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INDIAN STANDARDS INSTITUTION (ISI)

EIGHTEENTH  
ANNUAL REPORT  
APRIL 1964—MARCH 1965



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

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## ACKNOWLEDGEMENT

The Indian Standards Institution has great pleasure in expressing its deep debt of gratitude to its members and other individuals and organizations interested in its work for the valuable technical assistance and financial support received from them during the year under review.

The achievements of the Institution, as reflected in the report, represent a mighty co-operative effort put in jointly by the research worker, the Government executive, the industrial engineer, the producer, the seller and the consumer in the common cause of industrial and economic development of the country through standardization and quality control.



# EIGHTEENTH ANNUAL REPORT

OF THE

## INDIAN STANDARDS INSTITUTION (APRIL 1964—MARCH 1965)

### PART I GENERAL REVIEW

The Indian Standards Institution has completed 18 years of its useful service in the industrial and economic development of the country through standardization and quality control. During the year under review, the usual steady pace of all-round progress was maintained. Targets set for establishing new Indian Standards in different fields were exceeded in many cases.

The ISI Certification Marks Scheme, in the ninth year of its operation, registered considerable progress. Targets laid down for achievement by the end of the Third Plan period were not only achieved a year ahead but exceeded by a factor of three. Compulsory certification of jute and jute products for purposes of export was introduced and many new items of consumer interest were covered under the Scheme. There was marked progress in the implementation of Indian Standards and the awareness of the importance of the role of standardization in the industrial development in the country.

The Institution took active part in both technical and administrative work of the international organizations devoted to standardization. An important event of historical significance took place when the International Organization for Standardization (ISO) held, at the invitation of the Institution, its Sixth General Assembly and associated meetings in New Delhi in November 1964 for the first time in the East.

The twentieth annual meeting of the General Council was held on 15 March 1965 under the Chairmanship of its President, Shri T. N. Singh, Union Minister for Industry & Heavy Engineering. Shri Jehangir J. Ghandy and Shri Prabhu V. Mehta were elected as Vice-Presidents for a one-year term ending 31 March 1966. The Executive and Finance Committees of ISI held five meetings each during the year.

**Standards Published**—The number of Indian Standards in force including those under print on 31 March 1964 was 2 546. During the year under report, 426 new standards (as against 337 during the previous year) were sent to press and 14 standards were withdrawn. Thus, the total number of Indian Standards in force, including those under print, on 31 March 1965 was 2 958.

Besides 426 new standards, the Institution also issued during the year 117 revisions and the Hindi translation of IS : 2344-1963 'Specification for chewing tobacco, ZARDA flake type'. Lists of new and revised standards, standard translated into Hindi and standards withdrawn are given in Appendix A ( see P 62 ).

**ISI Certification Marks Scheme** — During the year under review, 400 additional licences were granted, bringing the total licences granted since the inception of the Scheme to 1 050. New items covered included calcium carbide, carbon paper, drafting machines, electric irons, electric radiators, electric hot plates, jute hessian, jute sackings, laboratory deflection pH meters, pressure cookers, sago, sanitarywares, starters for fluorescent lamps and tracing cloth.

The substantial increase in the number of licences granted during the year was mainly due to 133 licences for jute hessian and jute sackings, for the export of which ISI Certification Mark has been made obligatory under the Export ( Quality Control and Inspection ) Act, 1963, and 121 licences for steel, which came into operation only on 1 April 1965.

The annual value of goods covered under the scheme excluding jute hessian and sackings amounted approximately to Rs 970 million. The present export value of jute hessian and sackings is about Rs 1 450 million annually. Since compulsory ISI certification of these two items started only in January 1965, only a part of the annual export was certified during the year under review.

New applications for the grant of licences received during the year were 605 as against 310 in the preceding year. This brought the total applications received to 1 970.

Figure 1 gives graphical representation of the progress of the Scheme during the years.

**Certification Marks Advisory Committee** — A joint meeting of the Certification Marks Advisory Committee, CMAC ( tenth meeting ), and the Advisory Committee on Implementation of Indian Standards, ACIIS ( fourth meeting ), was held on 15 September 1964. The Committees made recommendations for amendment to sub-regulations 6(2) and 6(3) of the Indian Standards Institution ( Certification Marks ) Regulations relating to the use of the Standard Mark and decided that a directory of licensees may be prepared.

