materials.

- e) Standard for packing of rayon staple fibres.

Proper packaging with packing materials of a satisfactory quality protects the goods from hazards of transit, provides for ease of handling and preserves the contents from contamination and other deterioration. It is hoped that this standard will play a very important part in preventing damage in handling and safe transport of goods, their storage and marketing.

- f) Standards for khadi items, such as pugree cloth, dosuti, long cloth, mazri, napkins, table cloth, towels, bed sheets, dungri cloth, dusters, sheeting cloth, lining cloth, sponge cloth and superior scarlet woollen blankets.

These standards, formulated at the instance of the Khadi and Village Industries Commission, deal with the fabrics manufactured in the khadi sector, that is, woven on handlooms from hand-spun yarn. It is hoped that these standards will help the khadi sector in maintaining regularity in its production as also the central purchasing agencies in procuring their requirements of the right quality.

- g) Standards for hosiery items, such as rib-knitted cotton stockings, cotton singlets, plain-knitted sleeveless cotton vests and round neck jerseys.

These standards will give a fillip to the small-scale hosiery industry where production of hosiery goods is mostly concentrated.

- h) Standard code for inland packing of wool hosiery yarn and goods.

This standard is expected to play an important part in preventing damage in handling and safe transport of wool hosiery yarn and goods, their storage and marketing.

- j) Standards for textile mill accessories, such as dobbie lags and pegs, warp tubes, flyer bobbins, lease rods, wooden staves for cotton healds, wooden heald frames for wire and flat steel healds, and inset mail wire healds for jute industry.

These standards will be helpful to manufacturers in maintaining the quality of their products and will ensure dependable supplies, higher efficiency and less breakdown in textile mills.

- k) Standards for textile materials for aircraft purposes, namely, linen sewing thread, rot-proofed cotton tapes and light cotton fabric for covering surfaces of aircraft.

These standards formulated with a view to encouraging indigenous production of the materials which were hitherto mainly imported.

- m) Standards for aluminium plug type spindles for spinning and doubling frames and warp tubes for use on aluminium plug type spindles.

Production of spindle blade is complicated involving 20 to 25 precision operations. Avoidable wastage which can be prevented by reducing and rationalizing the varieties of spindles (and the warp tubes which are used on the spindles) can be visualized. It is hoped that 21 varieties of spindles and warp tubes covering the entire range of needs of the spinning industry will be helpful in the promotion of national economy.

- n) Standard for the determination of strength of azo dyes.

It is hoped that the method outlined in this standard will be mainly useful for determining the strength of dyes, for production control, production statistics and import-export statistics where one normally deals with unblended dyestuffs which are straight dilutions of crude dyestuffs.

8.2 The Standing Working Committee of the Textile Division Council (SWCT) held its fourteenth meeting on 1 October 1966 in New Delhi. Thirty-eight new subjects were approved for the formulation of Indian Standards. Two sectional committees, namely, Cotton Hosiery and Knitted Garments Sectional Committee, TDC 15 and Wool Hosiery and Knitted Garments Sectional Committee, TDC 16, were amalgamated into one, namely, Hosiery Sectional Committee, TDC 15, to deal with hosiery items made of any fibre, cotton, wool or man-made. SWCT also decided that, in Indian Standards on cotton textiles, the count of yarn shall be indicated in tex system with its equivalent in cotton count (English) within brackets, following the intermediate step (b) as recommended by ISO/TC 38, Textiles for converting count values from cotton count (English) to tex. No meeting of the Textile Division Council was held during the period under review.

8.3 Sixty-six Indian Standards formulated by the Textile Division Council and sent to press during the period under review are listed in Appendix A.

9. SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

9.1 Documentation (EC 2) — (Sectt: Publications Deptt) — One Standard, namely, IS : 3083-1966 ' Code of practice for the processing of microfilms (silver halide) ' was issued during the year.

Twenty-first meeting of the Documentation Committee was held on 5-6 July 1966. At this meeting, two draft standards, namely, (a) code

of practice for the processing of microfilms (silver halide), and (b) glossary of cataloguing terms (*first revision of IS : 796-1959*) were finalized, and two draft standards, namely, code of practice for layout of library catalogue code (*first revision of IS : 1358-1959*) and guiding principles for the preparation of the text of a book and of an article in a learned periodical were approved for wide circulation.

9.2 Quality Control and Industrial Statistics Sectional Committee (EC 3) — (Sectt: Statistics Deptt) — Fifth meeting of the Sectional Committee was held on 22 December 1966 when two draft Indian Standards regarding methods for the determination of precision of test methods and tests of significance were approved for wide circulation. The Sectional Committee also compiled a proposed draft Indian Standard glossary of terms in work study. These draft standards, when printed, will considerably promote the knowledge and application of statistical techniques in industries.

10. STATISTICS DEPARTMENT

10.1 An important feature of the work of the Department during the year under review was the organization of the second training course in Statistical Quality Control for the benefit of ISI licensees for cables and conductors. Besides, the Department was actively engaged in the formulation of a number of Indian Standards on the methods for sampling of different types of materials as also basic standards on control charts, sampling inspection, random sampling methods, work study and other statistical techniques. It also conducted second study on the sale of Indian Standards.

10.2 The Department continued to scrutinize draft Indian Standards with the object of introducing, wherever possible, statistical quality control concepts in them. Of the 762 drafts scrutinized during the year, statistically sound sampling plans were recommended in 409 drafts; in almost all the cases, the recommendations made by the Department were accepted by the relevant sectional committees. In this connection, special mention may be made of Indian Standard Specifications for automobile lamps (IS : 1606-1966), asbestos cement flat sheets (IS : 2096-1966), domestic pressure cookers (IS : 2347-1963), wettable sulphur powder (IS : 3383-1965), copper strip and foil for the manufacture of copper gaskets, copper washers and eyelets (IS : 3487-1966), lineman's leather safety belt and strap (IS : 3521-1965), rasps (IS : 3587-1966), rubber protective sheaths (condoms) (IS : 3701-1966), and dosuti, cotton khadi (IS : 3770-1966).

10.3 The Department scrutinized the routine inspection scheme referred to it for the issue of licences under the ISI 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 certified goods conformed to the relevant Indian Standards as also to examine the adequacy of the recommended frequencies of testing and inspection.

10.4 The department carried out second study on the sale of Indian Standards with particular reference to the annual value, the number of standards sold and the corresponding expenditure incurred on their publication during the last four years from 1962-63 to 1965-66. The study helped a great deal in taking effective remedial measures for boosting the sale of Indian Standards.

10.5 Training in Statistical Quality Control (SQC)— In order to enable ISI licensees for cables and conductors to introduce Statistical Quality Control methods during production, the second training programme in SQC was organized at Bombay from 5 to 13 December 1966. Fourteen licensees had nominated 16 trainees to participate in the programme.

Such programmes help the licensees in producing uniform goods of satisfactory quality conforming to the relevant Indian Standards at an economic level, thereby considerably facilitating sound operation of the ISI Certification Marks Scheme.

10.6 The Department carried out extensive investigations and statistical analyses of the data relating to different aspects of the standardization work. The investigations, which were found to be extremely helpful, covered among others, the following aspects:

- a) Laying down specification requirements for products like oil of Himalayan cedar wood, neem fruits and honey;
- b) Evaluation of the precision of test methods for modulus of rupture of stoneware, determination of evaporation loss in greases, etc.
- c) Designing of industrial experiments for import substitution purposes, for instance, comparative performance trials on lags and pegs made of indigenous timber and foreign timber;
- d) Estimation of the variability of products like maize starch for cotton textile industry for arriving at an appropriate sampling procedure; and
- e) Collection and analysis of data for judging the suitability of suggested sampling procedure for products like pig iron.

10.7 Comments and suggestions were sent for the improvement of clauses of a number of draft proposals of the International Organization for Standardization (ISO) and overseas standards bodies. The subjects on which comments and suggestions were sent include green coffee; fresh fruits and vegetables; starch; cereals; milk and milk products; asbestos-

cement products; raw, natural and synthetic rubbers; and chemical analysis of leather.

11. RESEARCH AND INVESTIGATION

11.1 Standardization of goods and services in modern economy is a dynamic process requiring continuous revision in the light of scientific advancement. Research and investigation are, therefore, basic to the development of economy, industry, science and technology, and in the fields of standardization. Before evolving quality requirements, methods of test and sampling procedures in Indian Standards, it is essential that these are scientifically tested and analyzed in laboratories and test houses. The Institution has conducted, from time to time, surveys of testing facilities available and made use of such facilities, wherever necessary, with the assistance and co-operation of the authorities concerned. The institution has been conducting research and investigations in its own laboratories and has also been collaborating with the laboratories and research organizations in different fields of industry and technology in the country.

The Institution gratefully acknowledges the support and collaboration extended by the laboratories and organizations throughout the country which have rendered assistance in research and investigation covering the work of different Divisions.

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

Agricultural and Food Products Division — Research and investigations undertaken by this Division related to the determination of gamma isomer content in BHC smoke generators by the British Pharmacopoeia method; determination of malathion content in technical malathion by iodometric method; emulsion stability of emulsifiable concentrates; suspensibility requirement of DDT water dispersible powder concentrates; solubility requirement for chlordane technical; aldrin content in aldrin dusting powders; acid content in amine salts of 2-, 4-D endrin content in technical endrin; acidity and alkalinity requirement of endrin emulsifiable concentrates; determination of characteristics of honey amenable to standardization; analysis of cow and buffalo evaporated (unsweetened) milk, separated milk, skim milk, butter-milk and cream for fat content by Brisk reagent and Gerber method; analysis of *CHAKKA* prepared from cow and buffalo milk for fat, protein, acidity and moisture contents; analysis of *BURFI* to determine characteristics like fat, total solids, acidity, protein, lactose and total reducing sugars; suitability of Hansa test for detecting adulteration of cow milk in buffalo milk; detection of added water in milk by interfacial tension test; separation of three substances of turmeric powder and determination of their chemical properties with particular reference to curcumin; determination of

chemical characteristics of onion and garlic; and assessment of the utility of urea as an ingredient in cattle feed with particular reference to the use of alternative carbohydrates.

Chemical Division — Research and investigation carried out by this Division related to the correlation of olfactory value of oil of palmarosa with its physico-chemical characteristics. Data were collected on the permeability of fumigation covers, transparency and shrinkage of tracing cloth, correlation tests on motor gasoline, peeling load and shear strength of rubber-based adhesives, adhesion to metal and self of pressure-sensitive adhesive cloth tapes, pH of skin powders and determination of calcium in ink blue dye by ETDA Method. Investigations were carried out for ascertaining the suitability of Kirloskar engines as a standard test engine for the evaluation of the performance of crankcase oils in place of imported engines being used in the country; for examining the suitability of low flash diesel fuel; and on oil of peppermint dementholized, pickled skins and chrome blues. For assessing the quality of paper being produced in the country *vis-a-vis* IS: 1848-1961 'Writing and printing papers', samples of paper from indigenous manufacturers were collected and tested. In order to ensure that primers conforming to relevant Indian Standard specifications are used in comparative performance investigations *vis-a-vis* IS: 2931-1964 'Ready mixed paint, brushing, aluminium-zinc oxide composite primer', samples of the following paints were tested: RMP, brushing, finishing, semi-gloss, for general purposes, red oxide; RMP, brushing, red lead, non-setting, priming; RMP, red oxide zinc chrome, priming, brushing; red oxide in alkyd medium; paint prepared for use, priming, general service, brushing, zinc chromate; aluminium paint for general purposes in dual containers; and aluminium zinc-oxide composite primer. Further investigations were carried out for determining the repeatability and reproducibility of the methods of test for coal.

Civil Engineering Division — The problems on which research and investigations were completed during the year included quantity of water to be used in compressive strength test for cement, mortar making properties of Ennore sand and lime reactivity test method and performance requirements for wooden flush doors. Research and investigations were in progress on permissible limit of magnesia content in building limes; testing of natural building stones; thermal efficiency of brick kilns; abrasion resistance of cement concrete tiles; use of square and circular plates for load test on soils; effect of vibration on soils; testing and calibration of sieve shaker; performance tests for batch type concrete mixers; performance of concrete vibrators; polythene pipes for their suitability for potable water supply; moulded rubber rings; effect of sediment on velocity distribution and hence on discharge; effect of sediment on the rating of current meter; minimum number of verticals for discharge measurements in canals; position of current meter with reference to the boat; use of bubble gauge;

effect of sediment on the discharge coefficient of notches, weirs and flumes; instructions for collection of data for the determination of error in the measurement of flow by velocity area methods; effect of bed formation by sediment motion (from drag) on flow in open channels; cupping and twisting of fibre hardboard; and preservative treatment for cores for block-boards.

Consumer Products Division — Investigations carried out in the field of medical equipment included trials made on some instruments, such as aural forceps, aural hooks and dental extraction forceps, and proved very useful in the work of the relevant committees. Special investigations and trials were made on certain items of general consumer interest, including copper-bottomed stainless steel utensils, hardness *vis-a-vis* lasting quality of ball point tips and fountain pen nibs.

Structural & Metals Division — Research was carried out with regard to the adverse effect on public health of lead as impurity used in the manufacture of utensils. This was necessitated while revising IS : 422-1959 'Specification for brass sheet and strip for the manufacture of utensils'. The results of the investigation were carefully examined and the adverse effect on public health of lead as impurity was found to be negligible within the limits already laid down in the Indian Standard.

Research work was initiated on corrosion resistance of various types of stainless steel for domestic cooking utensils and hospitalware. It was felt that nickel-free straight chromium stainless steel might be suitable for the manufacture of certain articles, such as dining plates, where deep drawing properties are not critical.

Work on a short-term programme for conducting exposure tests on light gauge steel panels, which was being done in four laboratories, was completed and the draft Indian Standard code of practice for corrosion protection of light gauge steel sections used in buildings was finalized and sent for printing.

Some other problems on which investigational work was completed during the period under report related to the determination of cold crushing strength of fireclay refractories, determination of physical and chemical characteristics for highly polished copper plates for photo-engraving purposes, and determination of the lowest ambient temperature below which welding should not be permitted in structural steel for fabrication purposes.

Work on the remaining 15 problems taken up from time to time and reported in previous years was continued at various laboratories in the country.

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;

tests for evaluating constructional particulars and breaking load of cotton braid for sleeving; tests for determining breaking load, shrinkage, scouring loss and other constructional particulars of cotton khadi—shirting, coating, dhoti, sari and non-mulberry silk fabrics produced in khadi sector, namely, muga shirting, muga coating, endi coating, endi chaddars and ketia coating; tests for evaluating breaking load, twist, Uster percentage and appearance characteristics of cotton hosiery yarn; tests for evaluating breaking load, shrinkage and other constructional particulars of export varieties of cotton grey sheeting, cotton drills and voiles; and tests for determining constructional details and breaking load of cotton cheese cloth, cotton shoe laces and cotton fabrics for the reinforcement of rubber hoses. With a view to including a method of test for determining whiteness of rayon yarn in the standard on grading of continuous filament viscose rayon yarn and acetate yarn, bright and dull (IS : 2427-1963), inter-laboratory trials were conducted for the purpose of ascertaining the reproducibility of the method. Tests were carried out for the determining breaking load, flexibility in terms of angle of sag and other constructional particulars of braided nylon rope for mountaineering purposes. Besides, trials were conducted to study its practical performance.

INTERNATIONAL ACTIVITIES

1. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

1.1 Out of 116 technical committees of the International Organization for Standardization (ISO), as on 31 March 1967, ISI was a Participating Member of 83 technical committees and an Observer Member of 29 others. Besides, the Institution held the Secretariat of 4 technical committees, 3 subcommittees and 8 working groups.

1.2 ISO Council — The 20th meeting of the ISO Council held in Geneva on 14, 15 and 17 June 1966 under the chairmanship of Shri Jehangir J. Ghandy, was attended by all the 14 member-bodies of the Council, Cuba, Finland, India and Ireland being the new member-countries. India was represented by Dr Lal C. Verman and Shri K. N. P. Rao. One of the important points made out was that a study should be made for the assessment of economic benefits of international standardization, for this a working group was set up under the Standing Committee for the Study of Scientific Principles of Standardization (STACO). Dr Verman stressed the need for and advisability of international exchange of technical personnel on a bilateral or other mutually agreed basis and the Secretary General was requested to pursue the suggestion further.

1.3 ISO Planning Committee (PLACO) — PLACO, one of the standing committees of the Council of which Dr Lal C. Verman is the Chairman, held its meeting in Geneva on 7 June 1966. Among other matters, titles and scope of 12 technical committees were reviewed. One important question which PLACO had to consider at this meeting was about the constitutional position of certain technical co-ordinating committees which had been created in the past.

1.4 ISO Development Committee (DEVCO) — The meeting of DEVCO held in Geneva on 8-9 June 1966 was attended, among

others, by Dr R. C. Desai, Chief of Industries Division of the Centre for Industrial Development of the United Nations. It was agreed, at his suggestion, that during the next ISO triennial General Assembly meeting in Moscow in 1967 a conference of developing countries be organized and the United Nations would finance the presence of at least 15 delegates from 15 developing countries which were not at present members of ISO.

1.5 ISO Organization Committee (ORCO) — Two meetings of ORCO were held in Geneva on 1-4 April 1966 and 13 June 1966. At these meetings, the Secretary General and some other members of the staff were selected and other organizational matters discussed. The third meeting was held on 14-15 December 1966 in Paris. Among the important decisions taken at this meeting were the creation of posts of Developing Countries Officer and Editor-cum-Public Relations Officer at ISO Headquarters, and the appointment of Dr Lal C. Verman as Chairman for the next meeting of DEVCO as well as President of the Development Conference to be held in Moscow in June 1967 at the time of the ISO General Assembly. All these meetings of ORCO were attended by Dr Verman.

1.6 ISO/IEC Standing Co-ordinating Committee — The first formal meeting of the Committee was held in Geneva on 11 June 1966 at which matters concerning public relations, avoidance of overlapping, patent policy, consumer problems and correspondent members were discussed. At the second meeting held in Paris on 16 December 1966, draft of the joint ISO/IEC information brochure was finalized for publication by the time of the General Assembly meeting at Moscow.

1.7 ISO Technical Committee — 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 2 Bolts, Nuts and Accessories — (Sectt: Germany) — Seventh meeting, 17-21 October 1966, Budapest. India was represented. Draft ISO Recommendations for parallel pins, taper pins and clevis pins were agreed upon; property classes for nuts were evolved; and a system of marking for bolts and nuts was approved. A step of 20 mm for the nominal lengths for general purpose bolts and screws was adopted for lengths between 200 and 300 mm. Dimensions for hexagon socket head cap screws and castle nuts for sizes above M39 were agreed upon. Clearance holes for metric bolts and screws and radii under the head for general purpose bolts and screws were finalized.

ISO/TC 5 Pipes and Fittings — (Sectt: Switzerland) — Two Draft ISO Recommendations for socket fittings for pipes under pressure unplasticized PVC fittings with plain sockets, metric series; and oven test for moulded fittings in unplasticized PVC for use under pressure were received for comments.

ISO/TC 5/SC 2 Cast Iron Pipes, Fittings and Their Joints — (Sectt: France) — Revised Draft ISO Recommendation on cast iron

sanitary pipes and fittings for waste water and ventilation was approved on behalf of India.

ISO/TC 8/WG 6 Compasses — (Sectt: UK) — Twelfth meeting, 17-19 October 1966, Hamburg (Germany). India was represented. During this meeting, revised Draft ISO Recommendations on general requirements for Class B magnetic compasses and binnacles for use in sea navigation and positioning of magnetic compasses in ships were approved for circulation to the ISO Council. The following documents were also considered:

- a) Terminology for compasses together with translation of these terms into other languages,
- b) Rules for testing and certification of magnetic compasses,
- c) Standard dimensions for compass correctors, and
- d) Draft proposal for an ISO Recommendation on magnetic control element of Class C compasses for use in sea navigation.

Experts' Meeting on Anchor Chains (Under ISO/TC 8 Ship-building Details) — An Indian delegate attended this meeting on 27 October 1966 in Cologne (Germany). He pressed for the acceptance of anchor chain sizes on the basis of preferred series, but this proposal was rejected by a majority vote. Anchor chain sizes were selected in conformity with EURONORM round bar sizes with the agreement of the representatives of Classification Societies. Tolerances for chain diameters as well as length and width of each link were also decided. The pitch of short link chains was retained at three times the diameter of the chain.

ISO/TC 12/SC 1 Procedure for Inter-conversion of Values from One System of Units to Another — (Sectt: India) — Second meeting, 23-25 June 1966, Helsingör (Denmark) under the chairmanship of Dr Lal C. Verman, former Director General of ISI. On behalf of India and the Secretariat, Dr B. N. Singh attended the meeting. The Subcommittee considered first Draft ISO Proposal on the procedure for inter-conversion of values from one system of units to another as prepared by the Secretariat on the basis of IS: 787-1956 'Guide for inter-conversion of values from one system of units to another', in accordance with the decision taken at its first meeting in New Delhi. It was decided to prepare a new document which would make a direct reference to ISO/R 370 'Conversion of toleranced dimensions from inches into millimetres and *vice versa*' for the conversion of toleranced dimensions from inches to millimetres and *vice versa*. It was also agreed to include in the document an alternative method for conversion as suggested by the UK member-body. Other important changes related to the inclusion of definitions of terms like 'precision', 'accuracy' and 'tolerance' in an appendix as also to the illustration of the method of conversion of absolute maximum and minimum values. Third Draft ISO Proposal prepared on these lines was

circulated to members of the Subcommittee for their approval and comments and also to members of TC 12 Quantities, Units, Symbols, Conversion Factors and Conversion Tables 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) — First meeting, 20-23 June 1966, Helsingör (Denmark). India was represented by Dr Lal C. Verman and Dr B. N. Singh.

The Secretariat proposal on general rules for the use of SI units and their multiples and sub-multiples was considered in detail and the Secretariat was requested to prepare a new proposal in the light of the discussions and decisions made at the meeting.

An inquiry on SI Units had been circulated to all ISO member-bodies and ISO Technical Committee Secretariat the replies of which will be discussed at the second meeting of the committee to be held in Moscow in June 1967.

ISO/TC 17 Steel — (Sectt : UK) — Draft ISO Recommendations received for comments related to mechanical testing of yield stress and proof stress and proving test when a yield occurs; verification of standardized blocks to be used for Vickers hardness testing machines (replacing Draft ISO/R 524); verification of standardized blocks to be used for Brinell hardness testing machines (replacing Draft ISO/R 525); verification of Rockwell B & C scale hardness testing machines (replacing Draft ISO/R 522); and verification of standardized blocks to be used for Rockwell B & C scale hardness testing machines (replacing Draft ISO/R 523).