The Certification Marks Advisory Committee, at its eleventh meeting held on 13 February 1965 decided, *inter alia*, that a session on the usefulness of ISI Certification Marking should be held during the next Standards Convention.

*Modification of the Provisions of Indian Standards and Recognition of Other Standards* — With a view to expediting the use of the Standard Mark, without in any way affecting the quality of the products covered by the standards, the Director, ISI, modified tentatively some of the provisions



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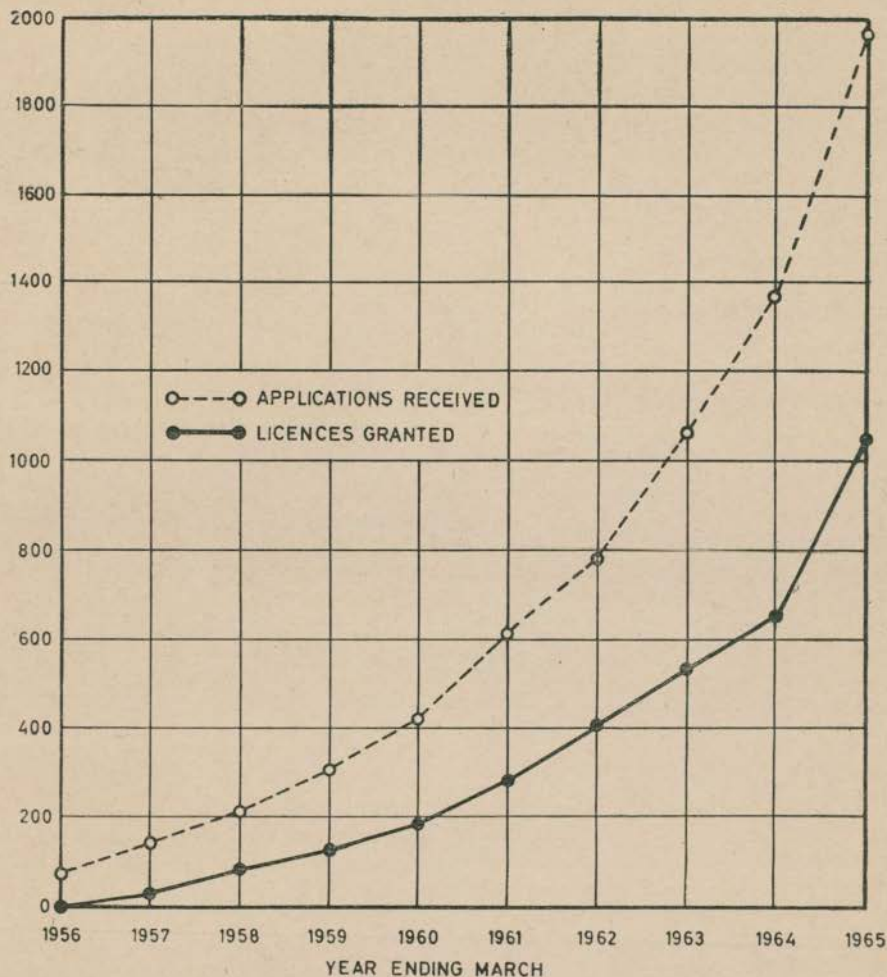


FIG. 1 PROGRESS OF ISI CERTIFICATION MARKS SCHEME

of IS : 899-1956 'Specification for sago (*SABOODANA*)', IS : 1051-1957 'Specification for pyrethrum extracts', and IS : 2086-1963, 'Specification for carriers and bases used in rewirable type electric fuses up to 650 volts (*revised*)'. However, the tentative modifications in IS : 2086-1963 were later withdrawn, as a result of subsequent discussions in the concerned technical committee and the Electrotechnical Division Council.

Under the provisions of ISI (Certification Marks) Regulations, ISI recognized as Indian Standards B.S. 214-1959 'Specification for enclosed



distribution fuseboards for low and medium voltages', B.S. 3422-1961 'Specification for laboratory deflection pH meters' and WHO/SIF/12: R<sub>1</sub>-1958 'Chlordane emulsion concentrates'.

*Competent Authority* — The Government of India, in consultation with this Institution, appointed the Indian Jute Mills Association Quality Control and Inspection Committee (IJMAQIC) as Competent Authority in respect of jute hessian and jute sackings.

*ISI Laboratory* — During the year under review, ISI laboratory received 2 147 samples and tested 2 061 samples. The charges for testing of samples amounted to Rs 226 599.85.

Since the setting up of ISI laboratory, 4 455 samples had been received and 3 907 tested up to the end of the year 1964-65, covering 178 Indian Standard specifications, and the value of the testing work done amounted to Rs 365 209.35.

ISI laboratory took up investigation work on the following items during the year under review:

- a) Mechanical strength and withdrawal force tests of rewirable fuse units,
- b) Insulation test data on storage test of cables,
- c) Leakage current values of open type and immersion tubular heaters,
- d) Suspending test of water dispersible powder,
- e) Creaming and sedimentation test of BHC, emulsifiable concentrates,
- f) Mercury content of phenyl mercury chloride,
- g) Determination of *gamma*-isomer content by chromatographic technique,
- h) Test evaluation of 18- and 20-litre tins,
- j) Fermenting power of yeast, and
- k) Collaborative testing of samples of *KATHA*.

Shri K. P. Madhavan Nair, Research Officer, Pesticides Testing Laboratory, Agricultural College, Kerala State, was given training in the testing of pesticides in the ISI laboratory from 22 February to 4 March 1965.

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

<i>Name of the Laboratory</i>	<i>Product/Type of Test Undertaken</i>
Prototype Production-cum-Training Centre, Government of India, Calcutta	Tensile, transverse and compression tests; special tests on tubes; bend test, hardness test; chemical analysis of plain carbon steel/cast iron, alloy steel, non-ferrous metals, refractory materials, ferro alloys and radiographic examination

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<i>Name of the Laboratory</i>	<i>Product/Type of Test Undertaken</i>
Therapeutics Chemical Research Corporation, Bombay	Analysis, testing and sampling of foods, drugs, chemicals, ores, all kinds of minerals, oils, oilseeds, oilcakes, fertilizers, insecticides, paints, etc
Central Mechanical Engineering Research Institute, Durgapur	Destructive & non-destructive testing of materials; precise measurement of dimensions, length, angle, screw-threads, flatness, squareness; etc
Indian Veterinary Research Institute, Izatnagar, Bareilly	Feeding stuff and fodder, oilcake, grain and by-products, mineral mixture, toxicological materials, lime stone, tissue analysis—bones (Ca & P), (Fl), teeth (flo) and liver (vitamins), & blood analysis (Ca, P & Mg), vitamin, water sample and phenyle

**Implementation of Indian Standards** — Implementation of Indian Standards in industrial and commercial practices of the country continued to receive active attention during the period under review. To pursue systematically, various possible lines of approach were adopted and to assess the success of such approaches, a constant vigil was kept by the Implementation Department to ensure that the decisions regarding implementation of Indian Standards taken by the Government of India and various State Governments were followed. These efforts made it possible to maintain a high level of adoption of Indian Standards (2 254) by central purchase departments of the Government of India.

*Adoption of Indian Standards* — Detailed position of Indian Standards adopted by the various departments of the Government of India is given below:

<i>Department</i>	<i>Number of Indian Standards Adopted Up to 31 Mar 1964</i>	<i>Standards Adopted from 1 Apr 1964 to 31 Mar 1965</i>	<i>As on 31 Mar 1965</i>
Directorate General of Supplies & Disposals (DGSD)	1 955	148	2 103
Defence Research & Development Organizations (DRDO)	993	107	1 100
Research Designs & Standards Organization (Railways) (RDSO)	857	136	993
Posts & Telegraphs Department (P & T)	201	2	203



In addition, various state electricity boards, state public works departments, associations and production units, have intimated the Institution of their decision to adopt all or specific Indian Standards of their interest for purposes of store purchase, guiding design and construction work, etc.

*State Conferences on Implementation of Indian Standards* — A conference on implementation of Indian Standards convened by the State Government was scheduled to be held at Madras on 6 April 1965. Proposals for holding such conferences in Andhra Pradesh, Assam and Rajasthan were under the active consideration of the respective State Governments.

To awaken standards consciousness among manufacturers and consumers in general, approaches through visits to industrial units, purchasing departments, etc, were initiated. As a result of this, various firms have communicated their decision to purchase and manufacture goods according to Indian Standard specifications.

To collect information about manufacturers claiming to produce goods conforming to Indian Standards, as a further aid to implementation, 67 enquiries covering 406 Indian Standards on various items were issued. Information thus collected is made available to all those who approach ISI for assistance in procuring standard goods. The claimants were also approached for joining ISI Certification Marks Scheme and many of them responded favourably.