ISO/TC 17/SC 1 Methods of Chemical Analysis and Spectrographic Analysis of Steel — (Sectt : Italy) — Two Draft ISO Recommendations relating to the determination of manganese and sulphur were approved on behalf of India. Besides, one Draft ISO Proposal for the determination of silicon was received for comments.

ISO/TC 17/WG 1 Methods of Mechanical Testing — (Sectt : UK) — Twenty-third meeting, 27-30 September 1966, Paris. Draft ISO Recommendation relating to tensile testing of steel was considered. India did not attend the meeting.

ISO/TC 17/WG 4 Heat Treated and Alloyed Steels and Free Cutting Steels — (Sectt : Germany) — Seventh and eighth meetings, 28 June- 1 July 1966, Stockholm and 12-15 December 1966, Dusseldorf (Germany). At these meetings, Draft ISO Proposals for case hardening steels, flame and induction hardening steels, nitriding steels, free cutting steels, stainless steels, quenched and tempered manganese steels, quenched and tempered 3 percent Cr and 0.5 percent Mo steels, quenched and tempered chromium steels, and quenched and tempered chromium-nickel-molybdenum steels were considered. India did not participate in these meetings.

ISO/TC 17/WG 8 Dimensions of Hot-Rolled Steel Sections — (Sectt: India) — Fifth meeting, 11-16 July 1966, Philadelphia was held under the chairmanship of Shri O. S. Murthy, General Manager, Western Railway, Bombay. Nineteen delegates representing seven countries, namely, Belgium, Canada, France, India, Japan, UK and USA participated in this meeting.

Three draft proposals on dimensions of hot-rolled flats, metric series; dimensions of hot-rolled equal leg angles, inch series; and dimensions of hot-rolled unequal leg angles inch series were finalized for submission to the Secretariat of ISO/TC 17 Steel for further processing.

It was also agreed that documents on parallel flange beam and column sections, metric series, should be further studied.

ISO/TC 17/WG 10 Steels for Pressure Vessels and ISO/TC 11/SC 1 Boilers Materials — (Sectt: Germany) — Joint meeting, 19-22 April 1966, Dusseldorf (Germany), Shri T. V. N. Kidao of Ashok Leyland Ltd, Madras, attended this meeting, on behalf of India. At this meeting, Draft ISO Proposal for plates for the manufacture of pressure vessels was considered.

ISO/TC 18 Zinc and Zinc Alloys — (Sectt: Belgium) — Second Draft ISO Proposal for chemical composition of zinc alloy die castings was received for comments.

ISO/TC 18/SC 1 Methods of Chemical Analysis of Zinc and Zinc Alloys — (Sectt: Belgium) — Three Draft ISO Recommendations for polarographic determination of lead and cadmium, photometric determination of iron and polarographic determination of lead in zinc alloys were approved on behalf of India.

ISO/TC 20 Aircraft — (Sectt: UK) — Thirteenth meeting, 5-7 September 1966, London. India was represented. The Committee directed its Working Group 2 rivets to redraft Draft ISO/R 818 'Rivet indications on aircraft drawings'. A new working group, WG/4 Aerospace Bolts and Nuts, was set up with France at the Secretariat. It was also decided to formulate Draft ISO Recommendations for aircraft fuel nozzle grounding plugs and sockets, heat-resisting (260°C) electrical cables for aircraft, aircraft plug and socket connectors, aluminium electric cables terminal ends, aircraft electrical power systems, aircraft electrical symbols and circuit diagrams, and symbols for flight dynamics.

Draft ISO Recommendations received for comments related to environmental and operational conditions of aircraft electrical equipment; dimensions for general purpose push-pull three-pole circuit-breakers for aircraft and general purpose electrical cables with aluminium or aluminium alloy conductors for aircraft.

ISO/TC 24 Sieves, Sieving and Other Sizing Methods — (Sectt: Germany) — Second meeting, 9 May 1966, Paris. The following new title and scope of the committee were adopted:

Title: Sieves, sieving and other sizing methods.

Scope: Standardization pertaining to equipment and methods used in size classification of solid particulate materials.

Two new subcommittees, SC 3 Industrial Screens and SC 4 Sizing by Methods Other Than Sieving were formed. The following working groups were established under SC 4:

WG 1 Sedimentation and Classification,

WG 2 Measurement and Counting by Microscope, and

WG 3 Measurement of Specific Surface.

Draft ISO Recommendation on woven wire cloth was circulated to member-bodies for approval as ISO Recommendation. This was approved by ISI on behalf of India.

ISO/TC 25 Cast Iron — (Sectt: UK) — Three Draft ISO Recommendations for whiteheart, blackheart and pearlitic malleable cast iron were received for comments.

ISO/TC 25/WG 2 Spheroidal Graphite Cast Iron — (Sectt: France) — Third Draft ISO Proposal for spheroidal graphite or nodular graphite cast iron was received for comments.

ISO/TC 27/WG 8 Coke — (Sectt: UK) — Tenth meeting, 9-10 June 1966, Paris. Methods for the determination of moisture in coke, sampling of coke, size analysis of coke, glossary of coke terms and strength tests in small cokes were discussed.

ISO/TC 27/WG 10 Grindability Tests — (Sectt: USA) — First meeting, 25-26 October 1966, London. Various methods for the determination of grindability of coal, including the Hardgrove method, were considered.

ISO/TC 30 Measurement of Fluid Flow in Closed Conduits — (Sectt: France) — Working Group 2 Steering Group for the Activities of TC 30 met in East Kilbride from 4 to 6 April 1966.

Draft ISO Recommendation for measurement of fluid flow by means of venturi tubes was circulated by the ISO Central Secretariat to its member-bodies during the year for comments.

ISO/TC 33/WG 2 Methods of Test for Refractoriness and Refractoriness Under Load — (Sectt: UK) — Eighth meeting, 15 November 1966, London. India did not participate. Four Draft ISO Proposals relating to the determination of refractoriness under load;

pyrometric reference cones and a statement on the use of thermo couples; creep of refractories at high temperature; and determination of permanent dimensional change on heating were considered.

ISO/TC 33/WG 3 Dimensions — (Sectt: UK) — Draft ISO Proposal for the dimensions of refractory arch bricks was received for comments.

ISO/TC 33/WG 4 Chemical Analysis of Refractories — (Sectt: UK) — Revised Draft ISO Proposals for analysis of high silicon refractory materials and alumino silicate refractory materials were received for comments.

ISO/TC 34 Agricultural Food Products — (Sectt: Hungary) — Fifth plenary meeting, 6-7 May 1966, Ankara (Turkey), under the chairmanship of Prof L. Telegdy-Kovats of the Technical University, Budapest. India was represented by Dr D. V. Karmarkar, former Deputy Director General of ISI, and Dr D. S. Bhatia, Technical Manager, Coca-Cola Export Corporation, New Delhi. The Committee considered the reports of its subcommittees.

ISO/TC 34/SC 1 Propagation Materials — (Sectt: France) — Second meeting, 7-9 June 1966, Paris. No delegate from India could attend the meeting. The Subcommittee prepared a Draft ISO Proposal on the methods of checking cow milk; it defines the method of milk yield verification.

ISO/TC 34/SC 2/WG 1 Sampling (of Oleaginous Seeds and Fruits) — (Sectt: UK) — Two documents, namely, first working group draft on sampling of oilseeds residues and second working group draft on sampling of crude vegetable oils and fats were received from ISO Secretariat for comments. Comments on these documents received from member-bodies, including India, will be discussed at the fourth meeting of the Working Group to be held in June 1967 at Moscow.

Draft ISO/R 685 'Oilseeds Sampling' was accepted by the ISO Council as an ISO Recommendation.

Draft ISO Recommendation No. 906 'Reduction of contract samples of oilseeds to samples for analysis' was approved by ISO member-bodies.

ISO/TC 34/SC 3 Fruits, Vegetables and Their Derived Products — (Sectt: Poland) — Sixth meeting, 8 October 1966, Belgrade. No delegate from India could attend the meeting. The Subcommittee considered Draft ISO Proposals relating to storage of onions, ware potatoes, cabbages, carrots, sampling of fresh fruits and vegetables, nomenclature of fruits and vegetables and their morphological parts, determination of essential oils, measurement of pH, determination of total soluble solids (Pycnometric and Refractometric methods) on the basis of the recommendations made by the relevant working groups.

ISO/TC 34/SC 4 Cereals and Pulses — (Sectt: Hungary) — Fifth meeting, 3-4 May 1966, Ankara (Turkey). India was represented by Dr D. V. Karmarkar, former Deputy Director General of ISI. The Subcommittee considered the draft proposal on methods of test for infestation by X-ray examination. Two new subjects relating to sampling of milled products and terminology of cereals and pulses were taken up. A new working group was set up with the United Kingdom as Secretariat to deal with the storage of cereals and pulses.

ISO/TC 34/SC 6 Meat and Meat Products — (Sectt: Germany) — Fourth meeting, 1 July 1966, Paris. India was not represented. The Subcommittee discussed and approved the following draft proposals for processing as Draft ISO Recommendations:

- a) Terminology of bovine, porcine and ovine animals presented for slaughter;
- b) Determination of total fat content, nitrogen content, and ash of meat and meat products; and
- c) Determination of insoluble impurities, moisture and volatile matter, water of animal fats, solidification point or titre of fatty acids.

ISO/TC 34/SC 7 Spices and Condiments — (Sectt: India) — Fourth meeting, 26-28 April 1966, Ankara (Turkey), under the chairmanship of Shri R. T. Mirchandani, Agricultural Marketing Adviser to the Government of India. Besides the Chairman, the Indian delegation comprised Shri M. S. P. Rajes and Dr D. V. Karmarkar, former Deputy Director General of ISI. The subjects considered at the meeting related to mustard seeds, pimento, saffron, cloves, coriander, cinnamon and method of test for milling products of red pepper (paprika).

The new subjects taken up for consideration included dehydrated onions, dehydrated garlic and dehydrated mint.

ISO/TC 34/SC 8 Stimulant Foods — (Sectt: India) — Second meeting, 3 May 1966, Ankara (Turkey), under the chairmanship of Dr D. S. Bhatia. Besides the Chairman, Dr D. V. Karmarkar, former Deputy Director General of ISI attended the meeting as Secretary. The Subcommittee considered the subject of cocoa beans and set up a new working group with France as Secretariat to deal with cocoa. It also considered the reports of its two working groups on tea and coffee.

ISO/TC 34/SC 8/WG 1 Tea — (Sectt: United Kingdom) — First meeting, 2 May 1966, Ankara (Turkey), under the chairmanship of Mr G. W. U. Liddle of UK. Dr D. S. Bhatia and Dr D. V. Karmarkar, former Deputy Director General of ISI, attended the meeting on behalf of India. The subjects considered at the meeting related to methods of test for tea which include determination of moisture and volatile matter,

preparation of ground sample for analysis, determination of water extract, determination of total ash, determination of water-soluble ash and water-insoluble ash, determination of alkalinity of water-soluble ash, and determination of acid-insoluble ash, and sampling of tea. The new subjects taken up for consideration included drafting of basic minimum standards for black tea, green tea and instant tea, preparation of a statement on typical organoleptic test procedures for the examination of tea; and vocabulary of terms used in tea trade and industry.

ISO/TC 34/SC 8/WG 2 Coffee — (Sectt: Argentina) — First meeting 29 April 1966, Ankara (Turkey), under the chairmanship of Dr Canova of Argentina. Dr D. S. Bhatia and Dr D. V. Karmarkar, former Deputy Director General of ISI, attended the meeting on behalf of India. The subjects considered at the meeting included methods of test for green coffee and determination of moisture by Practical Method and Reference Method. The new subjects taken up included sampling of green coffee and terminology of green coffee.

ISO/TC 36 Cinematography — (Sectt: USA) — Draft ISO Recommendations received for comments related to definitions and marking of safety film for motion-picture uses (replacing Draft ISO/R83); cinematography projection reels for 8 mm motion-picture film, cinematography cores for motion-picture and magnetic films, cinematography daylight loading spools for 16 mm motion-picture film, cinematography daylight loading spools for double-8 mm motion-picture film, cinematography sprockets for 35 mm motion-picture projectors, and cinematography picture areas for films and slides for television.

ISO/TC 37 Terminology (Principles and Co-ordination) — (Sectt: Austria) — Draft ISO Recommendations submitted to the Council after approval related to naming principles and symbols for languages, countries and authorities. Besides, Draft ISO/R 1189 International unification of concepts and terms was received for approval.

ISO/TC 38 Textiles — (Sectt: UK) — Draft ISO Recommendation on method of test for resistance of fabrics to penetration by water (hydrostatic head test) was received for comments.

ISO/TC 38/SC 7 Ropes and Cordages — (Sectt: France) — Fifth meeting, 30 November-2 December 1966, Paris. India was not represented. Draft Proposals for ISO Recommendations on polyester, polyamide and polyethylene ropes were approved for further processing. It was also decided to take up the work on polypropylene ropes.

ISO/TC 38/SC 9 Fishing Nets — (Sectt: Germany) — Draft ISO Recommendation on basic terms for netting for fishing was received for comments.

ISO/TC 38/SC 11 Care Labelling of Textiles — (Sectt : France)
— First meeting, 20-21 February 1967, Paris. India was not represented.
Detailed report of the meeting is awaited from the Secretariat.

ISO/TC 38/SC 12 Methods of Tests for Carpets — (Sectt : UK)
— First meeting, 28-29 September 1966, London. India was not represented. The following three working groups were set up:

WG 1 Classification and Terminology (Sectt : France),

WG 2 Tests for Machine-Made Products (Sectt : UK), and

WG 3 Tests for Hand-Made Carpets (Sectt : Iran).

India has become a participating member of WG 3.

ISO/TC 43 Acoustics — (Sectt : UK) — Ninth meeting, 18-23 April 1966, Prague (Czechoslovakia). As usual, the Technical Committee split up into a number of working groups to deal with the different items of the agenda. The Committee realized the necessity of giving urgent consideration to the preparation of a recommended method of measuring the acoustical performance of fans. It was decided to invite experts from the Working Group of ISO/TC 117 Methods of Testing Industrial Fans to attend the next meeting of Working Group 15 of ISO/TC 43. The Committee also decided that the work on acoustical terminology should be handled by IEC/TC 29 Electro-acoustics in order to avoid duplication of work as well as any delay in processing this important work.

Draft Recommendations sent to the ISO Secretariat for submission to ISO Council related to the procedure for calculating loudness level; and general requirements for the preparation of specifications for measuring noise emitted by machines.

ISO/TC 44 Welding — (Sectt : France) — Sixth meeting, 4-6 July 1966, Paris. A three-man delegation consisting of Shri R. Ghosh of Indian Oxygen Ltd, Calcutta (*Leader*); Shri S. V. Nadkarni of J. B. Advani — Oerlikon Electrodes Private Ltd, Bombay and Shri B. S. Krishnamachar, Deputy Director General of ISI (*Secretary*) attended this meeting on behalf of India. At this meeting, nine documents relating to standardization of wires for gas shielded metal-arc welding of mild steel; dimensions of wires, spools, rims and coils; code of symbols for electrodes for welding of cast iron; recommended practice for the radiographic inspection of fusion-welded butt joints for steel pipes up to 2 inch (50 mm) wall thickness; recommended practice for the radiographic inspection of fusion-welded butt joints for steel plates up to 2 in (50 mm) wall thickness; principles and identification of radiographic image quality indicators; definitions of the most important radiographic terms; dimensions and pitching of slots on platens for projection welding machines; dimensions of straight spot welding electrodes (for loads higher than 1 500 kgf); and dimensions of tubular electrode holders for spot welding machines

were approved for transmission to the ISO Central Secretariat for further processing.

During the year under report, eight Draft ISO Recommendations relating to welding were approved on behalf of India. In addition, three Draft ISO Recommendations were approved subject to certain comments.

ISO/TC 44/SC 5 Tests and Inspection of Welds — (Sectt : Italy)
— Third meeting, 6-8 June 1966, Genoa. India did not participate. Eight Draft ISO Proposals relating to welding were considered at the meeting.

ISO/TC 44/SC 6 Resistance Welding Equipment — (Sectt : UK) — Draft ISO Recommendations received for comments related to rating of manual metal arc welding equipment, rating of resistance welding equipment, and dimensions of seam welding wheel planks.

ISO/TC 44/SC 7 Graphical Welding Symbols — (Sectt : France)
— First meeting, 6-8 February 1967, Paris. Three Draft ISO Proposals relating to fusion welding, namely, symbolic representation on drawings, symbolic representation of welds on technical drawings, and location and position of weld symbols were considered.

ISO/TC 44/WG 2 Unification of Requirements in the Field of Welding — (Sectt : Germany) — First meeting, 9-10 February 1967, Paris. Draft ISO Proposal on safeguarding quality in welding work was considered.

ISO/TC 45 Rubber — (Sectt : UK) — Fourteenth meeting, 31 October-5 November 1966, Prague (Czechoslovakia). Dr D. Banerjee, Director, National Rubber Manufacturers Ltd, Calcutta (*Leader*) and Shri Lalit Mohan Jamnadas, Managing Director, Cosmos India Rubber Works Pvt Ltd, Bombay (*Member*) represented India. In all, 47 documents were considered by this Committee. Of these, two were submitted to ISO Council, 13 accepted as ISO Draft Recommendations and 28 approved for circulation as draft proposals. India actively participated in the deliberations of Working Group K where four specifications on hoses were approved for circulation as Draft ISO Recommendations. India's active participation in this meeting was highly appreciated and some of its recommendations agreed to.

ISO/TC 46 Documentation — (Sectt : Germany) — The German member-body took over the Secretariat of this Committee from the Netherlands member-body.

ISO/TC 46/SC 1 Documentary Reproduction — (Sectt : France) — Eleventh meeting, 12-14 October 1966, Paris. Some of the subjects discussed at the meeting related to glossary of documentary reproduction, specification for microfiche, bibliography and catalogue data

recording on microfilms, layout of film microfiche and filing boxes for processed microfilm roll.

One Draft ISO Recommendation, namely, 'Essential characteristics of 35 mm microfilm reading apparatus' was published as ISO/R 452-1965. A Draft ISO Recommendation on microcopy measurement of the screen luminance of microfilm readers was submitted for acceptance as an ISI Recommendation.

ISO/TC 47 Chemistry (Sectt: Italy) — Draft ISO Recommendations approved for submission to the ISO Council for publication related to preparation and preservation of test samples of sodium carbonate for industrial use, determination of total alkalinity (volumetric method) in sodium carbonate for industrial use, determination of sodium bicarbonate (volumetric method) in sodium carbonate for industrial use, determination of chloride content (Volhard volumetric method) in sodium carbonate for industrial use, determination of sulphate content (barium sulphate gravimetric method) in sodium carbonate for industrial use, determination of iron content (2-2'-bipyridyl spectrophotometric method) in sodium carbonate for industrial use, determination of loss of mass and non-volatile matter at 250°C in sodium carbonate for industrial use, determination of matter insoluble in water at 50°C in sodium carbonate for industrial use, expression of test results of sodium carbonate for industrial use, preparation and preservation of test samples of aluminium oxide intended for the production of aluminium, determination of loss of mass at 300°C of aluminium oxide intended for the production of aluminium preparation of sample solution for analysis of aluminium oxide intended for the production of aluminium, determination of iron content (orthophenanthroline photometric method) in aluminium oxide intended for the production of aluminium and determination of loss of mass at 1 000° and 1 020°C in aluminium oxide intended for production of aluminium.

The following Draft ISO Recommendations were circulated to ISO member bodies for comments:

Sodium Hydroxide for Industrial Use — Preparation and preservation of test samples, preparation of sample solution, determination of alkalinity; determination of chloride content, determination of sulphate content, determination of iron content, determination of silica content (gravimetric method and quinoline silico complex method, determination of calcium and determination of matter insoluble in water.

Potassium Hydroxide for Industrial Use — Preparation and preservation of test samples, preparation of sample solution, determination of alkalinity, determination of potassium carbonate content, determination of chloride content, determination of sulphate content, determination of iron content, determination of silica content (gravimetric method and quinoline silico

complex method), determination of calcium and determination of matter insoluble in water.

Phosphoric Acid for Industrial Use — Determination of sulphate content, determination of calcium content and determination of iron content.

Sodium Tripoly Phosphate for Industrial Use — Determination of matter insoluble in water, determination of iron content and determination of loss on ignition.

ISO/TC 48 Laboratory Glassware and Related Apparatus — (Sectt: UK) — Eleventh meeting, 24-28 October 1966, Frankfurt-am-Main (West Germany). On behalf of India, Shri S. Deb of Associated Porcelain Private Ltd, Calcutta, who is also representing India on Working Group L of ISO/TC 48, attended the meeting which was successful in reaching agreement on internationally acceptable recommendations on laboratory glass beakers, solid-stem general purpose thermometers, enclosed-scale general purpose thermometers, terminology for glass defects which may occur in laboratory glassware resistance of glass to 6N hydrochloric acid, porcelain and silica crucibles, and quality and methods of test for laboratory porcelain.

Progress was also made on the following subjects: Compactibility of laboratory tubing, resistance of enamels used for colour coding on pipettes, vocabulary relating to laboratory apparatus, laboratory flasks, glass tubing for laboratory purposes, porcelain and silica basins, porosity grading of sintered or fritted filters for laboratory apparatus, and test methods.

The meeting approved the following subjects for processing: Glass for thermometer bulb, interpretation of tolerances in relation to laboratory apparatus and test method, and reagent bottles.

ISO/TC 50 Lac — (Sectt: India) — Comments received on Draft ISO Proposal for the method of determination of adhesion of shellac to mica was considered by the Secretariat and the Draft ISO Proposal modified. Comments received on modified Indian method for the determination of bleach index and bleachability of seedlac were considered and modifications made on their basis.

ISO/TC 55 Hewn, Sawn and Planed Timbers — (Sectt: USSR) — Four Draft ISO Proposals on classification, terms and definitions, measurement of defects in deciduous sawn timber, and nominal sizes of coniferous sawn timber were circulated to member-bodies. These Draft ISO Proposals will be considered in the fifth plenary meeting of this technical Committee to be held on 14-28 June 1967 in Moscow.

ISO/TC 56 Mica — (Sectt: India) — Draft ISO Proposals on visual classification of muscovite mica blocks, thins and films; and thermal

classification of phlogopite mica splittings were circulated to members of the committee for adoption as Draft ISO Recommendations. Another Draft ISO Proposal on grading and visual classification of muscovite mica splittings was also circulated for the consideration of the members.