*Discussion on Implementation of Indian Standards at Industrial Conferences* — The Second Dairy Industries Conference held on 22 January 1965 in Calcutta made the following recommendations:

- a) Dairy equipment manufacturers should be encouraged to produce equipment in accordance with Indian Standards.
- b) Consumers should be urged to indent equipment conforming to Indian Standards.
- c) Purchasing agencies should make it a policy to give an adequate price preference in favour of ISI certified equipment.

West Bengal Printers Conference held in Calcutta on 30 and 31 January 1965 recommended as under:

'This Conference of Printers of West Bengal urges the Government of India to take definite steps so that paper mills accept and manufacture paper and boards according to ISI standards at least 80 percent of their production with definite ISI Certification marks on reams of paper and boards.'

**Company Standardization** — To assist Indian industries in organizing their in-plant standards activity, ISI has, since 1963, organized a number of survey and training programmes at various industrial centres. These training programmes have covered more than 100 industrial units from all



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over the country and have led to initiation of in-plant standards activity in many of the units.

During the period under review, the Institution organized the following training and survey programmes under its project of promoting and developing standardization activity in Indian industries:

- a) *Training Programme* — A training programme for establishment of company standardization was held at Mussoorie from 6 to 19 May 1964 in which 34 participants from 30 industrial organizations from all over the country participated. The programme provided detailed training in standardization methods and techniques with a thorough indoctrination in basic principles and practices.

Reports received about the activities of the participants to the above course indicated that positive steps are being taken by many of them in establishing company standards departments in their respective organizations.

- b) *Survey Programmes* — A four-week Survey Programme was organized in collaboration with the Calcutta Productivity Council from 7 September 1964. Nine participants representing eight organizations attended the programme which aroused great interest among the participants to organize in-plant standards activity in their respective organizations.

*Programme for Promotion of Company Standardization During 1965* — For further propagation of company standardization activity and for taking advantage of overseas experience towards further propagation of the movement, ISI has obtained the services of a United Nations Expert, Mr. Hans E. Riebensahm, Ob.—Ing. VDI from MaK Maschinenbau Kiel AG, West Germany, for a period of one year. During his stay in India, the following programmes have been planned for 1965:

- a) *Conferences on Management and Company Standardization* — To promote company standardization activity through top management support, conferences were organized jointly by ISI and the National Productivity Council in collaboration with the Local Productivity Councils at Jullundur ( 1 February 1965 ), Bombay ( 22 February 1965 ), Madras ( 8 March 1965 ) and Calcutta ( 22 March 1965 ).
- b) *Factory Visits* — For making surveys of the present activities of the firms relating to company standardization and for interesting them in further work in this direction, sixteen factories were visited till the end of March 1965 in Jullundur, Bombay, Madras and Calcutta regions. Visits to some more factories at Bombay and Jamshedpur were under consideration.
- c) *Survey Programmes* — To train a group of participants to survey and evaluate the state of existing company standardization practices in their respective firms as a first step towards the establishment of an

- organized standards activity, the survey programmes would be organized in collaboration with the National Productivity Council and the Local Productivity Councils at Bombay ( 20 April - 22 May 1965 ), Coimbatore ( 10 May - 22 June 1965 ) and Hyderabad ( 14 July - 24 August 1965 ).
- d) *Training Programmes* — To give detailed training in standardization methods and techniques to create a nucleus of standards engineers capable of organizing a formalized standards activity in the country, three residential courses would be organized by ISI to be held at Simla ( 1 - 11 June 1965 ), Bangalore ( 2 - 12 August 1965 ) and Darjeeling ( 11 - 21 October 1965 ).
- e) *Seeming Programme* — At the conclusion of the foregoing programmes, a seeming programme would be held at Manak Bhavan, the headquarters of Indian Standards Institution, New Delhi, from 15 to 18 November 1965.

**Training of Standards Engineers** — ISI has been operating for the last seven years its own training scheme with the object of overcoming the shortage of technical personnel. To assist in the field of standardization of other developing countries of Asia and Africa which have similar problems, the Institution offered last year to accommodate in its training programme a few trainees from the neighbouring countries.

*Training of Overseas Standards Engineers under the Colombo and Special Commonwealth African Assistance Plans* — The Government of India agreed to sponsor ISI scheme for training engineers in the field of standardization, drawn from developing countries of Asia, Africa and Latin America under its various training programmes. Accordingly, seven trainees — 3 from Malaysia and 2 each from the Republic of Philippines and Thailand — received training for about four months in ISI during the year.

*Training of Engineers from Ceylon in Steel Standardization* — Two officers of the Ceylon Steel Corporation, also received training in steel standardization for about 8 weeks in ISI under the Colombo Plan. The Ceylon Government is considering to set up with technical and economic assistance from USSR, a steel re-rolling mill with a capacity for rolling approximately 90 000 tonnes per annum of merchant sections and wire and wire products.

**Library and Information Services** — The libraries of the Institution at the Headquarters and in Branch Offices at Bombay, Calcutta, Kanpur and Madras continued to render useful service to ISI members and others in disseminating information about standards and specifications. During the period under review, 9 714 new publications were accessioned in the library at the Headquarters, bringing the total collection of standards and technical publications to more than 132 867. The number of scientific and technical journals received was 452 including 16 new journals added during the year.



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Nearly 51 000 publications were either consulted or loaned out from the Headquarters library and 79 bibliographies were prepared for the use of technical personnel and committee members. Arrangements were also made for translation into English of standards and other literature in foreign languages.

**Membership** — The subscribing membership of the Institution increased from 3 091 to 3 520. The revenue realized through this source was Rs 0·897 million as against Rs 0·809 million in the previous year. A graphical representation of the increase in subscribing membership is given in Fig. 2.

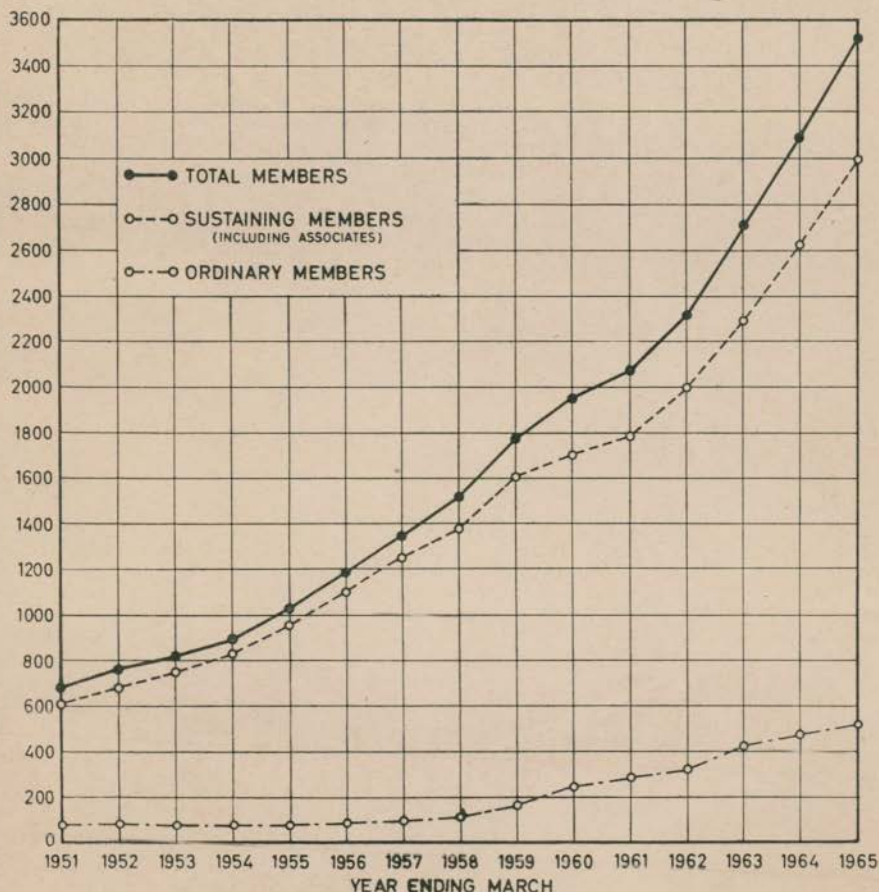


FIG. 2. ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS



**Public Relations** — During the period under review, several steps were taken to create greater standards-consciousness, to propagate ISI Certification Marks Scheme and to further the cause of industrial and economic development through standardization.