ISO/TC 59 Building Construction — (Sectt: France) — Draft ISO Recommendation on direction of closing and hand of doors and windows and their hardware was circulated to ISO member-bodies for approval. This was approved by ISI on behalf of India.

ISO/TC 59/SC 1 Modular Co-ordination — (Sectt: Belgium) — The following documents were circulated by the Subcommittee Secretariat:

- a) Planning module for horizontal measurements of the load bearing structure;
- b) Danish contribution concerning enlarged modules;
- c) Synthesis of the problem of modular co-ordination in Rumania; and
- d) Elements of draft proposal, multi-modules.

ISO/TC 61 Plastics — (Sectt: USA) — Sixteenth meeting, 19-24 September 1966, Stockholm. The following Draft ISO Recommendations were approved by India: Determination of indentation hardness of plastics by means of a durometer (shore hardness); preparation of specimens for optical tests on resins, moulding method; preparation of specimens for optical tests on resins, casting method; determination of decomposition temperature of plastics; determination of flammability of plastics in the form of bars; determination of the melt flow index of thermoplastics; determination of viscosity number of polyethylene terephthalate in dilute solution; and nomenclature of cellular plastics.

ISO/TC 65 Manganese Ores — (Sectt: USSR) — Six Draft ISO Recommendations relating to chemical analysis of barium oxide content, combined water content, titanium content, zinc content, calcium oxide content and magnesium oxide content; and vanadium content in manganese ores received for comments were approved on behalf of India.

ISO/TC 69 Statistical Treatment of Series of Observations — (Sectt: France) — Fourth meeting, 1-3 June 1966, Paris. A new working group, ISO/TC 69/WG 3 Application of Statistical Methods in Standardization was set up at the meeting with France as the Secretariat.

The following documents were considered at the meeting:

- a) Presentation of results,
- b) Third draft proposal on statistical symbols necessary for the proper formulation of ISO Standards, and
- c) Application of statistical methods in standardization.

ISO/TC 72 Textile Machinery and Accessories — (Sectt: Switzerland) — A Draft ISO Recommendation on standard working widths of weaving looms received during the year was approved by India.

Draft proposals for ISO Recommendations on definitions of right and left sides of dyeing and finishing machines, nominal widths of dyeing and finishing equipments, classification of dyeing and finishing machinery, and beams for dyeing fibres and yarn were circulated.

ISO/TC 72/SC 1 Spinning Preparatory, Spinning and Doubling (Twisting) Machinery — (Sectt: Switzerland) — Fifth meeting, 25-26 April 1966, Zurich. India was not represented. Draft ISO Proposals on travellers and nomenclature on drafting were referred to an experts' panel. The Committee also agreed to prepare a draft proposal on cans on castors on the same lines as ordinary cans. Draft proposals on cylindrical sliver cans over 1 000 mm high, flyer bobbins and nomenclature of spinning machinery were approved for postal ballot. The subject regarding hopper bale openers was deleted from the programme. It was decided that draft proposal on warp tubes (1:100 and 1:90) be kept in abeyance to watch further developments. It was also agreed to issue a supplement to ISO/R 368-1964 Warp tubes for ring spinning and ring doubling spindles; metric dimensions, tolerances and gauges so as to delete all references to warp tubes of taper 1:40; to standardize lengths over 450 mm in steps of 50 mm and to delete tolerance from the narrow end of the gauge.

ISO/TC 72/SC 4 Dyeing and Finishing Machinery — (Sectt: France) — Second meeting, 31 May-2 June 1966, Paris. India was not represented. Draft proposals on nominal widths and definitions of sides of dyeing and finishing machinery, and beams for tops and yarn dyeing were approved for submission to ISO/TC 72 Textile Machinery and Accessories.

ISO/TC 72/WG C Weaving Machinery — (Sectt: UK) — Ninth meeting, 11-12 May 1966, Manchester. India was not represented. Draft proposals on weft pirns for automatic winding and box loaders, twin wire healds for automatic drawing-in machines, and closed-end drop wires for Barber-Colman drawing-in machines and for Zellweger-type drawing-in machines were approved for postal ballot. The items regarding lingoes for healds for jacquard weaving, serrated bars for warp stop motions, numbering of heald frames and terminology of shuttles were also discussed; it was decided to await further details in the next meeting.

ISO/TC 72/WG E Sectional Beams for Warp Knitting Machines — (Sectt: Germany) — Third meeting, 27-28 April 1966, Zurich (Switzerland). India was not represented. The Secretariat was requested to prepare documents on correlation between lengths and

diameters, tolerances on dimensions, limits on eccentricity and requirements for balancing.

ISO/TC 73/SC 2 — Informative Labelling and Comparative Tests — (Sectt: Sweden) — Second meeting, 22-23 Feb 1967, Stockholm. The meeting was attended by delegates from 16 member countries as well as by representatives from organizations interested in the field of consumer information, namely, Centre International de Promotion de la Qualite (CIPQ), European Organization for Quality Control (EOQC), Technical Committee on Performance of Electro-domestic Appliances of International Electrotechnical Commission, IEC/TC 59 and International Organization of Consumers Unions (IOCU). Shri S. K. Sen, Deputy Director General, ISI, represented India. During the meeting, the results of an inquiry regarding current problems and working procedures were discussed. It was made clear that the main task of the Subcommittee was to specify those test methods which should be used for different types of consumer goods. A large number of articles were suggested for study and those selected were allocated to the various member-countries.

ISO/TC 74 Hydraulic Binders — (Sectt: Belgium) — A Draft ISO Recommendation on pozzolanacity test for pozzolanic cements was circulated to ISO member-bodies for approval as ISO Recommendation.

ISO/TC 77 Products in Asbestos Cement — (Sectt: Switzerland) — Tenth meeting, 28 September-1 October 1966, El Esconal (Spain). Draft ISO Proposal Guide for the use of Recommendation on sampling and inspection of asbestos cement products, was circulated to member-countries of this technical committee. India's views on the document were conveyed to the Secretariat of the Technical Committee.

ISO/TC 79 Light Metals and Their Alloys — (Sectt: France) — Six Draft ISO Recommendations received for comments were approved on behalf of India. These related to classification and composition of unalloyed aluminium ingots for remelting; composition of wrought products of aluminium and its alloys; mechanical properties of rolled products; extruded products; rivet stock; and forgings of aluminium and aluminium alloys.

ISO/TC 79 SC 1 Methods of Chemical and Spectrochemical Analysis of Light Metals and Their Alloys — (Sectt: Italy) — Eighth meeting, 26-28 October 1966, Milan (Italy). Draft ISO Proposals relating to photometric determination of zirconium, gravimetric and volumetric determination of zinc, photometric determination of zinc in aluminium and aluminium alloys, and photometric determination of titanium were considered. In addition, eight Draft ISO Recommendations were received for comments.

ISO/TC 83 Gymnastic and Sports Equipment — (Sectt : Germany) — Seven Draft ISO Proposals received for comments were circulated to the relevant national committees. India had no comments to offer.

ISO/TC 84 Syringes for Medical Use and Needles for Injection — (Sectt : France) — Draft ISO/R 739 ' Conical fittings for syringes, needles and other medical equipment ' received for final approval was circulated to the national committees.

ISO/TC 87 Cork — (Sectt : Portugal) — Draft ISO Recommendations on the following subjects were circulated to ISO member-bodies for approval as ISO Recommendations:

- a) Commercially dry virgin cork, ramassage, gleanings, corkwood refuse, and corkwaste, definitions and packaging; and
- b) Commercially dry corkwood in planks, definitions, classification and packaging.

ISO/TC 88 Pictorial Markings for Handling of Goods — (Sectt : India) — The fourth Draft ISO Proposal concerning pictorial markings for the handling of goods after having been approved by the Participating Members of the Committee, was forwarded to the ISO Central Secretariat for issuing it as a Draft ISO Recommendation. The ISO Central Secretariat has circulated it to all member-bodies for consideration.

Draft ISO Proposal on pictorial marking of transit packages containing photographic materials sensitive to radiant energy, developed by the Interim Working Group L of ISO/TC 42 in co-operation with the International Union of Railways (UIC), was processed by the Technical Committee and forwarded to ISO Central Secretariat for issuing it as a Draft ISO Recommendation. The ISO Central Secretariat has circulated the document to all the member-bodies for their consideration.

ISO/TC 89 Boards Made from Wood or Other Lignocellulosic Fibrous Materials — (Sectt : Germany) — Third meeting, 16-20 August 1966, Helsinki. The name of the Technical Committee was changed from Derived Timber Products to Boards Made from Wood or Other Lignocellulosic Fibrous Materials. The new scope of the Committee adopted at the meeting reads:

'Standardization of fibre building boards, particle boards, plywood and block-boards and other similar board products either flat or moulded, made from wood or other lignocellulosic fibrous materials, including nomenclature, specifications and test methods.'

In response to the request from ISO Subcommittee TC 89/SC 3 Plywood, India undertook preparation of Draft ISO Proposals on quality classification of plywood from tropical species of timber of the Near East

and Far East countries. Based on the information supplied by the Near East and Far East countries, a preliminary draft is under preparation.

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

- a) Plywood, terminology;
- b) Plywood, classification;
- c) Plywood, measurement of the dimensions of the boards;
- d) Plywood for ordinary use, dimensions and tolerances; and
- e) Plywood for ordinary use, general conditions.

ISO/TC 92 Fire Test on Building Materials and Structures — (Sectt: UK) — Meetings of the following working groups were held as under:

<i>Working Group</i>	<i>Venue of Meeting</i>	<i>Date on Which Held</i>
WG 2	Belgium	April 1966
WGs 3, 4 & 5	The Hague	May 1966
WG 6	Paris	June 1966
WGs 2, 4 & 6	Copenhagen	November 1966

Draft ISO Recommendations on fire resistance test of structures, non-combustibility test for building materials, and calorimetric bomb test were circulated to ISO member-bodies for approval as ISO Recommendations.

ISO/TC 98 Bases for Design of Structures — (Sectt: Poland) — Draft ISO Proposals on the method of evaluating design earthquake forces on structures and live loads on the floors of residential buildings, public buildings and industrial buildings were circulated to member-bodies.

ISO/TC 102 Iron Ores — (Sectt: Japan) — Second meeting, 13 and 17 June 1966, Paris. The meeting was attended by 62 delegates representing 13 countries. Dr B. N. Singh, Head of the Statistics Department, ISI, attended the meeting on behalf of India. The Committee, at its final session on 17 June 1966, considered and approved the recommendations of the two subcommittees on sampling and chemical analysis as also the working group on physical testing. The Committee also agreed to the setting up of a new working group on size determination.

ISO/TC 102/SC 1 Sampling — (Sectt: Japan) — Third meeting, 13-16 June 1966, Paris. The meeting was attended by 40 delegates representing 13 countries. Dr B. N. Singh, Head of the Statistics Department, ISI, attended this meeting on behalf of India. The Subcommittee

considered the problem of determining the size distribution of iron ores and decided to recommend to ISO/TC 102 the setting up of a new working group on the subject with UK as the Secretariat. It was also decided that the Subcommittee will itself deal with the problem of moisture determination and inform the subcommittee on chemical analysis about its decision. It was agreed that the statistical definitions given in Draft ISO/DR 982 Statistical vocabulary necessary for the proper formulation of ISO standards, would be suitably adapted to meet the particular needs of iron ores. The Subcommittee then considered in detail the fourth Draft ISO Proposal on sampling and preparation of samples of iron ores. It was decided that provision might also be made for sampling from loading bunkers. The table giving the precision of sampling would be revised and graphically represented for all lot sizes. Again, the table giving the number of increments would be modified, taking into account the findings of the investigations conducted by India regarding optimality of weights of gross samples. It was further decided that sampling from hatches might not be encouraged and the corresponding procedure might be given in an appendix rather than in the text. There was also a considerable amount of discussion as to whether moisture should be determined at the particle size of 10 mm or 20 mm; ultimately, the former, which was based on investigations made by India, was agreed to. The Secretariat was then authorized to prepare fifth Draft ISO Proposal on sampling and preparation of samples of iron ores in the light of the discussions at the meeting and circulate them to all member-bodies for their approval.

ISO/TC 102/SC 2 Chemical Analysis — (Sectt: Germany) —
Second meeting, 13-16 June 1966, Paris. India did not attend the meeting. The Subcommittee discussed, corrected and approved for the preparation of final draft methods of chemical analysis covering total iron, silicon dioxide, aluminium oxide, phosphorus (volumetric) and hygroscopic moisture. A number of other proposals relating to manganese, lime and determination of aluminium and phosphorus by photometric methods were discussed and it was agreed that experimental work be carried out before the preparation of draft proposals.

ISO/TC 102/WG 1 Methods of Physical Tests — (Sectt: USA) —
— Unofficial special meeting, 16 June 1966, Paris. This meeting was of an informal nature and was called by the delegation attending the Paris Conference on ISO/TC 102. At this meeting, draft agenda for the third meeting of the Working Group to be held in London from 24 to 28 April 1967 was discussed.

Three Draft ISO Proposals relating to the determination of reducibility of iron oxide containing materials, determination of apparent specific gravity of pellets, sinter and iron ores, and determination of bulk density or unit weight of pellets, were received for comments.

ISO/TC 106 Dentistry — (Sectt : UK) — One Draft ISO Proposal relating to fitting dimensions for burs and cutters used in dentistry was received and circulated to national committees for comments.

ISO/TC 107/WG 3 Electroplated Coatings — (Sectt : UK) — Third meeting, 19-21 April 1966, London. No delegation from India attended this meeting. Draft ISO Proposals for electroplated coatings of nickel plus chromium, coatings of copper nickel chromium on steel and coatings of nickel were considered.

ISO/TC 113 Measurement of Liquid Flow in Open Channels — (Sectt : India) — Working Group 5 Measurement of Liquid Flow in Open Channels, Flow Measuring Instruments and Equipment, and Working Group 6 Measurement of Liquid Flow in Open Channels, Sediment Flow, which were set up at the last meeting of the Technical Committee, held their first meetings during 23-27 May 1966 in New York. Shri K. K. Framji, Director, Rendel, Palmer and Tritton (India) Limited, and Dr H. C. Visvesvaraya, Director, Civil Engineering, ISI, attended these meetings. Besides discussing certain basic documents, the working groups discussed the scope and programme of their work.

The following Draft ISO Recommendations emanating from this committee were circulated during the year by the Central Secretariat of ISO to its member-bodies for comments:

- a) ISO/DR 948 Liquid flow measurement in open channels by velocity area methods,
- b) ISO/DR 954 Glossary of terms and symbols used in connection with the measurement of liquid flow with a free surface,
- c) ISO/DR 995 Instructions for collection of data for the determination of individual components of the total error in measurement of flow by velocity area methods,
- d) ISO/DR 1071 Establishment and operation of a gauging station and determination of the stage discharge relation, and
- e) ISO/DR 1140 Liquid flow measurement in open channels by slope area methods.

Draft ISO/R 592 'Liquid flow measurement in open channels, dilution methods for measurement of steady flow Part I Constant rate injection method' became an ISO Recommendation as ISO/R 555-1966 after approval by the Council members and was under print.

ISO/TC 117 Methods of Testing Industrial Fans — (Sectt : UK) — First meeting, 18-21 April 1966, London. India was represented

by Shri S. K. Sen, Deputy Director General, ISI. The Committee agreed upon its scope for ratification by the ISO Council, established a programme of work and decided to keep liaison with other ISO committees as well as other international industrial organizations. Liaison was also established with IEC/TC 43 Electric Fans. The following subcommittees were set up:

ISO/TC 117/SC 1 Fan Performance Testing — (Sectt : UK), and
ISO/TC 117/SC 2 Fan Noise Testing — (Sectt : USA).

In addition, the following working groups were established under ISO/TC 117/SC 1:

WG 1 Rules for Fan Performance Testing — (Sectt : France),
WG 2 Methods for Fan Performance Testing with Standardized Airways — (Sectt : UK), and
WG 3 Site Testing of Fans — (Sectt : Belgium).

ISO/TC 120 Leather — (Sectt : Iran) — First meeting, 5-7 November 1966, Tehran (Iran). Shri A. Nagappa Chettiar, Managing Director, India Leather Corporation Ltd, Madras, attended the meeting on behalf of India. At this meeting, the work of the Technical Committee was organized by setting up a working group and two subcommittees:

A working group of the plenary committee 'Terminologie', Secretariat of which would be held by Germany, and covering all aspects of hides skins and leather.

A subcommittee 'Hides and skins' including pickled goods, Secretariat of which would be held by France.

A subcommittee 'Leather', Secretariat of which would be held by Iran.

India actively supported the inclusion of leather manufacture in the scope of this technical committee.

ISO/TC 121 Anaesthesia Equipment and Medical Breathing Medicines — (Sectt : UK) — Four Draft ISO Proposals relating to breathing attachments for anaesthetic apparatus, endotracheal tubes, anaesthetic breathing bags made of antistatic rubber, and breathing machines for medical use were received and circulated to the national committees for comments.

ISO/TC 122 Packaging — (Sectt : USA) — This technical committee was set up by the ISO Council at its meeting held in June 1966. Its scope will cover the combined scopes of the existing technical committees ISO/TC 103 Packaging Dimensions, and ISO/TC 104 Freight Containers.

The following subcommittees were set up under this technical committee:

- ISO/TC 122/SC 1 Packaging Dimensions,
- ISO/TC 122/SC 2 Freight Containers, and
- ISO/TC 122/SC 3 Methods of Test and Quality Requirement for Packaging.

The following ISO Recommendations were circulated to ISO member-bodies for approval as ISO Recommendations:

- a) Marking of series 1 and series 2 freight containers, and
- b) Terminology relating to freight containers. These were approved by ISI on behalf of India.

2. INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

2.1 There were 60 IEC technical committees, 81 subcommittees, 4 expert committees and 120 working groups of the International Electrotechnical Commission (IEC) on 31 March 1967. 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 TEL-AVIV (ISRAEL)

About 51 technical committees, subcommittees, working groups, advisory committees and the Committee of Action met at Tel-Aviv (Israel) from 3 to 14 October 1966. Besides Dr A. N. Ghosh, Director General, ISI, Shri S. N. Mukerji, Director, National Test House, Calcutta (Chairman, Electric Fan Sectional Committee, ETDC 5), Shri A. D. Nangia of Usha Fans Industries, Calcutta, Shri Y. S. Venkateswaran, Director (Electrotechnical), ISI, and Shri N. B. Satarawala of the Indian High Commission in London represented India at these meetings.

Council (11 October 1966) — The Council transacted some of the routine work, such as approving the budget, approving the General Secretary's Annual Report and discussing the liaison between IEC and ISO on the recommendation of ISO/STACO, the Council decided to allocate, as an experimental measure, UDC numbers to drafts under the six months' rule, according to which a period of six months is given to the national committees for sending their comments and voting on the documents. The Council accepted the Treasurer's proposal for publication

by the IEC of a four-page bulletin devoted to electrical standardization of motors, with the ultimate aim of making it a monthly organ for propagating the ideals of the International Electrotechnical Commission as also the progress of its work.

At the biennial election to the Committee of Action, Germany, Israel and Poland were elected as members to fill the vacancies arising from the retirement of Spain, USA and USSR. The Council also accepted the recommendation of the Committee of Action to form two new technical committees, namely, TC 61 Safety of Household Electrical Appliances with USA as the Secretariat and TC 62 X-Ray Medical Equipment with Germany as the Secretariat. On the retirement of Dr Lal C. Verman from the post of Director General of ISI, a resolution appreciating his contribution to the work of IEC was passed by the Council.

Committee of Action (6 and 14 October 1966) — The Committee of Action considered the reports received from the various committees of IEC which met in Tel-Aviv in October 1966 and earlier during the year. The recommendations made by the committees were accepted by the Committee of Action.

A matter of considerable importance to India, namely, organizing the work on safety requirements for domestic electrical appliances, came up for a detailed discussion at the meeting. The Committee of Action finally made a recommendation, which was later approved by the Council to the effect that a new technical committee, TC 61 Safety of Household Electrical Appliances should be formed to handle safety aspects of all the electrodomestic appliances. The US National Committee was entrusted with the Secretariat of this Committee.

The formation of another new technical committee, TC 62 for X-Ray Medical Equipment, was proposed by the Committee of Action; this suggestion was later accepted by the Council.

The Committee of Action also accepted the recommendation of the *Ad-hoc* Working Group of the Advisory Committee on Electronics and Telecommunications to the effect that Subcommittee IEC/SC 13C Electronic Measurement Instruments should be raised to the status of a full technical committee.

Another subject debated by TC 2 Rotating Machinery and TC 15 Insulating Materials related to the question of preparing International Recommendations for insulation systems. As a result of the detailed discussion, the Committee of Action finally decided to set up a separate technical committee TC 63 Insulation Systems, for the purpose, instead of TC 15 handling the subject.

TC 15 Insulating Materials — (Sectt : Itlay) — Besides receiving reports from the Secretariats of the three newly set up subcommittees

regarding their future plans of work, the Committee appointed Messrs H. Kappeler, J. F. Dexter and W. H. Devenish as Chairmen of the Subcommittees SC 15A Short-Time Tests, SC 15B Endurance Tests and SC 15C Specifications, respectively. It also decided to disband the working groups and the steering committee which were not considered necessary subsequent to the formation of the subcommittees.

SC 15A Short Time-Tests — (Sectt : Germany) — The documents on method of test for electrical resistance of insulating materials at elevated temperatures and method for determining the comparative tracking index of solid insulating material under moist conditions were recommended to be issued under the six months' rule.

SC 15B Endurance Tests — (Sectt : USA) — The Subcommittee planned its future programme of work and decided to issue some modifications to the document on evaluation of bond strength of varnishes by helical coil test under two months' procedure. The document on resistance of insulating materials to breakdown by surface discharge was recommended for being issued under the six months' rule.

SC 15C Specifications — (Sectt : Netherlands) — The Subcommittee discussed draft on specifications for varnished cloth, pressure sensitive adhesive tapes for electrical purposes and insulating varnishes. Revised Secretariat documents will be prepared on all these subjects for further consideration. The document on built-up mica prepared by India was postponed for discussion at the next meeting.

TC 22 Static Power Convertors — (Sectt : Switzerland) — The Committee received report on the results of voting under the six months' rule on the following documents and approved their publication:

- a) Draft IEC Recommendations for mercury-arc convertors for reversible power, and
- b) Draft IEC Recommendations for ignitrons to be used in welding machine control.

The Committee also recommended the formation of a new subcommittee for taking up work on recommendations for regulated electronic dc power supplies. It was agreed that a draft proposal on overvoltage and overcurrent protection, for example, fuses for diodes and thyristors should be prepared. In addition, the Committee received and considered the reports of Subcommittees 22B Semiconductor convertors and 22D Single-phase power convertors for electric traction, which also met at Tel-Aviv.

SC 22B Semiconductor Convertors — (Sectt : Sweden) — The Subcommittee considered draft revision of IEC Pub 146 (1963) 'Monocrystalline semiconductor rectifier cells, stacks, assemblies and equipments' and decided that a new Secretariat document covering only clause

472 and Table III relating to type tests, service conditions, type of cooling and insulation class for the cells and stacks of rectifier equipment shall be prepared and circulated for consideration by the national committees. If favourable comments are received on this document, the Secretariat will consider issuing a Central Office document under the six months' rule. The Committee also discussed draft recommendations for thyristor convertors and decided that the revised drafts should be circulated as a Secretariat document.

SC 22D Single-Phase Power Convertors for Electric Traction — (Sectt: France) — The Committee considered draft recommendation for single-phase power convertors for use on electric rolling stock. A revised draft on the subject will be prepared for consideration at the next meeting of the Committee.

TC 23 Electrical Accessories — (Sectt: Belgium) — Two documents relating to plugs and socket-outlets for domestic and similar general use, and plugs, socket-outlets and couplers for industrial purposes were recommended by the Technical Committee for circulation under the six months' rule. Two amendments to the following Central Office documents, were recommended to be circulated for approval under the two months' procedure:

- a) Recommendations for a specification for appliance couplers for domestic and similar general purposes, and
- b) Recommendation for a specification for switches for appliances.

TC 28 Insulation Co-ordination — (Sectt: France) — The Technical Committee considered the result of voting under the six months' rule regarding the draft recommendations for insulation co-ordination of Fourth edition of IEC Pub 71 'Recommendations for insulation co-ordination' and approved the document for publication. In addition, the Committee discussed complete revision of IEC Pub 71, including the provision of switching surge test voltages.

TC 35 Primary Cells and Batteries — (Sectt: France) — The Technical Committee recommended five documents for circulation under the six months' rule; two of them relate to standardization of shape and dimensions of certain types of cylindrical cells, another two are concerned with standardization of five types of alkaline manganese dioxide cells and one is a specification sheet on batteries for general purpose applications.

TC 41 Electrical Relays — (Sectt: France) — A recommendation was made to the Committee of Action to change the scope of this Committee so as to cover electrical relays used in various fields of electrical engineering covered by IEC. The Committee also examined draft recommendation for time-lagged relays.

TC 43 Electric Fans — (Sectt: India) — Three drafts for ac electric ventilating fans and regulators for non-industrial use, electric fans and

regulators for use in ships and safety requirements of all types of electric fans were discussed. Although, the three recommendations already published, namely, those on electric ceiling fans, electric table fans and electric pedestal fans, included sufficient safety requirements, the documents mentioned above are much more elaborate as they have been prepared on the basis of the present practice in Europe for testing domestic appliances. These provide a radical departure from the earlier documents as far as safety requirements are concerned. After a detailed discussion, it was agreed that a revised draft with some modifications be prepared in respect of safety requirements for all types of fans for consideration at the next meeting. The other two drafts, namely, recommendations for electric fans and regulators for use in ships and that for ac electric ventilating fans and regulators for non-industrial use were also discussed and it was agreed to revise the Secretariat documents for further consideration.

TC 45 Electrical Measuring Instruments Used in Connection with Ionizing Radiation — (Sectt: Germany) — A large number of documents relating to instrumentation of ionizing radiation and health physics were considered and processed further.

SC 45A Reactor Instrumentation — (Sectt : France) — The Subcommittee recommended circulation of the following documents for approval under the six months' rule:

- a) General principles of nuclear reactor instrumentation, Chapters 5 and 8; and
- b) Characteristics and test methods of dc periodmeter, Chapter 5 of recommendations concerning nuclear reactor instrumentation.

SC 45B Health Physics Instrumentation — (Sectt : Italy) — The Subcommittee considered a number of documents relating to beta surface and floor contamination meters, monitors or indicators. It also reviewed the liaison maintained with various organizations and committees dealing with radiation protection, such as International Commission on Radiation and Measurements (ICRUM) and International Commission on Radiological Protection (ICRP).

46 Cables, Wires and Waveguides for Telecommunication Equipment — (Sectt: Germany) — The Committee received and approved the reports of its three subcommittees and considered the result of voting on recommendations for high tension connecting wires for use in television receivers for approval under six months' rule.

SC 46A RF Cables and Their Accessories — (Sectt: Netherlands) — The following subjects were approved for circulation under the six months' rule:

- a) Specification sheet for RF coaxial connectors;

- b) Specification sheet for rigid coaxial transmission lines and their flange-connectors, having a characteristic impedance of 50 and 75 ohms;
- c) RF screening efficiency test for RF cables with single outer conductor; and
- d) Requirements for the screening efficiency of RF cables.

SC 46B Waveguides and Their Accessories — (Sectt : USA) —

In addition to considering the result of voting under the six months' rule for the approval of a number of documents relating to waveguide and waveguide assemblies, the following documents were proposed to be circulated under the six months' rule:

- a) Recommendations for D type flanges for R 120-R 180, and
- b) Amendment to Pub 153-2 Recommendation for hollow metallic waveguides Part 2 relevant specifications for ordinary rectangular waveguides.

SC 46C LF Cables and Wires — (Sectt : Belgium) —

The document on signalling cables in singles for telecommunication equipment and installation was approved for circulation under the six months' rule. The Committee also received the report from Working Group 1 Colouring and Coding of LF Cables and Wires.

TC 51 Ferromagnetic Materials — (Sectt : Netherlands) —

Besides considering the various documents already circulated under the six months' rule in regard to the result of voting and approving for publication, the Committee approved for circulation under the six months' rule five documents relating to additional sizes of screw cores, gauges for screw-cores, recommendations for strip-wound cut cores of grain-oriented silicon-iron alloy, measurement of disaccommodation and temperature dependence of permeability, and terms and definitions relating to magnetism. The Committee also suggested to the Committee of Action that its title should be changed to Magnetic Materials and Components which was later agreed to by the Committee of Action.

TC 55 Winding Wires — (Sectt : Germany) —

The Committee noted the result of voting in respect of several documents and recommended the following documents for issue under the six months' rule:

- a) Basic dimensions of winding wires,
- b) Tolerances on dimensions of copper winding wires of rectangular section,
- c) Classification of resistance wires,
- d) Methods of test of textile-covered bunched enamelled copper wires,
- e) Test Methods for springiness of wires and bond strength of round, and
- f) Heat or solvent bonding wires.

At the suggestion of the Technical Committee, the Committee of Action agreed that it was not essential to use numbers from the preferred number series in such cases.

TC 59 Performance of Household Electrical Appliances — (Sectt : France) — The Committee finalized a document giving a general pattern for the preparation of all drafts dealing with the performance of electrical appliances with a view to ensuring a unified approach to the standard method for measuring performance so that there is a common pattern in all IEC documents and, if possible, in ISO documents as well. A draft standard method of measurement for performance characteristics of electric blankets was recommended to the Committee of Action for circulation under the six months' rule.

SC 59E Ironing and Pressing Appliances — (Sectt : Japan) — A draft method of measuring characteristics of domestic electric irons was discussed, taking into account the comments received from national committees. Proposals were invited for appropriate test methods for measuring scratch resistances and for hard water testing of irons.

MEETINGS AT OTHER PLACES

SC 2B Dimensions of Rotating Electrical Machines — (Sectt : Sweden) — 20-22 June 1966, London. The Committee considered dimensional standardization of small motors. The UK had proposed having a separate series while many countries, including India, were of the view that dimensions already covered in IEC Pub 72-1 (1959) Part 1 ' Foot-mounted induction motors with shaft heights between 56 and 315 mm (2 $\frac{3}{8}$ and 12 $\frac{1}{2}$ in)' should be utilized for small motors (fractional horse power motors) also. Other subjects discussed at this meeting concerned extending the scope of IEC Pub 72-1 to cover higher shaft heights also and positioning of mounting flanges of holes in relation to eyebolt or feet.

TC 4 Hydraulic Turbines — (Sectt : USA) — 19-23 September 1966, Paris. Revised scope of the Committee, namely, preparation of international recommendations and reports for hydraulic rotating machinery and associated equipment allied with hydro-power development was accepted.

TC 10 Liquid and Gaseous Dielectrics — (Sectt : Belgium) — 6-7 June 1966, Brussels. Three Subcommittees, namely, SC 10A Insulating Hydrocarbon Oils, SC 10B Insulating Liquids Other than Hydro-carbon Oils and SC 10C Gaseous Insulants were set up.

TC 13 Measuring Instruments — (Sectt : Hungary) — 23 May and 4 June 1966, Leningrad. Reports from its Subcommittees SC 13A Integrating Meters, SC 13B Indicating Instruments and SC 13C Electronic Measuring Instruments, which had met earlier, were considered.

SC 13A Integrating Meters — (Sectt: Hungary) — 30 May-3 June 1966, Leningrad. It was decided that the draft on class 0.5 ac watt-hour meters should be circulated under the two months' procedure. The Secretariat will also make necessary preparation for the consolidation of existing recommendations for meters and safety requirements which will be incorporated in this new document.

SC 13B Indicating Instruments — (Sectt: Hungary) — 23-28 May 1966, Leningrad. The subject of indirect acting measuring instruments was considered. It was decided that the draft may be prepared soon so that its circulation under the six months' rule is decided next year.

SC 13C Electronic Measuring Instruments — (Sectt: Hungary) — 30 May and 3 June 1966, Leningrad. The Committee reviewed the report received from its working groups. It also approved the recommendations for amplitude modulated signal generators for circulation under the six months' rule. The documents on safety requirements for electronic measuring apparatus and recommendations for cathode-ray oscilloscopes were also considered and it was agreed to recirculate them as Secretariat documents.

TC 18 Electrical Installations in Ships — (Sectt: Netherlands) — 24-28 May 1966, Leningrad. An addendum to IEC Pub 92-3 (1965) 'Cables (construction, testing and installations)' was approved for circulation under the six months' rule. A draft revision of Chapter 19 of IEC Pub 92-5 (1965) Part 5 'Transformers for power and lighting, semiconductor rectifiers, generators (with associated prime-movers) and motors, electric propulsion plant, tankers' and addendum to IEC Pub 92-6 (1965) Part 6 'Accessories, lighting, accumulator (storage) batteries, heating and cooking appliances, internal communications and lightning conductors' were approved for issue under the six months' rule.

TC 21 Accumulators — (Sectt: Czechoslovakia) — 10-12 May 1966, Stockholm. The Committee recommended circulation, under the six months' rule, of two documents relating to certain modifications in some clauses of IEC Pub 95-1 (1961) 'General requirements and methods of test for lead-acid starter batteries'.

SC 21A Alkaline Accumulators — (Sectt: Germany) — 9-10 May 1966, Stockholm. A document on general requirements and test methods for cadmium-nickel cylindrical rechargeable cells, in which modifications regarding electrical characteristics of cylindrical cells of leak-proof nickel-cadmium batteries were made, was recommended for circulation under the two months' procedure.

TC 29 Electro-acoustics — (Sectt: Netherlands) — 29 April 1966, Prague. Documents on characteristics and measuring methods on sound system microphones, sound system loudspeakers and auxiliary passive elements; additions and modifications for characteristics to be specified

and measuring methods on sound system amplifiers; and scales and sizes for plotting frequency characteristics were approved for circulation under the six months' rule. The Committee also received the report on an IEC reference coupler for the calibration of earphones used in audiometers which was approved for circulation under the six months' rule.

TC 31 Electrical Apparatus for Explosive Atmospheres — (Sectt: UK); **SC 31A Flameproof Enclosures** — (Sectt: UK); and **SC 31C Increased Safety Apparatus** — (Sectt: Germany) — 16-17 May 1966, Ottawa. An important subject discussed at the meeting related to the British document on correlation of safe gaps and minimum igniting currents. The following documents were approved for circulation under the six months' rule: (a) Classification of maximum surface temperatures of electrical apparatus for flammable atmospheres; (b) list of established ignition temperatures as a supplement to IEC Pub 79-4 (1966) 'Electrical apparatus for explosive gas atmospheres Part 4: Method of test for ignition temperature'; (c) marking of electrical apparatus for use in explosive gas atmosphere; (d) section 2 of IEC Pub 79 concerning checks and tests; (e) requirements for Group IIC enclosures; and (f) cover glasses for lighting fittings.

TC 32 Fuses — (Sectt: France); **SC 32A High-Voltage Fuses** — (Sectt: France); **SC 32B Low-Voltage Fuses** — (Sectt: Germany); and **SC 32C Miniature Fuses** — (Sectt: Netherlands) — 11-12 January 1966, Davos (Switzerland) and 26 September-1 October 1966, Bucharest. Documents on definitions of fuses, recommendations for high-voltage current limiting fuses and recommendations for low-voltage fuses were approved for issue under the six months' rule.

TC 36 Insulators — (Sectt: Italy) — 9-10 June 1966, Paris. The following documents were approved for circulation under the six months' rule: (a) Draft recommendation for tests on insulators of ceramic material and glasses for overhead lines with a nominal voltage greater than 1 000 V; and (b) draft recommendation for the dimensions of indoor and outdoor post insulators for system voltages with nominal voltages greater than 1 000 V (Section dealing with cylindrical outdoor post insulators).

The Committee also received the reports of its subcommittees held earlier in the year.

SC 36A Insulated Bushings — (Sectt: Italy) — 11-12 October 1966, Tokyo. Revision of IEC Pub 137 (1962) 'Bushings for alternating voltages above 1 000 V' was considered.

SC 36B Ball and Socket Fittings for Suspension Insulators — (Sectt: Sweden) — 7-8 June 1966, Paris. A document on dimensions of string insulator units of the cap and pin type was considered.

TC 39 Electronic Tubes and Valves — (Sectt: Netherlands) — 12 and 16 September 1966, Hamburg (Germany). Besides receiving the report of its working group, the Committee considered various proposals

on dimensions of electronic tubes and valves; measuring methods on phototubes, camera tubes, geiger-muller counter tubes, multiplier phototubes, photosensitive devices, cold cathode counting and indicator tubes; and photoconductive cells. It also approved the documents on the following subjects for circulation under the six months' rule: (a) Methods of measurement of thyatron pulse modulators; (b) methods of measurement of cross-modulation; (c) amendment to IEC Pub 100 (1962) 'Methods for the measurement of direct interelectrode capacitance of electronic tubes and valves'; and (d) determination of display tube resolution.

SC 39A Microwave Tubes and Valves — (Sectt: United Kingdom) — 1-6 June 1966, Florene (Italy). The following subjects were discussed: (a) Methods of measurement of low-power velocity modulated tubes and valves (klystrons); (b) measuring methods for high-power klystrons; (c) methods of measurement of magnetrons; and (d) methods of measurement of forward travelling wave amplifier tubes.

TC 40 Capacitors and Resistors for Electronic Equipment — (Sectt: Netherlands) — 5 and 9 July 1966, Hamburg (Germany). The following documents on resistors and capacitors were approved for circulation under the six months' rule: (a) Wirewound variable resistors, type 2; (b) fixed wirewound resistors, type 1; (c) general terms and methods of test for fixed resistors; (d) letter code for asymmetrical and fixed value tolerances on capacitors and resistors; (e) preferred diameters of wire terminations for capacitors and resistors; (f) ceramic capacitors, type 3; and (g) article sheets for tantalum and aluminium electrolytic capacitors.

TC 47 Semiconductor Devices — (Sectt: France) — 15-25 June 1966, Zurich (Switzerland). The Committee approved for circulation under the six months' rule 27 documents relating to various aspects of semiconductor devices, such as terms and definitions for avalanche rectifier diodes, terms and definitions for all effect devices, letter symbols for tunnel diodes, essential ratings and characteristics of thyristors, preferred nominal values and limits of voltages for reference diodes, list of voltages for low-power devices; measuring methods of thyristors voltage reference and voltage regulator diodes, reference methods of measurement on transistors, noise measurements on transistors; mechanical standardization and micro-electronics. The Committee also considered a large number of Secretariat documents on the various aspects of semiconductor devices for further processing.

TC 48 Electromechanical Components for Electronic Equipment — (Sectt: Netherlands) — 16 and 20 June 1966, Oslo. Ten documents approved for circulation under the six months' rule relate among other things, to article sheets for miniature sockets for printed wiring boards, article sheets for magnoval sockets and shields, practice and test procedures for solderless wrapped connections and specification sheets for various types of connectors. The Committee considered the result of voting, under the two months' procedure and the six months'

rule of the various documents and approved publication of a number of them. It also received the report of its three subcommittees.

TC 49 Piezo-electric Crystals and Associated Devices — (Sectt : USSR) — 24 and 28 May 1966, Leningrad. The following documents were approved for circulation under the six months' rule: (a) General characteristics and standards and test conditions for temperature control devices for quartz crystals units; (b) guide to the use of temperature control devices; (c) pin connections for temperature control devices; and (d) additions to IEC Pub 122 'Quartz crystal units for oscillators'.

The Committee also reviewed the report received from the Working Groups on Crystal Ovens and Crystal Filters.

TC 52 Printed Circuits — (Sectt : Italy) — 11 and 13 July 1966, Hamburg (Germany). The Committee approved for circulation, under the six months' rule, the document on guidance for the design and use of components intended for mounting on boards with printed wiring and printed circuits. The Committee also considered the document on a test for the finish of copper foil surface of copper-clad laminated sheets and decided that a revised document would be circulated as a Secretariat document. Besides, report of Working Group 3 Reference Grid for Newly Developed Techniques was received.

TC 53 Computers and Information Processing — (Sectt : USA) — 17 June 1966, Stockholm. The Committee approved for circulation, under the six months' rule, the document on recommendations for analogue-to-digital converters.

TC 56 Reliability of Electronic Components and Equipment — (Sectt : USA) — 11-15 July 1966, Hamburg (Germany). Besides considering the result of voting for the approval, under the six months' rule, of the various documents, such as preliminary list of basic terms and definitions for the reliability of electronic parts and equipment guidance for the assessment of reliability, the Committee considered the following aspects of its work: (a) Presentation of reliability data on electronic parts; (b) managerial aspects of reliability; (c) authentication of reliability data; (d) recommendations for the inclusion of reliability requirements into purchase specifications; (e) reliability data from field performance of electronic equipment; (f) block diagram on the aims, philosophy and instrumentation techniques of the technical committee and the inter-relationships between reliability, availability and maintainability; and (g) reliability testing and approach to acceptance testing covering a sampling and testing procedure for resistors and capacitors.

TC 57 Line Traps — (Sectt : Germany) — 7 and 9 June 1966, Rhode-St-Genese (Belgium). The Committee suggested the following scope of its work for the approval of the Committee of Action: 'To prepare international recommendations regarding the specification of line traps inserted into high-voltage transmission lines in order to restrict the

transmission of carrier frequency signals to the section of line concerned, including recommendations for testing and preferred ratings'.

SC 59A Kitchen Machines — (Sectt : USA) — 10 and 12 March 1966, Paris. A draft recommendation for the measurement of performance characteristics of electric dishwashers was discussed. A working group was set up to develop a standard detergent and standard rinsing agent for laboratory testing of dishwashing machines.

SC 59B Cooking Appliances — (Sectt : Germany) — 7-9 July 1966, Hamburg (Germany). A revised draft for determining test methods for the performance of household electric ranges and ovens was discussed.

SC 59C Small Heating Appliances — (Sectt : Netherlands) — 5-6 July 1966, Hamburg (Germany). Draft measurements for performance characteristics of electric blankets was discussed taking into account the comments received from various national committees and was recommended for circulation under the six months' rule.

SC 59D Home Laundry Appliances — (Sectt : France) — 7-9 March 1966, Paris. A draft proposal by the French Committee for determining the performance of domestic washing machines was discussed.

SC 59F Floor Treatment Appliances — (Sectt : Sweden) — 28 June-1 July 1966, Stockholm. A draft method for performance testing of domestic vacuum cleaners was discussed.

3. WORKING GROUP FOR THE DEVELOPMENT OF STANDARDS INSTITUTIONS IN THE ECAFE REGION

3.1 A meeting of the Working Group for the Development of Standards Institutions in the ECAFE Region was held in Bangkok from 12 to 19 December 1966. Experts from 12 countries of the region, namely, Australia, India, Indonesia, Iran, Japan, Republic of China, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, and Thailand participated. Dr A. N. Ghosh, Director General of ISI, who represented India was unanimously elected Chairman of the meeting.

3.2 The meeting was held to consider follow-up action on the recommendations of the first Asian Conference on Industrialization (ACI) held in Manila in December 1965 and the first Asian Industrial Development Council (AIDC) meeting held in Bangkok in September 1966. The Working Group welcomed the recommendation in respect of the establishment of an Asian Standards Committee on inter-governmental basis to promote co-ordination of standardization activities in the region and to assist and advise member-countries on the need for establishing standards institutions. One of the items which the proposed Asian Standards Committee is expected to consider on a priority basis is the question of a regional or sub-regional centre for the training of Standards Engineers.