- a) *Press Notes* — 960 press notes on published and draft Indian Standards and other important activities of ISI were issued.
- b) *Display Advertisements* — Display advertisements highlighting the importance of ISI Certification Marks Scheme and advantages of joining ISI as a subscribing member were released to the press.
- c) *Outdoor Publicity* — ISI activities were also publicized through the media of outdoor publicity such as cinema slides and bus panels.
- d) *Articles, Write-Ups, Reviews, etc* — A number of articles, write-ups resume, reviews, etc, about standardization and activities of ISI in different fields were contributed to newspapers, periodicals, directories, technical journals, reference books, etc.
- e) *Radio Broadcasts* — The following two group discussions among ISO delegates were broadcast in English from Delhi Station of All India Radio:

<i>Subjects</i>	<i>Broadcast by</i>	<i>Date</i>
Standards in Industry	Prof. E. A. Wegelius (Finland) Mr. Roger E. Gay (U.S.A.) Mr. N. Ludwig (West Germany) Dr. K. L. Moudgill (Moderator)	14 January 1965
How standardization protects the consumers and helps international trade	Dr. Amin Sharif (Lebanon) Mr. A. L. Stewart (Australia) Mr. Rowland Hill (Canada) Shri J. J. Ghandy (Moderator)	15 February 1965

- f) *Exhibitions* — ISI participated in the following exhibitions held in different parts of the country where Indian Standards, other literature and certified products bearing ISI Mark were prominently displayed:
  - 1) Exhibition on Food Adulteration organized by the National Consumer Service in New Delhi from 2 to 5 October 1964.
  - 2) Exhibition on Food Adulteration organized by the National Consumer Service from 5 to 11 January 1965 as a part of Industrial Exhibition held in Durgapur on the occasion of sixtyninth Session of Indian National Congress.
  - 3) Indian Leather Fair sponsored by Indian Industries Leather Fair Society in Madras from 25 to 31 January 1965.

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- 4) Exhibition on Food Adulteration organized by the Health Department of Municipal Corporation of Delhi from 27 February to 2 March 1965.
- 5) *New York World's Fair* — A panel devoted to Indian Standards Institution was put up in the Indian Pavilion in the New York World's Fair with the following text:

“A growing range of products from sewing machines and fans to industrial instruments produced to international standards. Quality control and standardization supplement traditional craftsmanship. The Indian Standards Institution lays down standard specifications for materials, products, and practices, and promotes quality control. It issues licences to manufacturers for providing third-party guarantee about quality of products. It also collaborates with several international standards organizations.”

- h) *Intensive Publicity* — On the occasion of the Sixth Triennial General Assembly and associated meetings of International Organization for Standardization ( ISO ) held in New Delhi in November 1964, intensive publicity for ISI activities was done through press advertisements, press releases including features, articles, photographs, radio broadcasts and press conferences.

**K. L. Moudgill Prize** — The seventh K. L. Moudgill prize for the year 1964 of the value of Rs 1 000·00 was awarded to Dr. Gopal Shanker Hattiangdi, Chief Chemist, Hindustan Lever Limited, Bombay, by Dr. Zakir Husain, Vice-President of India on 9 November 1964 at the inaugural function of ISO General Assembly, at New Delhi.

**Finances** — A certified statement of accounts for the year under review appears in Appendix B ( *see* P. 82 ). Total income of ISI from various sources, such as contributions of the Government of India, membership subscription, sale of standards and certification marks fee, amounts to Rs 6 384 404·24 as against an expenditure of Rs 6 450 782·40. In addition, consideration may be given to the direct contribution made by way of expenses incurred by committee members from government and private organizations to attend meetings of ISI within India and abroad; besides, several organizations, both government and private, have undertaken testing work and also supplied samples. Such invisible contribution for the year under report is estimated at Rs 1 117 718·75.

**Leo B. Moore Award to Dr. Lal C. Verman** — The Standards Engineers Society (SES) of America announced on 2 September 1964 the award of the Leo B. Moore Medal for 1964 to Dr. Lal C. Verman, Director, ISI in recognition of his services to the cause of standardization. The Medal named after Prof. Leo B. Moore of the Massachusetts Institute of Technology, instituted in 1963, is ‘the supreme honour granted by the Society’, and is awarded ‘for highest achievement, extraordinary



contribution and distinguished service in the field of standardization and its professional advancement through original research and writing, creative application and development, or professional and public service'. The first award in 1963 went to US Defence Secretary, Mr. Robert S. McNamara.