PART IV
APPENDICES

APPENDIX A

(See page 6)

**INDIAN STANDARDS PUBLISHED AND IN PRESS
DURING 1966-67**

(This list gives the new Indian Standards published during 1966-67 and those which were under print on 31 March 1967. It does not include standards which were under print on 31 March 1966 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	
Alcoholic Drinks	
1. IS: 3811-1966 Rum	1-00
2. IS: 3865-1966 Beer	2-50
Animal Feeds	
3. IS: 3591E-1966 Solvent-extracted coconut oilcake (meal) as livestock feed	1-00
4. IS: 3592E-1966 Solvent-extracted cottonseed oilcake (meal) as livestock feed	1-00
5. IS: 3593E-1966 Solvent-extracted rice bran as livestock feed	1-00
6. IS: 3648-1966 Rice bran	1-00
7. IS: 4018-1967 Broiler feeds	4-00
Bakery & Confectionery	
8. IS: 3839-1966 Food yeast	6-00

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Sl No.					Rs
Bee-Keeping Equipment					
9.	IS : 3838-1966	Self-raising flour	3-50
10.	IS : 3891-1966	Layout for honey processing unit	1-50
11.	IS : 3894-1966	Comb Foundation Mill	...	...	1-50
Cereals and Pulses					
12.	IS : 3729-1966	Corn sampler (<i>PARKHI</i> type )	...	...	1-00
Cereals and Pulses Products					
13.	IS : 3714-1966	Method for sampling of bigger size foodgrains	...	...	1-50
Coffee Products					
14.	IS : 3581-1966	Grading for green coffee	...	...	2-50
15.	IS : 3802-1966	Roasted coffee-chicory powder	...	...	1-00
Dairy Equipment					
16.	IS : 1792-1966	Aluminium milking pails (hooded type) (<i>first revision</i> )	...	...	1-50
17.	IS : 3661-1966	Farm milk cooling tanks	...	...	3-50
18.	IS : 3662-1966	Insulated aluminium milk storage tanks	...	...	2-50
19.	IS : 3719-1966	Open surface milk coolers (with aluminium tubes )	...	...	1-50
Dairy Industry Layout Plans					
20.	IS : 3922-1966	Recommendations for ghee refinery	...	...	5-00
Dairy Industry, Methods of Test					
21.	IS : 3507-1966	Methods of sampling and test for butter	...	...	6-00
22.	IS : 3508-1966	Methods of sampling and test for ghee (butterfat )	...	...	13-50
23.	IS : 3509-1966	Methods of sampling and test for cream	...	...	5-00
Dairy Laboratory Apparatus					
24.	IS : 3864-1966	Mobile kit for milk testing	...	...	2-00
25.	IS : 3893-1966	Slides for direct microscopic count of milk	...	...	1-50
Farm Implements and Machinery					
26.	IS : 3606-1966	Disc harrow, animal drawn	...	...	2-50
27.	IS : 3939-1966	Hand maize sheller	...	...	2-00
Fish and Fishery Products					
28.	IS : 3849-1966	Mackerel (<i>Rastrelliger</i> sp.) canned in brine	...	...	1-50
29.	IS : 3850-1966	Dry-salted threadfin (<i>DARA</i>) and dry-salted Jewfish (<i>GHOL</i> )	...	...	2-00
30.	IS : 3851-1966	Dry-salted catfish	...	...	2-00
31.	IS : 3852-1966	Dry-salted leather jackets (<i>Chorinemus</i> sp. )	...	...	2-00
32.	IS : 3853-1966	Dry-salted horse mackerels (<i>Caranx</i> sp. )	...	...	2-00
33.	IS : 3892-1966	Frozen lobster tails	...	...	1-50
Food Colours					
34.	IS : 3827-1966	Riboflavin	...	...	2-00
35.	IS : 3841-1966	β -Carotene	...	...	2-00

Sl No.		Rs
Fruits and Vegetables		
36.	IS: 3543-1966 Papain	5-00
37.	IS: 3547-1966 Mango nectar	3-50
38.	IS: 3570-1965 Nomenclature of Fruits	6-00
39.	IS: 3712-1966 Radish	1-50
40.	IS: 3713-1966 Knol khol	1-00
41.	IS: 3718-1966 Limes, fresh	3-50
42.	IS: 3728-1966 Wooden boxes for packaging apples	1-50
43.	IS: 3801-1966 Guavas	1-50
44.	IS: 3880-1966 Canned mango pulp... ..	2-50
45.	IS: 3881-1966 Tomato juice	3-00
46.	IS: 3882-1966 Tomato ketchup	2-50
47.	IS: 3883-1966 Canned tomato puree	2-50
48.	IS: 3884-1966 Canned tomato paste	2-50
Livestock Housing		
49.	IS: 3916-1966 Code of practice for pig housing	4-00
Pest Control Equipment		
50.	IS: 3634-1966 Dust applicator for burrows	2-00
51.	IS: 3652-1966 Foot sprayer	3-00
52.	IS: 3897-1966 Sprayer, atomizer type, hand-operated	2-50
53.	IS: 3906 (Part I)-1966 Continuous sprayer, knapsack type: Part I Reciprocating type	3-00
Pesticidal Formulations		
54.	IS: 632-1966 BHC emulsifiable concentrates (<i>second revision</i>)	5-00
55.	IS: 1507-1966 Copper oxychloride water dispersible powder concentrates (<i>first revision</i>)	3-00
56.	IS: 2682-1966 Chlordane emulsifiable concentrates (<i>first revision</i>)	6-00
57.	IS: 3899-1966 Zincb water dispersible Powder	4-00
58.	IS: 3901-1966 Ziram water dispersible powder	3-50
59.	IS: 3903-1966 Diamethoate emulsifiable concentrates	6-50
60.	IS: 3904-1966 Thiometon concentrates	4-50
61.	IS: 3905-1966 Thiometon emulsifiable concentrates	3-50
Pesticides		
62.	IS: 1311-1966 Ethylene dibromide (<i>first revision</i>)	4-00
63.	IS: 3898-1966 Zincb, technical	3-00
64.	IS: 3900-1966 Ziram, technical	3-50
65.	IS: 3902-1966 Dimethoate, technical	6-00
*66.	IS: 4015 (Part I) - 1967 Guide for handling cases of pesticide poisoning: Part I First aid measures	—
Propagation Materials		
67.	IS: 3647-1966 Seed potatoes	1-00
68.	IS: 3866-1966 Sugarcane seed material	1-50
Spices and Condiments		
69.	IS: 1907-1966 Cardamom (<i>first revision</i>)	2-00
70.	IS: 3576-1966 Turmeric whole	1-00
71.	IS: 3795-1966 Fenugreek, whole	1-00
72.	IS: 3796-1966 Fennel seeds, whole	1-00
73.	IS: 3797-1966 Celery seeds	1-00

*Under print

Sl. No.		Rs
Tea		
74.	IS: 3633-1966 Tea	2-00
Transport of Live Animals		
75.	IS: 3699 (Part I)-1966 Code for transport of monkeys by land: Part I Transport from trapping area to the nearest rail-head	1-00
76.	IS: 3907 (Part I)-1966 Code for the transport of laboratory animals: Part I Transport of mice, rats, rabbits, guineapigs and cotton rats	1-00
CHEMICAL		
Adhesives		
77.	IS: 3434-1965 Glossary of terms for adhesives and pressure sensitive adhesive tapes	3-50
78.	IS: 3676-1966 Pressure sensitive adhesive PVC tapes	3-50
79.	IS: 3687-1966 Pressure sensitive adhesive cloth tapes	3-50
80.	IS: 3988-1967 Guar gum	5-00
Ceramicware, Enamelware and Laboratory Porcelain		
81.	IS: 3505-1965 Porcelain dinnerware	2-00
82.	IS: 3936-1966 Porcelain mortars and pestles	2-50
83.	IS: 3953-1966 High temperature combustion boats	2-00
84.	IS: 3990-1967 Combustion tubes	2-50
Chemicals, Inorganic (Miscellaneous)		
85.	IS: 261-1966 Copper sulphate (<i>first revision</i>)	3-00
86.	IS: 701-1966 Zinc chloride (<i>first revision</i>)	4-00
87.	IS: 3401-1966 Desiccant silica (Recognition of Government of India, Ministry of Defence Specification No. IND/SL/7061 (b) as an Indian Standard	2-50
88.	IS: 3598-1966 Sodium perborate, tetrahydrate... ..	2-00
89.	IS: 3605-1966 Bauxite for chemical and petroleum industries	1-50
90.	IS: 3607-1966 Magnesite for chemical industries	1-50
Coal and Coke		
91.	IS: 3746-1966 Graphical symbols for coal preparation plant... ..	3-00
92.	IS: 3810-1966 Glossary of terms used in coal preparation practice	5-00
93.	IS: 4023-1966 Methods for the determination of reactivity of coke	5-50
Coal Carbonization Products		
94.	IS: 359-1965 Xylolene, industrial solvent grade (<i>first revision</i>)	4-50
Cosmetics and Toilet Goods		
95.	IS: 3958-1966 Methods of sampling cosmetics and toilet goods	2-00
96.	IS: 3959-1966 Skin powders	2-00
97.	IS: 3986-1966 Sodium lauryl sulphate for cosmetic industry... ..	5-50
98.	IS: 3987-1967 Sorbitol solution (70 percent)... ..	6-00
99.	IS: 4028-1965 Beeswax, bleached, for cosmetic industry	5-50
Dye Intermediates		
100.	IS: 3562-1965 <i>p</i> -Nitrotoluene, technical	4-50

Sl No.		Rs
Fillers, Stoppers and Putties		
101.	IS: 3709-1966 Mastic cement for bedding of metal windows...	1-00
Footwear		
102.	IS: 1989-1966 Miners' safety leather boots for miners (<i>first revision</i>) ...	9-00
103.	IS: 3735-1966 Canvas shoes, rubber sole ...	3-00
104.	IS: 3736-1966 Canvas boots, rubber sole ...	3-50
105.	IS: 3737-1966 Leather safety boots for workers in heavy metals industries	3-50
106.	IS: 3738-1966 Rubber knee boots ...	3-50
107.	IS: 3976-1967 Safety rubber-canvas boots for miners ...	6-50
Glass and Glassware		
108.	IS: 3702-1966 Refills for vacuum flasks ...	1-50
INDUSTRIAL GASES		
109.	IS: 307-1966 Carbon dioxide (<i>second revision</i>) ...	4-50
110.	IS: 3551-1965 Pure nitrogen (dry) ...	5-00
Laboratory Glassware, Thermometers and Related Apparatus		
111.	IS: 3608-1966 Glass alcoholometers ...	2-50
Leather, Leather Goods and Leather Dressings		
112.	IS: 1017-1966 Chamois leather (<i>first revision</i>)... ..	4-00
113.	IS: 3521-1965 Lineman's leather safety belt and strap ...	4-50
114.	IS: 3840-1966 lining Leathers ...	6-00
115.	IS: 3946-1966 Leather for leg guard ...	5-50
116.	IS: 3982-1966 Sheepskin leather for orthopaedic linings ...	6-00
117.	IS: 3983-1966 Goatskin parchment for orthopaedic purposes ...	5-00
118.	IS: 3985-1966 Leather for Rugby ball ...	5-00
119.	IS: 3999-1967 Gasein based aqueous pigments and finishes... ..	3-50
LINTERS AND ALLIED PRODUCTS		
120.	IS: 3517-1965 Cotton linters	3-50
121.	IS: 3518-1966 Chemical cotton for viscose and cellulose acetate ...	1-00
122.	IS: 3519-1965 Methods of sampling and test for chemical cotton ...	5-50
123.	IS: 3520-1966 Water-soluble sodium carboxymethyl cellulose ...	4-00
124.	IS: 3532-1966 Chemical cotton for nitrocellulose ...	1-00
Lubricants		
125.	IS: 496-1966 Internal combustion engine lubricating oils (<i>first revision</i>) ...	4-50
Metal Containers and Closures		
126.	IS: 916-1966 18-Litre square tins (<i>first revision</i>)... ..	2-00
127.	IS: 1394-1966 Glossary of terms relating to metal containers trade (<i>first revision</i>)	4-50
128.	IS: 2087-1966 Square tins for general purposes (<i>first revision</i>) ...	2-50
129.	IS: 3259-1966 Methods for sampling of metal containers ...	3-00
130.	IS: 3575-1965 Bitumen drums	1-50
131.	IS: 3603-1966 Seamless aluminium containers	1-00
132.	IS: 3680-1966 Round printing ink containers	1-00

Sl No.		Rs
Oils and Fats, Oleaginous Seeds and Fruits		
133.	IS: 435-1966 Castor oil (<i>first revision</i>)	2-00
134.	IS: 543-1966 Cottonseed oil (<i>first revision</i>)	2-50
135.	IS: 3471E-1966 Solvent-extracted coconut oil	2-50
136.	IS: 3472E-1966 Solvent-extracted cottonseed oil	4-00
137.	IS: 3473E-1966 Solvent-extracted groundnut oil	2-50
138.	IS: 3474E-1966 Solvent-extracted linseed oil	2-50
139.	IS: 3475E-1966 Solvent-extracted <i>Mahua</i> (<i>Mowrah</i>)	2-50
Paper and Allied Products		
140.	IS: 1060 (Part I)-1966 Methods of sampling and test for paper and allied products: Part I (<i>first revision</i>)	1-00
141.	IS: 3673-1966 Alkali resistant paper	1-00
Perfumery Materials, Natural and Synthetic		
142.	IS: 587-1965 Oil of geranium (<i>first revision</i>)	1-50
143.	IS: 3504-1965 Thymol	1-50
144.	IS: 3533-1965 Oil of linaloe barries... ..	1-00
145.	IS: 3584-1966 Camphor	3-00
146.	IS: 3858-1966 Benzyl acetate	1-00
147.	IS: 3924-1966 Benzyl alcohol	1-00
148.	IS: 3925-1966 Eugenol	1-00
149.	IS: 3926-1966 Methyl cinnamate	1-50
150.	IS: 3927-1966 <i>iso</i> Butyl phenyl acetate	1-00
151.	IS: 3928-1966 Styralyl acetate	1-00
152.	IS: 3929-1966 Amyl salicylate	1-00
Petroleum and Petroleum Products		
153.	IS: 1447-1966 Methods of sampling of petroleum and its products	7-00
154.	IS: 1448 (P: 16)-1967 Density by hydrometer method (P: 16) (<i>first revision</i>)	2-00
155.	IS: 1448 (P: 28)-1966 Oxidation stability of motor gasoline, aviation, fuels and vaporizing oils (P: 28) (<i>first revision</i>)	3-00
156.	IS: 1448 (P: 33)-1967 Sulphur by bomb method (P: 33) (<i>first revision</i>)	2-00
157.	IS: 1448 (P: 34)-1966 Determination of sulphur (P: 34) (<i>first revision</i>)	5-50
158.	IS: 1448 (P: 42)-1967 Water reaction and tolerance (P: 42) (<i>first revision</i>)	1-50
159.	IS: 1448 (P: 43)-1967 Bromine number by colour-indicator method (P: 43) (<i>first revision</i>)	2-00
160.	IS: 1448 (P: 61)-1966 Evaporation loss in greases (2-hour drying) (P: 61)	1-00
161.	IS: 1448 (P: 62)-1966 Heat stability of greases (P: 62)	1-00
162.	IS: 1448 (P: 64)-1967 Non-volatile matter in solvents (P: 64)	1-00
163.	IS: 1571-1965 Aviation turbine fuels, kerosine type (<i>first revision</i>)	3-50
164.	IS: 3470E-1966 Hexane, food grade	4-50
Pigments and Extenders		
165.	IS: 3493-1965 Methods of sampling and test for organic pigments	5-00
166.	IS: 3526E-1966 Barium chromate for paints	1-00
167.	IS: 3527E-1966 Mica pigment (wet ground)	1-00
168.	IS: 3540E-1966 Barium potassium chromate for paints	1-50
169.	IS: 3574 (Part I)-1965 Organic pigments for paints: Part 1 Azo pigments (toluidine red; chlorinated <i>p</i> -nitroaniline red; arylamide yellow; and para red)	1-50

Sl. No.		Rs
Plastics		
170.	IS: 1300-1966 Phenolic moulding materials (<i>second revision</i>)	2-00
171.	IS: 1461-1966 Plastic buttons (thermosetting) (<i>first revision</i>)	2-50
172.	IS: 3669-1966 Melamine formaldehyde moulding materials	1-00
173.	IS: 3672-1966 Octyl phthalate plasticizers	3-00
174.	IS: 3693-1966 Plastic spectacle frames	1-50
175.	IS: 3730-1966 Polyethylene buckets	2-00
Ready Mixed Paints and Enamels		
176.	IS: 487-1966 Brushes, paint and varnish, i) oval ferrule bound and ii) round, copperwire bound (<i>first revision</i>)	4-50
177.	IS: 3536E-1966 Ready mixed paint, brushing, wood primer, pink	1-00
178.	IS: 3537E-1966 Ready mixed paint, finishing, interior, for general purpose, to Indian Standard colours (as specified in the Standard)	1-00
179.	IS: 3538E-1966 Ready mixed paint, red oxide-barium chromate/barium potassium chromate primer	1-50
180.	IS: 3539E-1966 Ready mixed paint, undercoating, for use under oil finishes, to Indian Standard colours, as required	1-00
181.	IS: 3585-1966 Ready mixed paint, aluminium, brushing, priming, water resistant, for woodwork	1-50
182.	IS: 3631E-1966 Ready mixed paint, finishing, exterior, i) alkyd and ii) non-alkyd for general purposes, to Indian Standard colours	2-50
183.	IS: 3678E-1966 Ready mixed paint, thick white, for lettering	1-00
184.	IS: 3679E-1966 Ready mixed paint, storing, red, oxide-barium chromate/barium potassium chromate primer	1-00
Rubber and Rubber Products		
185.	IS: 3400 (Part I)-1965 Methods of test for vulcanized rubbers: Part I Tensile stress-strain properties	2-00
186.	IS: 3400 (Part II)-1965 Methods of test for vulcanized rubbers: Part II Hardness	2-50
187.	IS: 3400 (Part III)-1965 Methods of test for vulcanized rubbers: Part III Abrasion resistance-Du Pont constant load method	1-50
188.	IS: 3400 (Part IV)-1965 Methods of test for vulcanized rubbers: Part IV Accelerated ageing	2-00
189.	IS: 3400 (Part V)-1965 Methods of test for vulcanized rubbers: Part V Adhesion of rubbers to textile fabrics	2-00
190.	IS: 3549-1965 Water suction and discharge hose of rubber heavy duty	1-50
191.	IS: 3557-1965 Air hose of rubber, heavy duty, with woven reinforcement	1-50
192.	IS: 3565-1966 Rubber teats for feeding bottles	2-50
193.	IS: 3572-1966 Braided welding and cutting hose of rubber	1-50
194.	IS: 3660 (Part I)-1966 Methods of tests for natural rubber: Part I Determination of dirt, volatile matter, ash, total copper, manganese, iron, rubber hydrocarbon, viscosity (shearing disc viscometer), and mixing and vulcanizing of rubber in a standard compound	8-50
195.	IS: 3692-1966 Rubber closures (pharmaceutical)	3-00
196.	IS: 3701-1966 Rubber protective sheaths (condoms)	2-50
197.	IS: 3708 (Part I)-1966 Methods of test for natural rubber latex: Part I Dry rubber content, total solids, coagulum content, viscosity sludge content, density, total alkalinity, KOH-number, mechanical stability, volatile fatty acid number, pH total nitrogen, total copper, total iron, total manganese and total ash	8-00
198.	IS: 3867-1966 Rubber ice bags	3-50

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Soaps and Other Surface Active Agents		
199.	IS: 286-1966 Methods of sampling and test for soaps (<i>first revision</i>) ...	9-00
Thermal Insulation Materials		
200.	IS: 3346-1966 Method for the determination of thermal conductivity of thermal insulation materials (two slab, guarded hot-plate method) ...	4-50
201.	IS: 3677-1966 Rock and slag wool mats for thermal insulation ...	2-00
202.	IS: 3690-1966 Glass wool mats for thermal insulation ...	2-00
Treated Fabrics		
203.	IS: 3765-1966 Varnish impregnated cotton sleeveings for electrical purposes ...	2-50
204.	IS: 3768-1966 PVC ventilation tubing flexible ducting ...	3-00
Water and Water Treatment		
205.	IS: 2488 (Part I)-1966 Methods of sampling and test for industrial effluents: Part I ...	8-50
206.	IS: 3550-1965 Methods of test for routine control for water used in industry ...	6-00
207.	IS: 3957-1966 Quality tolerances for water for ice manufacture ...	1-00
Unclassified		
*208.	IS: 4016-1966 Density composition tables for aqueous solutions of sodium hydroxide ...	—
CIVIL ENGINEERING		
Aggregates		
209.	IS: 650-1966 Standard sand for testing of cement (<i>first revision</i>) ...	1-00
Boards and Sheets		
210.	IS: 2096-1966 Asbestos cement flat sheets ...	3-00
Bricks and Blocks		
211.	IS: 1077-1966 Common burnt clay building bricks (<i>first revision</i>) ...	1-50
212.	IS: 3583-1966 Paving bricks ...	1-00
213.	IS: 3590-1966 Load bearing light-weight concrete blocks ...	3-50
214.	IS: 3620-1966 Laterite stone block for masonry... ..	1-00
215.	IS: 3630-1966 Code of practice for construction of non-load bearing gypsum block partitions ...	2-50
216.	IS: 3952-1967 Burnt clay hollow blocks for walls and partitions ...	2-00
Builder's Hardware		
217.	IS: 204-1966 Tower bolts (<i>second revision</i>) ...	6-00
218.	IS: 205-1966 Non-ferrous metal butt hinges (<i>second revision</i>) ...	3-00
219.	IS: 1837-1966 Fanlight pivots (<i>first revision</i>) ...	2-00
220.	IS: 2209-1966 Mortice locks (vertical type) (<i>first revision</i>) ...	3-00
221.	IS: 2681-1966 Non-ferrous metal sliding door bolts for use with padlocks (<i>first revision</i>) ...	2-00
222.	IS: 3150-1966 Hexagonal wire netting for general purposes (<i>first revision</i>) ...	1-50

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223.	IS : 3564-1966	Door closers (hydraulically regulated)	1-50
224.	IS : 3818-1966	Continuous (piano) hinges	1-50
225.	IS : 3828-1966	Ventilator chains	... ..	1-50
226.	IS : 3843-1966	Steel backflap hinges	... ..	2-00
227.	IS : 3847-1966	Mortice night latches	... ..	2-50
Cement				
228.	IS : 3535-1966	Methods of sampling hydraulic cements	... ..	2-50
Construction Equipment				
229.	IS : 3558-1966	Code of practice for use of immersion vibrators for consolidating concrete	... ..	3-00
230.	IS : 3559-1966	Pneumatic concrete breakers	... ..	3-00
Doors and Windows				
231.	IS : 1003 (Part I)-1966	Timber panelled and glazed shutters: Part I Door shutters (<i>first revision</i>)	... ..	6-00
232.	IS : 1003 (Part II)-1966	Timber panelled and glazed shutters: Part II Window and ventilator shutters (<i>first revision</i>)	... ..	3-50
233.	IS : 2191 (Part I)-1966	Wooden flush door shutters (cellular and hollow core type): Part I Plywood face panels (<i>first revision</i>)	... ..	5-50
234.	IS : 2191 (Part II)-1966	Wooden flush door shutters (cellular and hollow core type): Part II Particle board face panels (<i>first revision</i>)	... ..	2-50
235.	IS : 2202 (Part I)-1966	Wooden flush door shutters (solid core type): Part I Plywood face panels (<i>first revision</i>)	... ..	6-00
236.	IS : 2202 (Part II)-1966	Wooden flush door shutters (solid core type): Part II Particle board face panels (<i>first revision</i>)	... ..	2-50
Drawing Estimation and Measurement				
237.	IS : 3861-1966	Method of measurement of areas and cubical contents in buildings	... ..	1-00
Fire Fighting Equipment				
238.	IS : 942-1966	275-1/min portable pump set for fire fighting (<i>first revision</i>)	... ..	1-00
239.	IS : 943-1966	680-1/min trailer pump for fire brigade use (<i>first revision</i>)	... ..	2-50
240.	IS : 944-1966	1800-1/min trailer pump for fire brigade use (<i>first revision</i>)	... ..	2-50
241.	IS : 945-1966	1800-1/min motor fire engine (<i>first revision</i>)	... ..	4-50
242.	IS : 3582-1966	Basket strainers for fire fighting purposes (cylindrical type)	... ..	1-50
243.	IS : 3744-1966	Hose binding machine	... ..	2-00
Fire Safety				
244.	IS : 3034-1966	Code of practice for fire safety of industrial buildings: Electrical generating and distributing stations	... ..	4-50
245.	IS : 3614 (Part I)-1966	Fire check doors: Part I Plate, metal covered and rolling type	... ..	4-50
246.	IS : 3808-1966	Method of test for combustibility of building materials	... ..	1-00
247.	IS : 3809-1966	Fire resistance test of structures	... ..	2-00
248.	IS : 3836-1966	Code of practice for fire safety of industrial buildings: Jute mills	3-00

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249.	IS: 3844-1966 Code of practice for installation of internal fire hydrants in multi-storey buildings	2-50
Flow Measurements		
250.	IS: 3918-1966 Code of practice for use of current meter (cup type) for water flow measurements	3-50
Flow Measuring Instruments		
251.	IS: 3910-1966 Current meters (cup type) for water flow measurement... ..	5-00
252.	IS: 3911-1966 Surface floats	1-50
253.	IS: 3912-1966 Sounding rods	1-50
254.	IS: 3913-1966 Suspended sediment load samplers	3-50
255.	IS: 3917-1966 Scoop type bed material samplers	2-50
Foundations		
256.	IS: 1904-1966 Code of practice for structural safety of buildings: Foundations (<i>first revision</i>)	5-00
257.	IS: 2974 (Part II)-1966 Code of practice for design and construction of machine foundations: Part II Foundations for impact type machines (drop and forge hammer foundations)	4-00
258.	IS: 3955-1967 Code of practice for design and construction of well foundations	4-50
Functional Design		
259.	IS: 3483-1965 Code of practice for noise reduction in industrial buildings	4-50
260.	IS: 3792-1966 Guide for heat insulation of non-industrial buildings ...	9-50
Furniture		
261.	IS: 1883-1966 Metal shelving racks (adjustable type) (<i>first revision</i>) ...	2-50
262.	IS: 3663-1966 Dimensions of tables and chairs for general office purposes	1-00
263.	IS: 3761-1966 Metal side racks (adjustable type)	1-50
264.	IS: 3762-1966 Metal waste paper bins	1-00
265.	IS: 3763-1966 Metal folding chairs	1-50
266.	IS: 3791-1966 Metal paper trays	1-00
267.	IS: 3845-1966 Code of practice for joints used in wooden furniture ...	4-50
General Structural Design and Construction		
268.	IS: 1893-1966 Criteria for earthquake resistant design of structures (<i>first revision</i>)	8-00
269.	IS: 1911-1967 Schedule of unit weights of building materials (<i>first revision</i>)	12-00
270.	IS: 3548-1966 Code of practice for glazing in buildings	3-50
271.	IS: 3935-1966 Code of practice for composite construction... ..	8-00
Investigations and Planning in Projects		
272.	IS: 4008-1967 Guide for presentation of project report for river valley projects	5-00
Lining of Canals		
273.	IS: 3860-1966 Precast cement concrete slabs for canal linings ...	1-00
274.	IS: 3872-1966 Code of practice for lining of canals with burnt clay tiles...	
275.	IS: 3873-1966 Code of practice for laying <i>in situ</i> cement concrete lining on canals	3-00
		2-50

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Pipes		
276.	IS: 3597-1966 Methods of tests for concrete pipes	3-00
Plaster, Paint and Allied Finishes		
277.	IS: 2395 (Part I)-1966 Code of practice for painting concrete masonry and plaster surfaces: Part I Operations and workmanship ...	4-50
Poles		
278.	IS: 2905-1966 Methods of test for concrete poles for overhead power and telecommunication lines	1-50
Pozzolanas		
279.	IS: 3812 (Part I)-1966 Fly ash: Part I For use as pozzolana... ..	2-00
280.	IS: 3812 (Part II)-1966 Fly ash: Part II For use as admixture for concrete	2-00
281.	IS: 3812 (Part III)-1966 Fly ash: Part III For use as fine aggregate for mortar and concrete	2-00
Reinforcement		
282.	IS: 432 (Part I)-1966 Mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement: Part I Mild steel and medium tensile steel bars (<i>first revision</i>)	2-50
283.	IS: 432 (Part II)-1966 Mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement: Part II Hard-drawn steel wire (<i>second revision</i>)	1-50
284.	IS: 1139-1966 Hot rolled mild steel and medium tensile steel deformed bars for concrete reinforcement (<i>first revision</i>)	2-50
285.	IS: 1785 (Part I)-1966 Plain hard-drawn steel wire for prestressed concrete: Part I Cold drawn stressed-relieved wire (<i>first revision</i>) ...	2-50
286.	IS: 1786-1966 Cold twisted steel bars for concrete reinforcement (<i>first revision</i>)	1-50
Safety Constructions		
287.	IS: 3696 (Part I)-1966 Safety code for scaffolds and ladders: Part I Scaffolds	2-50
288.	IS: 3696 (Part II)-1966 Safety code for scaffolds and ladders: Part II Ladders	2-00
289.	IS: 3764-1966 Safety code for excavation work... ..	4-00
Soil Engineering		
290.	IS: 2720 (Part I)-1966 Methods of test for soils: Part I Preparation of dry soil samples for various tests	1-50
291.	IS: 2720 (Part XVII)-1966 Methods of test for soils: Part XVII Laboratory determination of permeability	3-50
292.	IS: 2720 (Part XX)-1966 Methods of test for soils: Part XX Determination of linear shrinkage	1-00
293.	IS: 2720 (Part XXIII)-1966 Methods of test for soils: Part XXIII Determination of calcium carbonate	1-00
294.	IS: 2720 (Part XXVIII)-1966 Methods of test for soils: Part XXVIII Determination of dry density of soils, in-place, by the sand replacement method	4-50
295.	IS: 2720 (Part XXIX)-1966 Methods of test for soils: Part XXIX Determination of dry density of soils, in-place, by the core cutter method	1-50

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Stone		
296.	IS: 3622-1966 Sandstone slabs for use in flooring	1-00
Tiles		
297.	IS: 3464-1966 Method of test for plastic flooring and wall tiles	5-00
298.	IS: 3951-1967 Structural hollow clay floor tiles... ..	2-00
299.	IS: 3978-1967 Code of practice for manufacture of burnt clay Manglore pattern roofing tiles	4-00
Timber		
300.	IS: 1150-1966 Trade names and abbreviated symbols for timber species (<i>first revision</i>)	2-50
301.	IS: 1331-1966 Cut sizes of timber (<i>first revision</i>)	1-50
302.	IS: 2377-1967 Tables for volumes of cut sizes of timber (<i>first revision</i>)	14-00
303.	IS: 2683-1966 Guide for installation of pressure impregnation plants for timber (<i>first revision</i>)	2-50
304.	IS: 3731-1966 Grading rules for teak squares	2-50
Timber Design and Construction		
305.	IS: 883-1966 Code of practice for design of structural timber in building (<i>second revision</i>)	4-00
306.	IS: 3629-1966 Structural timber in building	7-00
307.	IS: 3670-1966 Code of practice for construction of timber floors	4-00
Timber Stores		
308.	IS: 1503-1967 Wooden packing cases (<i>first revision</i>)	5-50
309.	IS: 3805-1966 Pent-top wooden cases	1-50
310.	IS: 3806-1966 Wooden beaters	1-50
Waterproofing and Damp-Proofing		
311.	IS: 1346-1966 Code of practice for waterproofing of roofs with bitumen felts (<i>first revision</i>)	5-00
312.	IS: 1609-1966 Code of practice for laying damp-proof treatment using bitumen felts (<i>first revision</i>)	1-00
313.	IS: 3067-1966 Code of practice for general design details and preparatory work for damp-proofing and waterproofing of buildings	5-50
Water Supply, Sanitation and Drainage Fittings		
314.	IS: 780E-1966 Sluice valves for waterworks purposes [<i>second (emergency revision)</i>]	5-00
315.	IS: 782-1966 Caulking lead (<i>second revision</i>)	1-50
316.	IS: 2548E-1966 Plastic water-closet seats and covers (<i>first revision</i>)	2-00
317.	IS: 3950-1966 Surface boxes for sluice valves... ..	2-00
Wood-Based Materials		
318.	IS: 3513 (Part I)-1966 High and medium density wood-based laminates (compreg): Part I Electrical purposes	3-50
319.	IS: 3513 (Part II)-1966 High and medium density wood-based laminates (compreg): Part II Chemical purposes	3-00
320.	IS: 3513 (Part III)-1966 High and medium density wood-based laminates (compreg): Part III General purposes	3-00
321.	IS: 3513 (Part IV)-1966 High and medium density wood-based laminates (compreg): Part IV Sampling and tests	1-50

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CONSUMER PRODUCTS**Domestic Hardware**

322.	IS: 3981-1967	SIGRIES	3-50
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Fountain Pens and Ball Point Pens

323.	IS: 3705-1966	Ball point pens	1-00
324.	IS: 3706-1966	Fountain pens	2-50
325.	IS: 3707-1966	Ball point pen refills...	...	...	...	...	...	...	1-50

Hospital Equipment

326.	IS: 3829-1966	Horizontal cylindrical and horizontal rectangular steam sterilizers, pressures type (for hospital use)...	...	...	...	...	...	...	6-50
327.	IS: 3830-1966	Water stills for pyrogen-free distilled water	...	...	...	...	...	...	2-00
328.	IS: 3831-1966	Dressing drums	...	...	...	...	...	...	2-50

Sports Goods

329.	IS: 827-1966	Sinew guts for tennis and badminton rackets (<i>first revision</i>)	...	...	...	...	...	...	1-50
330.	IS: 828-1966	Cricket bats (<i>first revision</i>)	...	...	...	...	...	...	1-50
331.	IS: 830-1966	Tennis racket frames (<i>first revision</i>)	...	...	...	...	...	...	2-00
332.	IS: 831-1966	Badminton racket frames (<i>first revision</i>)	...	...	...	...	...	...	2-00
333.	IS: 3659-1966	Table tennis balls	...	...	...	...	...	...	1-50
334.	IS: 3785-1966	Wicket keeping gauntlets	...	...	...	...	...	...	1-50
335.	IS: 3800-1966	Batting gloves	...	...	...	...	...	...	1-50
336.	IS: 3874-1966	Boxing gloves	...	...	...	...	...	...	2-00
337.	IS: 3923-1966	Leg-guards for cricket batsmen, wicket keepers and hockey goal keepers	...	...	...	...	...	...	2-50

Surgical and Medical Instruments

338.	IS: 3642-1966	General requirements for surgical instruments	...	...	...	...	...	...	2-50
339.	IS: 3643-1966	Dissecting forceps (serrated and toothed)	...	...	...	...	...	...	2-00
340.	IS: 3644-1966	Artery forceps (Halsted's mosquito pattern)	...	...	...	...	...	...	1-50
341.	IS: 3645-1966	Artery forceps (Spencer wells pattern)	...	...	...	...	...	...	1-50
342.	IS: 3740-1966	Tubes, glass, for pathological work	...	...	...	...	...	...	2-00
343.	IS: 3741-1966	Tubes, sedimentation	...	...	...	...	...	...	1-50
344.	IS: 3742-1966	Pipettes, dilution for haemocytometers	...	...	...	...	...	...	1-50
345.	IS: 3758-1966	Hooks, aural	...	...	...	...	...	...	1-50
346.	IS: 3759-1966	Blades, skin grafting	...	...	...	...	...	...	1-00
347.	IS: 3760-1966	Probe, aural, Jobson Horne's pattern	...	...	...	...	...	...	1-00
348.	IS: 3767-1966	Hook, skin, Gillies pattern	...	...	...	...	...	...	1-00
349.	IS: 3787-1966	Gag, mouth, cleft palate	...	...	...	...	...	...	1-50
350.	IS: 3788-1966	Specula, aural	...	...	...	...	...	...	1-50
351.	IS: 3799-1966	Forceps, aural and nasal, crocodile action	...	...	...	...	...	...	2-00
352.	IS: 3807-1967	Forceps, dressing, aural and nasal	...	...	...	...	...	...	4-00
353.	IS: 3875-1966	Hot plate, wax levelling, dental...	...	...	...	...	...	...	1-00
354.	IS: 3876-1967	Plaster knife, dental	...	...	...	...	...	...	1-00
355.	IS: 3877-1967	Wax knife, dental	...	...	...	...	...	...	1-00
356.	IS: 3878-1967	Plaster shears, dental	...	...	...	...	...	...	1-00
357.	IS: 3879-1967	Wax spatula, dental	...	...	...	...	...	...	2-00
358.	IS: 3887-1966	General requirements for cutting type dental instruments	...	...	...	...	...	...	1-50
359.	IS: 3888-1967	Spatula (dental)	...	...	...	...	...	...	2-00
360.	IS: 3890 (Part I)-1967	Instruments, plastic filling, dental: Part I	3-50
		Designation numbers, 1, 2, 3, 4, 5 and 6	

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Utensils and Cutlery		
361.	IS: 925-1966 Pocket knives (<i>first revision</i>)	2-00
362.	IS: 2347-1966 Domestic pressure cookers (<i>first revision</i>)	2-00
363.	IS: 3545-1966 Meat choppers	1-50
364.	IS: 3546-1966 Vegetable knives	2-00
365.	IS: 3695-1966 Thick bottom aluminium utensils	1-00
366.	IS: 3721-1966 Cheese cutting knives for table use	2-00
367.	IS: 3743-1966 Hair clippers (hand-operated)	2-50
368.	IS: 3991-1967 Bowls, lotion	5-00
369.	IS: 3992-1967 Trays, kidney	4-00
370.	IS: 3993-1967 Trays, instrument	4-00
371.	IS: 3994-1967 Bowls, wash	4-00
372.	IS: 3995-1967 Mugs	3-50
373.	IS: 3996-1967 Spittoons	3-50
ELECTROTECHNICAL		
Acoustics		
374.	IS: 1031-1967 Methods of measurements on loudspeakers and loud- speaker systems (<i>first revision</i>)	5-50
375.	IS: 3641-1966 Methods of measurements on hearing aids	4-00
376.	IS: 3720-1966 Dimensions of polarized plugs for hearing aids	1-00
377.	IS: 3931-1966 Sound level meters for the measurement of noise emitted by motor vehicles	4-00
378.	IS: 3932-1966 Sound level meters for general purpose use	4-00
379.	IS: 3956-1967 Dimensions of spools for magnetic tapes for sound recording and reproduction	2-00
Appliances		
380.	IS: 1415-1966 Electric hand-lamps (<i>first revision</i>)	2-00
381.	IS: 2268-1966 Electric call bells and buzzers for indoor use (<i>first revision</i>)	2-00
382.	IS: 3514-1966 Electric coffee percolators (non-regulator type)	3-00
383.	IS: 3724-1966 Cartridge type heating elements (non-embedded type)	2-00
384.	IS: 3725-1966 Resistance wires, tapes and strips for heating elements	1-50
Automobile Electrical Equipment		
385.	IS: 1606-1966 Automobile lamps (<i>first revision</i>)	5-00
386.	IS: 3105-1966 General requirements for automobile lighting and signalling devices	3-00
387.	IS: 3563-1966 Automobile headlights (replaceable bulb type)	1-50
388.	IS: 3628-1966 Sidelights, tail-lights, parking lights, stop lights and direction indicators for automobile use	2-50
Code of Practice		
389.	IS: 3043-1966 Code of practice for earthing	10-00
Conductors and Cables		
390.	IS: 691-1966 Rubber-insulated flexible trailing cables for use in coal mines	8-00
391.	IS: 1026-1966 Flexible trailing cables for use in quarries and metalliferous mines	7-00
392.	IS: 3975-1967 Mild steel wires, strips and tapes for armouring cables	3-50

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Electric Welding Equipment		
393.	IS: 1851-1966 Single operator type arc welding transformers (<i>first revision</i>)	3-00
394.	IS: 2635-1966 DC electric welding generator (<i>first revision</i>) ...	4-00
Electronic Components		
395.	IS: 1980-1967 Ceramic dielectric capacitors, Type I (<i>first revision</i>) ...	8-00
396.	IS: 2628 (Part II)-1967 Rotary wafer switches (low current rating): Part II Rotary wafer switches with central mounting ...	
397.	IS: 3354 (Part III)-1967 Valve sockets: Part III valve sockets for octal base	3-50
398.	IS: 3354 (Part IV)-1967 Valve sockets: Part IV Valve sockets for 9-pin miniature base	5-00
399.	IS: 3544-1966 General requirements and tests for tag strips... ..	3-00
400.	IS: 3671 (Part I)-1966 Air dielectric variable capacitors: Part I Tests and general requirements	4-50
401.	IS: 3700 (Part I)-1966 Essential ratings and characteristics of semiconductor devices: Part I General	1-50
402.	IS: 3723-1966 Capacitors for radio interference suppression ...	6-00
403.	IS: 3826 (Part I)-1966 Connectors for frequencies below 3Mc/s: Part I General requirements and tests	6-00
404.	IS: 4002-1967 General requirements and test for audio frequency transformers and chokes used in transistorized equipment	7-00
405.	IS: 4007 (Part I)-1967 Terminals for electronic equipment: Part I General requirements and tests... ..	5-50
Electronic Equipment		
406.	IS: 2106 (Part XIII)-1966 Environmental tests for electronic equipment: Part XIII Mould growth test	2-00
407.	IS: 2106 (Part XIV)-1966 Environmental tests for electronic equipment: Part XIV Constant acceleration test... ..	1-50
408.	IS: 2106 (Part XV)-1966 Environmental tests for electronic equipment: Part XV Gas tightness test	1-00
409.	IS: 3715-1966 Letter symbols for semiconductor devices	4-50
410.	IS: 3886-1966 Minimum requirements for general purposes audio frequency signal generators (30 c/s to 30 kc/s)	1-50
411.	IS: 3915-1966 Methods of measurements on audio frequency signal generators (30 c/s to 30 kc/s)	2-00
Fans		
412.	IS: 374-1966 Electric ceiling type fans and regulators (<i>second revision</i>) ...	4-00
413.	IS: 3588-1966 Electric axial flow fans	4-50
414.	IS: 3963-1966 Roof extractor units	7-00
High-Voltage Techniques		
415.	IS: 3716-1966 Application guide for insulation co-ordination equipment located in exposed situations	8-50
Illuminating Engineering		
416.	IS: 2672-1966 Code of practice for library lighting	2-50
417.	IS: 3528-1966 Waterproof electric lighting fittings	3-50
418.	IS: 3553-1966 Watertight electric lighting fittings	3-00
419.	IS: 3646 (Part I)-1966 Code of practice for interior illumination: Part I Principles of good lighting and aspects of design	9-00

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420.	IS: 3646 (Part II)-1966 Code of practice for interior illumination: Part II Schedule for values of illumination and glare index ...	5-00
421.	IS: 4012-1967 Dust proof electric lighting fittings ...	7-00
422.	IS: 4013-1967 Dust-tight electric lighting fittings ...	7-00
Instruments and Meters		
423.	IS: 722 (Part III)-1966 AC electricity meters: Part III Three-phase whole-current and transformer-operated meters, and signal-phase two-wire transformer-operated meters (<i>first revision</i>) ...	4-50
424.	IS: 722 (Part IV)-1966 AC electricity meters: Part IV Three-phase watt-hour meters with maximum demand indicator (<i>first revision</i>) ...	4-50
425.	IS: 1565-1966 Electrical apparatus comprising resistors (<i>first revision</i>)...	3-00
426.	IS: 1765-1966 DC potentiometers for laboratory and industrial uses (<i>first revision</i>) ...	2-00
427.	IS: 3635-1966 Methods of test for resistance of metallic electrical resistance material ...	1-50
428.	IS: 3636-1966 Method of test for temperature coefficient of precision resistor wires ...	2-50
Instrument Transformers		
429.	IS: 3156 (Part III)-1966 Voltage transformers: Part III Protective voltage transformers (electromagnetic type) ...	2-00
Insulators		
430.	IS: 283-1966 Porcelain insulators for telegraph and telephone lines (<i>second revision</i>) ...	4-00
431.	IS: 1441-1966 Insulator stalks for telegraph and telephone lines (<i>first revision</i>) ...	4-50
Lamps and Lamp Accessories		
432.	IS: 897-1966 Tungsten filament electric lamps for railway rolling stock (<i>first revision</i>) ...	4-00
Lifts		
433.	IS: 3534-1966 Outline dimensions for electric lifts ...	3-50
Lightning Arresters		
434.	IS: 3070 (Part II)-1966 Lightning arresters for alternating current systems: Part II Expulsion type lightning arresters ...	8-00
Motors and Generators		
435.	IS: 1231-1967 Dimensions of three-phase foot-mounted induction motors (<i>second revision</i>) ...	4-00
436.	IS: 3003 (Part I)-1966 Carbon brushes for electrical machines: Part I Nomenclature, dimensions and test methods ...	6-00
437.	IS: 3682-1966 Flameproof alternating current motors for use in mines ...	2-50
438.	IS: 4029-1967 Guide for testing three-phase induction motors ...	6-50
Nomenclature and Symbols		
439.	IS: 1885 (Part III/Sec 1)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 1 Physical acoustics ...	5-50
440.	IS: 1885 (Part III/Sec 2)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 2 Acoustical and electroacoustical systems ...	8-00

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441. IS: 1885 (Part III/Sec 4)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 4 Sonics, ultrasonics and underwater acoustics ...	4-00
442. IS: 1885 (Part III/Sec 5)-1966 Electrotechnical vocabulary: Part III Acoustics, Section 5 Speech and hearing ...	4-00
443. IS: 1885 (Part VII)-1965 Electrotechnical vocabulary: Part VII Semiconductor devices ...	5-50
444. IS: 1885 (Part IX)-1966 Electrotechnical vocabulary: Part IX Electrical relays ...	5-00
445. IS: 1885 (Part XI)-1966 Electrotechnical vocabulary: Part XI Electrical measurements ...	10-00
446. IS: 1885 (Part XII)-1966 Electrotechnical vocabulary: Part XII Ferromagnetic oxide materials ...	7-00
447. IS: 1885 (Part XIII/Sec 2)-1967 Electrotechnical vocabulary: Part XIII Telecommunication transmission lines and waveguides, Section 2 Microwave transmission lines and waveguides...	6-00
448. IS: 1885 (Part XIV)-1967 Electrotechnical vocabulary: Part XIV Nuclear power plants ...	9-00
449. IS: 3722-1966 Letter symbols and signs used in electrical technology ...	6-50
 Power Convertors	
450. IS: 3895-1966 Monocrystalline semiconductor rectifier cells and stacks...	4-50
 Relays	
451. IS: 3637-1966 Gas-operated relays ...	1-50
452. IS: 3638-1966 Application guide for gas-operated relays ...	2-00
453. IS: 3842 (Part II)-1966 Application guide for electrical relays for ac systems: Part II Overcurrent relays for generators and motors ...	3-50
454. IS: 3842 (Part III)-1966 Application guide for electrical relays for ac systems: Part III Phase unbalance relays including negative phase sequence relays ...	3-00
455. IS: 3842 (Part IV)-1966 Application guide for electrical relays for ac systems: Part IV Thermal relays ...	5-00
 Switchgear and Control Gear	
456. IS: 2516 (Part II/Sec 1)-1966 Alternating current circuit breakers: Part II Tests, Section 1 Voltage not exceeding 1 000 volts ...	5-00
457. IS: 2675-1966 Enclosed distribution fuseboards and cutouts for voltages not exceeding 1 000 volts (<i>first revision</i>) ...	4-00
 Transformers	
458. IS: 3639-1966 Fittings and accessories for power transformers ...	2-00
 Winding Wires	
459. IS: 1595-1967 Enamelled round copper wire with high mechanical properties (<i>first revision</i>) ...	8-00
460. IS: 3855-1966 Rectangular and square enamelled copper conductors ...	3-50
 Wiring Accessories	
461. IS: 371-1966 Ceiling roses (<i>first revision</i>) ...	3-50
462. IS: 3837-1966 Accessories for rigid steel conduits for electrical wiring ...	3-00
463. IS: 3854-1966 Switches for domestic and similar purposes ...	8-00

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Sl No.		Rs
Unclassified		
464.	IS: 3599-1966 Method of measurement of cooling medium temperature for electrical apparatus	2-50
MECHANICAL ENGINEERING		
Basic Engineering Standards		
465.	IS: 3616-1966 Recommendation on the international system (SI) units	3-50
Abrasives		
466.	IS: 551-1966 Marking system for grinding wheels (<i>first revision</i>) ...	1-50
467.	IS: 715-1966 Coated abrasives, glue bond (<i>second revision</i>) ...	3-50
468.	IS: 3755-1966 Emery fillets	1-00
Bearings		
469.	IS: 2398-1966 Identification code for rolling bearings	9-00
470.	IS: 3697-1966 Boundary dimensions for tapered roller bearings ...	2-50
471.	IS: 3823 (Part I)-1966 Methods of evaluating static load ratings of rolling bearings: Part I Radial ball bearings	1-00
472.	IS: 3823 (Part II)-1966 Methods of evaluating static load ratings of rolling bearings: Part II Radial roller bearings	1-00
473.	IS: 3823 (Part III)-1966 Methods of evaluating static load ratings of rolling bearings: Part III Thrust ball bearings	1-00
474.	IS: 3823 (Part IV)-1966 Methods of evaluating static load ratings of rolling bearings: Part IV Thrust roller bearings	1-00
475.	IS: 3824 (Part I)-1966 Methods of evaluating dynamic load ratings of rolling bearings: Part I Radial ball bearings	1-50
476.	IS: 3824 (Part II)-1966 Methods of evaluating dynamic load ratings of rolling bearings: Part II Radial roller bearings	1-00
477.	IS: 3824 (Part III)-1966 Methods of evaluating dynamic load ratings of rolling bearings: Part III Thrust ball bearings	1-00
478.	IS: 3824 (Part IV)-1966 Methods of evaluating dynamic load ratings of rolling bearings: Part IV Thrust roller bearings	1-00
479.	IS: 3980-1967 Sintered metal powder oil impregnated bearings ...	6-00
480.	IS: 4025-1967 Gauging practices for ball and roller bearings ...	3-50
Bicycle Components		
481.	IS: 3798-1966 Glossary of terms used in the bicycle industry ...	4-50
Chemical Engineering		
482.	IS: 3223-1967 Graphical symbols for process measurement and control functions	6-50
483.	IS: 3612-1966 Classification and methods for measuring capacity of crushing and grinding equipment	1-50
Engineering Metrology		
484.	IS: 2984-1966 Slip gauges	3-00
485.	IS: 3455-1966 Tolerances for plain limit gauges	5-50
486.	IS: 3510-1966 Toolmaker's flats and high precision surface plates ...	1-50
487.	IS: 3512-1966 Toolmaker's straightedges	1-00
488.	IS: 3651-1966 Vernier calipers	3-00
489.	IS: 4019-1967 Firm-joint dividers	2-00

Sl. No.		Rs
Gas Cylinders and Fittings		
490.	IS: 2872-1966 Low carbon steel cylinders for the storage and transportation of liquefiable gases	2.50
491.	IS: 3224-1966 Valve fittings for compressed gas cylinders	5.50
492.	IS: 3465-1966 Jointing compounds for use in liquefied petroleum gas appliances and installations	2.50
493.	IS: 3710-1966 Filling ratios for liquefiable gases	1.50
494.	IS: 3745-1966 Yoke type valve connections for medical gas cylinders	3.00
495.	IS: 3870-1966 Code of practice for handling gas cylinders and related equipment intended for medical use	1.50
496.	IS: 3933-1966 Colour identification of gas cylinders and related equipment intended for medical use	2.00
Gears		
497.	IS: 3681-1966 General plan for spur and helical gears	10.00
498.	IS: 3734-1966 Dimensions for worm gearing	2.50
499.	IS: 3756-1966 Method for gear correction	4.00
Hand Tools		
500.	IS: 274 (Parts I & II)-1966 Shovels: Part I General purposes shovels: Part II Heat-treated shovels (<i>second revision</i>)	3.50
501.	IS: 703-1966 Axes (<i>first revision</i>)	2.50
502.	IS: 3529-1966 Eyelet pliers	1.00
503.	IS: 3552-1966 Flat-nose pliers	1.50
504.	IS: 3568-1966 Round nose pliers	1.50
505.	IS: 3569-1966 Burner pliers	1.00
506.	IS: 3587-1966 Rasps	3.50
507.	IS: 3650-1966 Combination side cutting pliers	1.00
508.	IS: 4003-1967 Pipe wrenches	4.00
509.	IS: 4017-1967 Carpenter's squares	2.50
IC Engines and Automotive Vehicles		
510.	IS: 1135-1966 Leaf springs for automobile suspension (<i>first revision</i>)	3.50
511.	IS: 3511-1966 Cylinder bore diameters for internal combustion engines	1.00
512.	IS: 3649-1966 Clutch facing for automotive transmission	2.50
Instruments (Drawing, Optical and Surveying)		
513.	IS: 3219-1966 Engineers' drawing instruments, boxes for leads and needles	1.00
514.	IS: 3220-1966 Engineers' drawing instruments, screw drivers	1.00
515.	IS: 3221-1966 Sets for drawing instruments	1.00
516.	IS: 3222 (Part I)-1966 Instrument screws: Part I Fasteners for drawing instruments	2.50
517.	IS: 3602-1966 Recommendations for the design of scales and indexes for indicating instruments for scales of 1 to 2 percent resolution	6.00
518.	IS: 3686-1966 Student type microscope	2.50
Instruments (Industrial)		
519.	IS: 3624-1966 Bourdon tube pressure and vacuum gauges	6.00
520.	IS: 3944-1966 Flow cups	1.00
Lubricating Equipment		
521.	IS: 4009-1967 Grease nipples	3.50

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Machine Tools and Small Tools		
522.	IS : 3691-1966 Test chart for woodworking bandsaws	2-50
523.	IS : 3694-1966 Test chart for wood turning lathes	1-50
524.	IS : 3793-1966 Live centres	1-50
525.	IS : 4022-1967 Cemented carbide indexable throwaway inserts	5-00
Marine Engineering and Shipbuilding		
526.	IS : 3269-1966 Stock anchors (for ship's use)	1-50
527.	IS : 3270-1966 Stock and single fluke stock anchors (for harbour use)	2-00
528.	IS : 3274-1967 Goose-neck ventilators — welded type	2-50
529.	IS : 3573-1966 Sea-anchors for lifeboats and liferafts	1-50
530.	IS : 3580-1966 General requirements for distress signals for lifeboats and liferafts	1-00
531.	IS : 3586-1966 Recommendations for lifeboats equipment	1-50
532.	IS : 3732-1966 Rigid liferafts	2-00
533.	IS : 3733-1966 Conventional signs for ship ventilation systems	3-50
534.	IS : 3940-1966 Torpedo ventilators	1-50
535.	IS : 3941-1966 Cabin ventilators	1-00
536.	IS : 3942-1966 Marine sounding rods	1-00
537.	IS : 3943-1966 Voice pipe and voice fittings	2-00
538.	IS : 3947-1966 Code of practice for testing, installation and maintenance of marine portable fire appliances	6-50
539.	IS : 3979-1967 Code of practice for testing of marine diesel engines of 800 rpm and above	7-50
540.	IS : 4010-1967 Sounding pipes	5-50
Mechanical Handling, Lifting		
541.	IS : 3822-1966 Eye hooks for use with chains	2-00
542.	IS : 3832-1966 Hand-operated chain pulley blocks	2-50
543.	IS : 3938-1967 Electric wire rope hoists	8-50
544.	IS : 3971-1967 Glossary of terms on pallets	4-00
Mining		
545.	IS : 3819-1967 Solid forged coal cutting picks	2-50
546.	IS : 3820-1967 Tungsten carbide tipped coal cutting picks	2-50
547.	IS : 3869 (Part I)-1966 Shortwall coal cutting machines: Part I General requirements for skid-mounted shortwall coal cutting machines	1-50
548.	IS : 3869 (Part II)-1966 Shortwall coal cutting machines: Part II Recommendations on selection of the basic parameters of the cutting system and the calculation of power consumption	4-50
549.	IS : 3948-1967 Calibrated high tensile steel chain (round link) for chain conveyors and coal ploughs used in mines	5-00
550.	IS : 3970-1967 Safety detaching hooks used in mines	2-50
551.	IS : 4001-1967 Mine tubes	5-00
Refrigeration		
552.	IS : 3621-1966 Domestic refrigerators (absorption type)	3-50
Sewing Machines		
553.	IS : 1294-1967 Bobbins for sewing machines for household purposes (first revision)	2-50
554.	IS : 1295-1967 Needle bars for sewing machines for household purposes (first revision)	2-50

Sl. No.		Rs
555.	IS: 1296-1967 Presser feet for sewing machines for household purposes (first revision)	4-00
556.	IS: 1297-1967 Presser bars for sewing machines for household purposes (first revision)	2-50
557.	IS: 3816-1966 Connecting rods for sewing machines for household purposes	1-50
558.	IS: 3817-1966 Arm shafts for sewing machines for household purposes ...	1-50
559.	IS: 3868-1966 Feed lifting rock shaft for sewing machines for house- hold purposes	1-50

Threaded Fasteners and Rivets

560.	IS: 1365-1966 Slotted countersunk head machine screws (first revision)	1-00
561.	IS: 3138-1966 Hexagonal bolts and nuts (M42 to M150) ...	1-00
562.	IS: 3139-1966 Dimensions for screw threads for bolts and nuts (diameter range M42 to M150)	2-50
563.	IS: 3524-1966 Threaded taper pins... ..	1-50
564.	IS: 3726-1966 Knurled thumb screws	1-50
565.	IS: 3727-1966 Wing screws	1-50
566.	IS: 3757-1966 High-tensile friction grip fasteners for structural engi- neering purposes	3-00
567.	IS: 3974-1967 Bifurcated rivets for general purposes	2-50

Transmission Devices, Pulleys and Belts

568.	IS: 3181-1966 Fire resistant conveyor belting for underground use in coal mines	5-00
569.	IS: 3542-1966 Extended pitch transmission precision roller chains and chain wheels	3-00
570.	IS: 3560-1966 Short pitch transmission precision bush chains and chain wheels	3-00
571.	IS: 3653-1966 Dimensions for forged and type rigid couplings ...	1-00
572.	IS: 3654-1966 Dimensions for straight sided serrations	2-00
573.	IS: 3665-1966 Dimensions for involute sided splines	5-50
574.	IS: 3688-1966 Dimensions for shaft ends	3-00

Weights and Measures

575.	IS: 1437-1967 Automatic weighing machines	1-50
576.	IS: 3515-1966 Tapes for use in measurement of oil quantities ...	1-50
577.	IS: 3960-1967 Totalizing weighing machines	1-00

Wire Ropes and Wire Products

578.	IS: 3623-1966 Guide and rubbing ropes	2-50
579.	IS: 3626-1966 Locked coil winding ropes	3-00
580.	IS: 3973-1967 Code of practice for the selection, installation and maintenance of wire ropes	9-50

STRUCTURAL & METALS

Alloy Steels and Special Steels

581.	IS: 3748-1966 Tool and die steels for hot work	2-00
582.	IS: 3749-1966 Tool and die steels for cold work	2-00
583.	IS: 3930-1966 Flame and induction hardening steels	6-00

Sl. No.		Rs
Cast Iron and Malleable Cast Iron		
584.	IS: 1536-1967 Centrifugally cast (spun) iron pressure pipes for water, gas and sewage (<i>first revision</i>)	7-00
585.	IS: 3516-1966 Cast iron pipe flanges and flanged fittings, class 9, for petroleum industry	5-50
*586.	IS: 3896-1966 Comparison of Indian and overseas standards for iron castings	—
587.	IS: 3989-1967 Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes	2-50
Copper and Copper Alloys		
588.	IS: 407-1966 Brass tubes for general purposes (<i>second revision</i>) ...	3-00
Foundry		
589.	IS: 1918-1966 Physical tests for foundry sands	5-50
590.	IS: 3666-1966 Tests for foundry core oils requiring baking	1-00
Hot-Dip Metallic Coatings		
591.	IS: 1327-1966 Method of determination of weight of tin coating of tinplate (<i>first revision</i>)	1-50
592.	IS: 2629-1966 Recommended practice for hot-dip galvanizing of iron and steel	4-00
Lead, Zinc, Tin, Antimony and Their Alloys		
593.	IS: 25-1966 Antifriction bearing alloys (<i>second revision</i>)	2-00
594.	IS: 26-1966 Tin ingot (<i>second revision</i>)	1-00
595.	IS: 193-1966 Soft solder (<i>second revision</i>)	1-50
596.	IS: 209-1966 Zinc (<i>second revision</i>)	1-00
597.	IS: 211-1966 Antimony (<i>second revision</i>)	1-00
598.	IS: 713-1966 Zinc base alloy ingots for die casting (<i>first revision</i>) ...	1-00
599.	IS: 742-1966 Zinc base alloy die castings (<i>first revision</i>)	2-00
600.	IS: 1357-1966 Printing metal (<i>first revision</i>)	1-00
601.	IS: 1654-1966 Antimonial lead (<i>first revision</i>)	1-00
602.	IS: 3684-1966 Metal for casting movable types	1-00
603.	IS: 3717-1966 Refined secondary lead	1-00
Light Metals and Their Alloys		
604.	IS: 733-1967 Wrought aluminium and aluminium alloys, bars, rods and sections (for general engineering purposes) (<i>first revision</i>) ...	8-50
605.	IS: 738-1966 Wrought aluminium and aluminium alloys, drawn tube (for general engineering purposes) (<i>first revision</i>)	5-50
606.	IS: 739-1966 Wrought aluminium and aluminium alloys, wire (for general engineering purposes) (<i>first revision</i>)	5-00
607.	IS: 740-1966 Wrought aluminium and aluminium alloys, rivet stock (for general engineering purposes) (<i>first revision</i>)	4-50
608.	IS: 1284-1966 Wrought aluminium and aluminium alloys, bolt and screw stock (for general engineering purposes) (<i>first revision</i>)	4-00
609.	IS: 3577-1967 Diameters of wrought aluminium and aluminium alloys, rivet, bolts and screw stock	2-00
610.	IS: 4026-1967 Aluminium ingots (EC Grade)	2-00

*Under print.

Sl No.	Rs
Metal Standards	
611. IS: 3531-1966 Glossary of terms relating to corrosion of metals ...	3-00
612. IS: 3618-1966 Phosphate treatment of iron and steel for protection against corrosion	3-00
Metallic Finishes	
613. IS: 1359-1966 Electroplated coatings of tin (<i>first revision</i>)	2-00
614. IS: 3554-1966 Glossary of terms relating to electroplating	4-50
615. IS: 3655-1966 Recommended practice for electroplating	1-50
Methods of Chemical Analysis	
616. IS: 3685-1966 Methods of chemical analysis of brasses	5-00
617. IS: 3863-1966 Methods of chemical analysis of copper-tellurium alloys	1-50
618. IS: 4027-1967 Chemical analysis of bronzes	8-00
Methods of Physical Tests	
619. IS: 3711-1966 Method for selection and preparation of samples and test pieces for mechanical tests for wrought steel	1-00
620. IS: 3766-1966 Method for calibration of pendulum impact testing machines for testing steels	3-00
621. IS: 3804-1966 Method for calibration of Rockwell B & C scale hardness testing machines	2-00
622. IS: 3848-1966 Method for end quench test for hardenability of steel ...	3-00
Methods of Sampling	
623. IS: 1405-1966 Methods of sampling iron ore (<i>first revision</i>)	3-50
624. IS: 3704-1966 Methods for sampling of light metals and their alloy products	2-50
Non-destructive Testing	
625. IS: 2598-1966 Safety code for industrial radiographic practice	12-50
626. IS: 3657-1966 Radiographic image quality indicators	2-00
627. IS: 3658-1966 Code of practice for liquid penetrant flaw detection ...	2-00
628. IS: 3664-1966 Code of practice for ultrasonic testing by pulse echo method (direct contact)	2-00
629. IS: 3703-1966 Code of practice for magnetic particle flaw detection ...	3-00
Precious Metals	
630. IS: 3541-1966 Code of practice for manufacture of 14 and lower carat gold alloys	1-00
631. IS: 3571-1966 Dental gold solders	1-00
632. IS: 3578-1966 Dental gold alloy wire	2-00
633. IS: 3610-1966 Dental gold foil	1-00
Refractories	
634. IS: 6-1967 Moderate heat duty fireclay refractories Group 'A' (<i>third revision</i>)	2-00
Steel Forgings	
635. IS: 1875-1966 Carbon steel billets, blooms and slabs for forgings, (<i>first revision</i>)	2-00
636. IS: 3261-1966 Carbon steel forgings for shipbuilding industry ...	3-00
637. IS: 3469-1966 Tolerances for steel drop forgings, upset forgings, press forgings and forged bars	4-50

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Steel Tubes, Pipes and Fittings		
638.	IS: 3589-1966 Electrically welded steel pipes for water, gas and sewage (200 to 2 000 mm nominal diameters)	2-00
639.	IS: 3601-1966 Steel tubes for mechanical and general engineering purposes	6-00
640.	IS: 3609-1966 Chrome molybdenum steel, seamless, boiler and super-heater tubes	3-50
Structural Engineering		
641.	IS: 802 (Part I)-1967 Code of practice for use of structural steel in overhead transmission-line towers: Part I Load and permissible stresses	5-50
642.	IS: 804-1967 Rectangular pressed steel tanks (<i>first revision</i>)	6-50
643.	IS: 4000-1967 Code of practice for assembly of structural joints using high tensile friction grip fasteners	4-00
644.	IS: 4014 (Part I)-1967 Code of practice for steel tubular scaffolding: Part I Definitions and materials... ..	2-50
Structural Shapes		
645.	IS: 1173-1967 Hot rolled and slit steel tee bars (<i>first revision</i>)	2-50
646.	IS: 3908-1966 Aluminium equal leg angles	2-50
647.	IS: 3909-1966 Aluminium unequal leg angles	1-50
648.	IS: 3921-1966 Aluminium channels... ..	1-00
649.	IS: 3954-1966 Hot rolled steel channel sections for general engineering purposes	1-50
650.	IS: 3964-1967 Light rails	2-00
Structural Welding		
651.	IS: 1323-1966 Code of practice for oxy-acetylene welding for structural work in mild steel (<i>first revision</i>)	4-00
652.	IS: 2751-1966 Code of practice for welding of mild steel bars used for reinforced concrete construction	5-50
653.	IS: 3525-1966 Code of practice for use of metal arc welding for hull construction of merchant ships in mild steel... ..	4-00
Welding, General		
654.	IS: 815-1966 Classification and coding of covered electrodes for metal arc welding of mild steel and low alloy high tensile steel (<i>first revision</i>)	5-50
655.	IS: 3600-1966 Code of procedure for testing of fusion welded joints and weld metal in steel	5-50
656.	IS: 3613-1966 Acceptance tests for wire flux combinations for submerged-arc welding	4-50
Wrought Steel Products		
657.	IS: 1835-1966 Steel wire for ropes (<i>first revision</i>)	2-00
658.	IS: 3747-1966 Steel for flanging and pressing	1-00
659.	IS: 3835-1966 Aluminized steel core wire for aluminium conductors (ACSR)	1-50
660.	IS: 3885 (Part I)-1966 Steel for the manufacture of laminated springs (railway rolling stock): Part I Flat sections	2-00
661.	IS: 3945-1966 Steel for naval purposes	3-50
662.	IS: 4030-1967 Cold rolled carbon steel strip for general engineering purposes	3-50

Sl No.		Rs
TEXTILE		
Aeronautical Textiles		
663.	IS: 1045-1966 Light cotton fabric for covering surfaces of aircraft (first revision)	1-50
664.	IS: 2196-1966 Linen sewing threads for aeronautical purposes (first revision)	2-00
665.	IS: 3846-1966 Rot-proofed cotton tapes for aeronautical purposes ...	2-00
Chemical Test Methods		
666.	IS: 3456-1966 Method for determination of water soluble matter of textile materials	1-00
667.	IS: 3522-1966 Method for estimation of common preservatives used in textile industry	4-50
668.	IS: 3561-1966 Method for determination of dimensional changes on washing of woven silk fabrics	1-50
669.	IS: 3856-1966 Method for testing flax fabrics for resistance to attack by micro-organisms	2-50
Colour Fastness of Textiles, Materials Determination of		
670.	IS: 687-1966 Method for determination of colour fastness of textile materials to washing: Test 1 (first revision)	1-00
671.	IS: 764-1966 Method for determination of colour fastness of textile materials to washing: Test 3 (first revision)	1-00
672.	IS: 974-1966 Method for determination of colour fastness of textile materials to steaming (first revision)	1-00
673.	IS: 3857-1966 Method for determination of colour fastness of textile materials to acid feltings: Mild... ..	1-00
Cotton Fabrics, Khadi		
674.	IS: 3769-1966 Pugree cloth, cotton khadi	2-00
675.	IS: 3770-1966 Dosuti, cotton khadi	2-00
676.	IS: 3771-1966 Long cloth, cotton khadi, bleached	1-50
677.	IS: 3772-1966 Mazri, cotton khadi, scoured	1-50
678.	IS: 3773-1966 Napkins, cotton khadi, bleached	2-00
679.	IS: 3774-1966 Table cloth, cotton khadi, bleached	1-50
680.	IS: 3775-1966 Huckaback towels, cotton khadi, bleached	2-00
681.	IS: 3776-1966 Bedsheets, cotton khadi, bleached	1-50
682.	IS: 3777-1966 Dusters, cotton khadi, bleached	1-50
683.	IS: 3778-1966 Dungri cloth, cotton khadi, bleached	1-50
684.	IS: 3779-1966 Sheeting cloth, cotton khadi, bleached	1-50
685.	IS: 3780-1966 Lining cloth, cotton khadi, dyed	1-50
686.	IS: 3781-1966 Honeycomb towels, cotton khadi, bleached... ..	2-00
687.	IS: 3782-1966 Sponge cloth, cotton khadi, grey	1-50
688.	IS: 3784-1966 Cotton khadi, bleached for general purposes	1-50
Dyestuffs, Determination of Strength		
689.	IS: 3859-1966 Method for determination of strength of water soluble azo dyes by reduction with titanium trichloride	2-00
Hosiery		
690.	IS: 3530-1966 Rib-knitted cotton stockings	2-50
691.	IS: 3555-1966 Cotton singlets, white with blue welting	2-50

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Sl. No.		Rs
692.	IS: 3556-1966 Plain-knitted sleeveless cotton vests	2-50
693.	IS: 3604-1966 Round neck jerseys	3-00
694.	IS: 3617-1966 Gents' worsted pullovers, one-piece (interlock-knitted)...	3-00
Jute Bags		
695.	IS: 3790-1966 Hessian bags	3-00
696.	IS: 3794-1966 Liverpool twill (L-twill) bags	1-00
697.	IS: 3984-1967 DW-flour bags	2-50
Jute Fabrics		
698.	IS: 3667-1966 B-twill cloth	2-00
699.	IS: 3668-1966 Liverpool twill (L-twill) cloth	1-00
700.	IS: 3750-1966 Jute corn sack cloth... ..	1-00
701.	IS: 3751-1966 Heavy cee cloth	1-00
702.	IS: 3966-1967 DW-Flour jute cloth	2-00
Jute Mills Accessories		
703.	IS: 3825-1966 Inset mail wire healds for jute weaving	1-00
Packaging		
704.	IS: 3353-1966 Code for inland packing of wool hosiery yarn and goods	1-50
705.	IS: 3862-1966 Packing of rayon staple fibres	1-00
Physical Test Methods		
706.	IS: 744-1966 Method for determination of wool fibre diameter-projection microscope method (<i>first revision</i>)	3-00
707.	IS: 3674-1966 Method for determination of micronaire values of cotton fibres	3-00
708.	IS: 3675-1966 Method for determination of bundle strength (tenacity) of cotton fibres	2-50
Sampling of Textiles, Methods for		
709.	IS: 3919-1966 Methods for sampling of cotton fabrics for determination of physical characteristics	2-50
710.	IS: 3920-1966 Methods for sampling of cotton yarn for determination of physical characteristics	2-00
Spinning Machinery Components		
711.	IS: 2510-1966 Bottom rollers for cotton rings spinning frames (<i>first revision</i>)	2-50
712.	IS: 3523-1966 Travellers for ring spinning frame	1-50
713.	IS: 3698-1966 Spindles for warp ring frames	2-00
714.	IS: 3934-1966 Aluminium plug type spindles for spinning and doubling frames	2-00
715.	IS: 3977-1967 Bottom rollers for speed frames	2-00
Terminology		
716.	IS: 1324-1966 Glossary of textile terms relating to man-made fibre and fabric industry (<i>first revision</i>)	8-00
717.	IS: 3871-1966 Glossary of terms relating to fibre ropes and cordages	4-50

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Textile Mill Accessories (Other than Jute Mills)		
718.	IS : 3619-1966 Wooden staves for cotton healds... ..	1-00
719.	IS : 3625-1966 Warp tubes for use on aluminium plug type spindles ...	2-00
720.	IS : 3833-1966 Flyer bobbins	2-50
721.	IS : 3834-1966 Lease rods for cotton looms	1-50
Weaving Machinery Components		
722.	IS : 3627-1966 Cloth rollers for plain cotton looms	1-50
723.	IS : 3683-1966 Drop wires for warp stop motions	2-50
724.	IS : 3789-1966 Bare cloth take-up rollers for plain cotton looms ...	1-00
Wool Fabrics, Khadi		
725.	IS : 3783-1966 Blankets, superior, brick-red, wool khadi	2-50
Yarn and Similar Structures		
726.	IS : 3566-1966 Viscose rayon cut staple (spun) yarn	1-50
727.	IS : 3567-1967 Cotton yarn for covering conductors	2-50
Unclassified		
728.	IS : 3689-1966 Conversion factors and conversion tables for yarn counts	5-00
MISCELLANEOUS		
729.	IS : 796-1966 Glossary of cataloguing terms (<i>first revision</i>)	14-50
730.	IS : 3083-1966 Code of practice for the processing of microfilms (silver halide)	1-00
731.	IS : 3786-1966 Method for computation of frequency and severity rates for industrial injuries and classification of industrial accidents ...	5-00
INDIAN STANDARDS WITHDRAWN DURING 1966-67		
1.	IS : 396-1953 Bare annealed high-conductivity copper wire for electrical machinery and apparatus (<i>tentative</i>)	
2.	IS : 592-1954 Audio output transformers for radio receivers, amplifiers, small transmitters and similar other purposes (<i>tentative</i>)	
3.	IS : 1037-1957 General purposes low frequency chokes	
4.	IS : 1119-1957 Reversible protected type two-pin plugs and sockets with earthing connections	
5.	IS : 1227-1957 Method for determination of twist in continuous filament rayon yarn and acetate yarn (<i>tentative</i>)	
6.	IS : 1594-1960 Metric sizes of copper wires and conductors for electrical purposes	
7.	IS : 1847-1961 99.7 percent primary aluminium notched bars and ingots for remelting for aircraft purposes	
8.	IS : 2130-1962 Hand compression sprayer for agricultural use	
9.	IS : 2356-1963 Formulations based on phenyl mercury salicylate	
10.	IS : 2357-1963 Formulations based on phenyl mercury acetate	

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR	SL No.	HEADS OF EXPENDITURE	AMOUNT
Rs			Rs
	1.	<i>Pay</i>	
1 130 176-54	1.1	Officers	1 510 460-32
1 381 733-90	1.2	Staff	1 476 851-40
	2.	<i>Allowances</i>	
333 390-35	2.1	Officers	545 172-49
874 389-93	2.2	Staff	1 019 840-94
112 705-16	3.	CHS and Other Medical Charges	108 045-13
	4.	<i>Provident Fund</i>	
169 472-00	4.1	Contribution to CPF	168 571-00
94 430-00	4.2	Interest to CPF	111 569-00
5 418-00	4.3	Interest to GPF	10 101-00
31 683-00	5.	Contribution to Pension Fund	73 758-00
11 708-64	6.	Staff Welfare	16 421-28
	7.	<i>TA</i>	
71 251-59	7.1	Overseas	89 516-98
239 457-12	7.2	Officers and Staff	306 318-49
40 659-78	7.3	Committee Members	43 713-75
	8.	<i>Subscription to International Organizations</i>	
35 550-00	8.1	ISO	130 681-85
30 005-00	8.2	IEC	69 800-60
	9.	<i>Production</i>	
444 125-48	9.1	Standards	322 644-02
265 271-90	9.2	Bulletin	284 956-10
142 383-00	9.3	Calculation Aids	113 712-81
78 273-74	9.4	Miscellaneous	65 273-64
31-72	10.	Research and Consultation	50-00
49 416-12	11.	Testing Fees	65 496-23
40 456-40	12.	Laboratory Apparatus and Stores	48 401-67
5 581 989-37		CARRIED OVER	6 581 356-70

D I X B

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THE YEAR ENDED 31 MARCH 1967

I N C O M E

PREVIOUS YEAR	SL No.	HEADS OF INCOME	AMOUNT
Rs			Rs
1 031 579·28	1.	Membership Subscription	1 509 303·82
	2.	<i>Sales</i>	
644 522·73	2.1	Standards	697 008·67
202 485·00	2.2	Calculation Aids	253 693·80
3 750·00	2.3	Bulletin Subscription	3 750·00
126 784·89	2.4	Bulletin Advertisements	152 531·59
140 077·30	3.	Sales Commission	81 223·91
1 048 467·49	4.	Certification	1 411 695·91
13 180·00	5.	CHS Contributions	16 293·25
14 032·78	6.	Conferences	14 077·75
90 375·32	7.	Training Programme	10 000·00
62 552·97	8.	Miscellaneous	106 429·83
	9.	<i>Government Grant</i>	
	9.1	From Ministry of Industrial Development and Company Affairs	3 900 000·00
3 400 000·00	9.2	From Ministry of Commerce (Marketing Development Fund) (For Certification Marking of Jute Goods)	121 500·00
127 000·00			

6 904 807·76

CARRIED OVER

8 277 508·53

(Continued)

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR	SL No.	HEADS OF EXPENDITURE	AMOUNT
Rs			Rs
5 581 989-37		BROUGHT FORWARD	6 581 356-70
	13.	<i>Publicity</i>	
2 834-63	13.1	Exhibitions	4 918-29
103 722-65	13.2	Advertising	99 303-28
2 228-06	13.3	Miscellaneous	5 749-98
27 234-57	14.	Conferences	33 425-23
64 811-49	15.	Training Programmes	7 772-54
44 032-68	16.	Library	45 336-39
	17.	<i>Office Expenses</i>	
147 596-91	17.1	Stationery	189 894-19
157 884-94	17.2	Postage	155 953-26
63 014-05	17.3	Telephones	78 879-97
24 354-58	17.4	Recruitment	15 731-44
88 039-29	17.5	Miscellaneous	110 883-26
	18.	<i>Office Equipment</i>	
90 890-27	18.1	Furniture	48 354-24
102 905-54	18.2	Other Equipment	31 455-89
	19.	<i>Buildings</i>	
103 705-41	19.1	Rent and Taxes	160 092-49
110 682-08	19.2	Electricity and Water	105 463-31
32 895-11	19.3	Maintenance	50 318-87
	20.	<i>Local Transport</i>	
—	20.1	Vehicles	—
29 991-30	20.2	Maintenance	32 816-50
1 320-00	21.	Audit Fees	1 500-00
157 994-53	22.	Certification Marking of Jute Goods	192 536-98
161 029-92	23.	Depreciation	182 140-49
			8 133 883-30
		Add excess of income over expenditure	143 625-23
<u>7 099 157-38</u>		TOTAL	<u>8 277 508-53</u>

DIX B — *Contd*

page 23)

THE YEAR ENDED 31 MARCH 1967

INCOME

PREVIOUS YEAR	SL No.	HEADS OF INCOME	AMOUNT
Rs			Rs
6 904 807·76		BROUGHT FORWARD	8 277 508·53

1 94 349·62

DEFICIT

7 099 157·38

TOTAL

8 277 508·53

(Continued)

A P P E N
BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL No.	Rs	Rs	AMOUNT Rs
	1.	<i>Capital Account</i>		
	a)	As per last Balance Sheet	2 531 535-57	
	b)	Add : Excess of Income over Expenditure during the year	143 625-23	
			<u>2 675 160-80</u>	
2 531 535-57	c)	Less : Unspent balance of previous year's grant adjusted	3 816-04	2 671 344-76
	2.	<i>Reserve and Surplus</i>		
	2.1	<i>K. L. Moudgill Prize Fund</i>		
	a)	As per last Balance Sheet	13 800-70	
	b)	Add : Receipt during the year	1 260-50	
			<u>15 061-20</u>	
13 800-70	c)	Less : Expenditure during the year	1 060-00	14 001-20
	2.2	<i>Gratuity Fund</i>		
	a)	As per last Balance Sheet	86 276-85	
	b)	Add : Receipt during the year	42 238-73	
			<u>128 515-58</u>	
86 276-85	c)	Less : Expenditure during the year	27 900-00	100 615-58
	2.3	<i>ISI Second Building and Laboratory Fund</i>		
	a)	<i>Government Grant</i>		
	i)	As per last Balance Sheet	728 520-49	
728 520-49	ii)	Add : Receipt during the year	71 000-00	799 520-49
	b)	<i>Interest-Free Deposits (Repayable within 5 years)</i>		
	i)	As per last Balance Sheet	792 001-00	
	ii)	Add : Receipt during the year	4 000-00	
			<u>796 001-00</u>	
792 001-00	iii)	Less : Refund during the year	8 500-00	787 501-00
<u>4 152 134-61</u>		CARRIED OVER		<u>4 372 983-03</u>

DIX B — Contd

AT 31 MARCH 1967

ASSETS

PREVIOUS YEAR	Sl. No.		AMOUNT
Rs			Rs
		1. <i>Fixed Assets</i>	
	1.1	ISI Building (Manak Bhavan)	
	a)	As per cost value up to 31-3-66	2 081 849.54
	b)	Depreciation w/o up to 31-3-66	(-) 572 844.16
1 509 005.38	c)	Depreciation w/o during the year	(-) 75 047.84
			<u>1 433 957.54</u>
	1.2	ISI Second Building (Manakalaya)	
	a)	Work in progress up to 31-3-66	1 708 370.42
1 708 370.42	b)	Additions during the year	523 574.74
			<u>2 231 945.16</u>
	1.3	Laboratory Equipment	
	a)	As per cost value up to 31-3-66	317 447.24
	b)	Additions during the year	191 223.70
			<u>508 670.94</u>
	c)	Depreciation w/o up to 31-3-66	(-) 74 198.73
243 248.51	d)	Depreciation w/o during the year	(-) 43 325.75
			<u>391 146.46</u>
	1.4	Furniture and Office Equipment	
	a)	As per cost value up to 31-3-66	519 482.04
	b)	Additions during the year	174 362.22
			<u>693 844.26</u>
	c)	Disposed of during the year	(-) 3 021.88
	d)	Depreciation w/o up to 31-3-66	(-) 277 657.43
	e)	Depreciation w/o during the year	(-) 48 629.77
241 824.61	f)	Depreciation adjusted on sale	(+) 2 846.49
			<u>367 381.67</u>
3 702 448.92		CARRIED OVER	<u>4 424 430.83</u>

(Continued)

APPEN
BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL No.			AMOUNT
Rs			Rs	Rs
4 152 134-61		BROUGHT FORWARD		4 372 983-03
298 420-95	c)	Interest-Free Overdraft		182 686-83
	d)	Donations, etc		
		i) As per last Balance Sheet	168 766-42	
168 766-42		ii) Receipts during the year	95 369-50	264 135-92
	e)	Rent of Second Building (5th Floor)		1 315 843-97
5 871-30				
2 746 271-00	2.4	Contributory Provident Fund		2 932 606-00
164 158-00	2.5	General Provident Fund		282 688-00
130 559-00	2.6	Pension Fund		257 143-04
	3. <i>Current Liabilities</i>			
	3.1	Advance Subscription		
		a) For 1967	1 001 861-03	
921 106-56		b) For 1968	100-00	1 001 961-03
	3.2	Advance Fees towards Training Programme and Conferences		2 550-00
—				
	3.3	Sundry Creditors		
		a) Inland	108 487-60	
		b) Abroad	136 165-80	
525 092-73		c) Earnest Money	47 048-51	291 701-91
9 112 380-57		CARRIED OVER		10 904 299-73

DIX B — Contd

AT 31 MARCH 1967

ASSETS

PREVIOUS YEAR	SL No.		AMOUNT
Rs		Rs	Rs
3 702 448-92		BROUGHT FORWARD	4 424 430-83
	1.5	Staff Cars	
	a)	As per cost value up to 31-3-66	132 002-56
	b)	Additions during the year	37 130-10
			<u>169 132-66</u>
	c)	Depreciation w/o up to 31-3-66	(-) 57 337-00
74 665-56	d)	Depreciation w/o during the year	(-) 15 137-13
			<u>96 658-53</u>
	1.6	Library Books	
	a)	As per cost value up to 31-3-66	22 588-97
22 588-97	b)	Additions during the year	3 620-86
			<u>26 209-83</u>
	2.	Investments at Cost	
637 392-22	2.1	Deposits with banks	1 002 535-72
—	2.2	Shares of ISI Employees Consumer 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	2 464 000-00
	b)	Advances to Members	174 585-00
2 746 271-00	c)	Bank Balance	294 021-00
			<u>2 932 606-00</u>
	2.5	General Provident Fund	
	a)	Investment in Defence Certificates	230 000-00
164 158-00	b)	Advances to Members	39 153-00
	c)	Bank Balance	13 535-00
			<u>282 688-00</u>
130 559-00	2.6	Pension Fund	257 143-04
	3.	Current Assets	
704 025-80	3.1	Stock of Printing Paper (at cost)	165 903-66
7 693 509-47		CARRIED OVER	9 204 575-61

(Continued)

APPEN BALANCE SHEET AS

PREVIOUS YEAR		SL. NO.	LIABILITIES	AMOUNT	
Rs				Rs	Rs
9 112 380-57			BROUGHT FORWARD		10 904 299-73

9 112 380-57

TOTAL

10 904 299-73

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 subject to the observations in the separate Audit Report, 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/-

(P. P. Gangadharn)

Accountant General

Commerce, Works & Miscellaneous, New Delhi

DIX B — Contd

AT 31 MARCH 1967

PREVIOUS YEAR		SL No.	ASSETS		AMOUNT
Rs			Rs		Rs
7 693 509-47			BROUGHT FORWARD		9 204 575-61
		3.2	Sundry Debtors		
		a)	Sale of Publications		336 157-41
442 097-02		b)	Advertisements in Bulletin and ISO Souvenir		105 239-30
		4.	Loans and Advances		
		4.1	a) Conveyance Advances to Staff		161 215-58
232 736-24		b)	Advances for Purchases, etc		99 300-03
		4.2	Security Deposits		38 250-00
34 584-00		4.3	Prepaid Expenses		55 975-63
28 398-05		4.4	ISI Employees Consumer Co-operative Store		—
5 000-00		5.	Cash and Bank Balance		
661 119-68		5.1	With Bankers		888 163-27
7 296-41		5.2	In hand (including Imprest)		6 387-81
7 639-70		5.3	Postage stamps in hand		9 035-09
<u>9 112 380-57</u>			TOTAL		<u>10 904 299-73</u>

Sd/-
 (S. K. Sen)
 Deputy Director General
 Indian Standards Institution, New Delhi

APPENDIX C
Principal Officers of
INDIAN STANDARDS INSTITUTION
(As on 31 March 1967)

<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	SHRI B. P. PAL
Vice-Chairman	SHRI A. C. KHANNA
<i>Chemical Division Council (CDC)</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 N. N. CHOPRA
<i>Electrotechnical Division Council (ETDC)</i>	
Chairman	SHRI B. V. BALIGA
Vice-Chairman	SHRI H. V. NARAYANA RAO
<i>Mechanical Engineering Division Council (EDC)</i>	
Chairman	DR B. D. KALELEKAR
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 (TDG)</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 (WAG)</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

S T A F F

Director General:	DR A. N. GHOSH
Deputy Directors General:	SHRI S. K. SEN SHRI B. S. KRISHNAMACHAR
Agricultural & Food Products Department	
Deputy Director/Head	DR HARI BHAGWAN
Chemical Department	
Director	DR SADGOPAL
Civil Engineering Department	
Director	SHRI R. NAGARAJAN
Consumer Products Department	
Director	SHRI A. B. RAO
Electrotechnical Department	
Director	SHRI Y. S. VENKATESWARAN

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Mechanical Engineering Department	
Director	SHRI M. V. PATANKAR
Structural & Metals Department	
Director	DR A. K. CHATTERJI
Textile Department	
Director	SHRI S. M. CHAKRABORTY
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	
Director	SHRI D. DAS GUPTA
Publications Department	
Director	SHRI JAINATH KAUL
Public Relations Department	
Deputy Director/Public Relations Officer	SHRI KAVALJIT SINGH
Statistics Department	
Deputy Director/Head	DR B. N. SINGH
Bombay Branch Office	
Director	SHRI S. SRINIVASAN
Calcutta Branch Office	
Director	SHRI A. P. BANERJI
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

GENERAL INFORMATION

The 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.

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 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 relating to standardization in all its branches.

The Indian Standards Institution is an autonomous body and its overall control rests with the General Council with the Minister for Industrial Development and 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.

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.

Indian Standards, formulated with the agreement and concurrence of the 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. In order to encourage a wider implementation of Indian Standards, conferences on implementation of Indian Standards at State level are held from time to time.

For focusing public attention on the importance of standardization in industrial development and for creating standards-consciousness among different interests, Standards Conventions are held annually at different important industrial centres in the country. Besides, different public relations and publicity media are availed of for publicizing 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 in the country.

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), 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 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 inspection 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 for subjecting them to tests in independent laboratories.

ISI has set up its own laboratory with the primary object of testing certified products manufactured in accordance with Indian Standard specifications and 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 Test House carries out investigational work relating to Indian Standard specifications and amendments to these specifications. In the light of its investigations the Laboratory proposes new, simpler, economical and less time-consuming analytical techniques to the various technical committees of ISI. In addition, it extends facilities for training in testing products according to Indian Standard specifications.

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

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

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.

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 in any one of the 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; and the facility of getting information on standardization both in India and abroad.

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

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, Kanpur and Madras.

The publications of the Institution include:

- a) Indian Standards;
- b) Handbooks and Reports, to cover special subjects;
- c) Sectional (Classified) Lists of Indian Standards, relating to different industries,
- d) ISI Bulletin, published every month;
- e) Standards : Monthly Additions; and
- f) Annual Report.