On behalf of SES, Mr. Rowland Hill presented the Moore Medal to Dr. Verman at the inauguration of the Sixth ISO General Assembly in New Delhi on 9 November 1964.

**Pensionary Benefits** — Pension Scheme, as applicable to Central Government employees, was introduced by ISI in place of Contributory Provident Fund with effect from 1 April 1964. The Scheme, governed by the Liberalized Pension Rules of the Government of India, has been made compulsory for all new entrants and optional for the existing employees.

**Welfare** — In response to a call by Voluntary Blood Transfusion Service of the Ministry of Health, 14 employees of ISI donated blood for the sick, victims of accidents, maternity cases, etc.

Forty-five employees utilized the facilities of ISI Holiday Home at Mussoorie and spent a portion of their leave at the hill station.

**Co-operative Store** — In order to protect their interests against rising prices of commodities of daily use, ISI employees formed a society named ISI Employees Consumer Co-operative Store Limited, to cater to the employees' needs of consumer goods. The store started functioning with effect from 1 February 1965; the Institution has provided rent-free accommodation and necessary staff to run it.

**Branch Offices** — During the year under report, the four Branch Offices of the Institution located at Bombay, Calcutta, Kanpur and Madras continued to render useful service to industry, trade and commerce in their respective zones by disseminating information relating to standardization effecting sale of Indian and foreign standards, enrolling subscribing members, doing inspection work under the ISI Certification Marks Scheme and maintaining liaison with the industry and commerce. Besides, the officers of Bombay Branch Office gave evidence at the Tariff Commission enquiries from time to time.

In order to allow more space for its increased activities, the Calcutta Branch Office was shifted to a new and bigger accommodation. The Bombay Branch Office was also shifted to an alternate accommodation provided by the Life Insurance Corporation of India.

**Second ISI Building** — The construction of the second ISI building was started in March 1964 and the main structure was completed during the year 1964-65. Work relating to services, namely, electrical and water supply installations, was currently in progress. Contracts for the supply and installation of lifts, transformers and switchgears, and air-conditioning have yet to be awarded.

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A sum of Rs 1·817 million was received or promised to be received up to 31 March 1965 by way of interest-free deposits from members, outright donation in cash and kind, etc, details of which are given below:

	( Rs in Thousands )
a) Government grant	729
b) Amount received as interest-free deposit	584
c) Amount received as outright donations	95
d) Interest-free over-draft allowed by the Bank of Baroda	300
e) Material received as donation	34
f) Cash promised as interest-free deposit	17
g) Material promised as outright donation	58
	<hr/> 1 817

The new building project (including laboratory equipment) which according to the original estimate was to cost Rs 3 million was now estimated to cost Rs 4·65 million, the increase in the cost being due to the increase in general price level and floor area provided and the inclusion of air-conditioning equipment.

For collecting the remaining funds required for the completion of the building, an All-India Building Fund Committee was being set up with leading industrialists as its members.

**Women's Advisory Committee (WAC)** — Consequent upon the resignation of Shrimati Raksha Saran from the Chairmanship of WAC, the Executive Committee, EC, at its eightyfifth meeting appointed Shrimati Lilavati Munshi as the Chairman of the Women's Advisory Committee, WAC.

The third meeting of the Women's Advisory Committee was held on 7 April 1964 under the chairmanship of Shrimati Lilavati Munshi. Besides having business discussions, Mrs. M. S. Thompson, Secretary, Women's Advisory Committee of BSI, who made a brief halt in New Delhi on her way to Australia, also addressed the meeting and enlightened the WAC members about the activities of their counterparts in England. A tape-recorded message from the Chairman and members of WAC of BSI containing good wishes and brief account of their activities was played for the benefit of the members.

The Women's Advisory Committee set up a subcommittee to study the activities of WAC of BSI and to chalk out a programme.

**International Activities** — During the period under review, the Institution participated actively in the work of 82 committees of ISO



(see P 36 to 55) and 58 technical committees of the International Electrotechnical Commission (IEC) (see P 55 to 61), and served as an elected member of the Council of International Organization for Standardization (ISO) till the end of 1964.

ISI also held Secretariat of the following 14 technical committees, subcommittees and working groups dealing with subjects of interest to India:

1. ISO/TC 50 Lac
2. ISO/TC 56 Mica
3. ISO/TC 88 Pictorial Markings for Handling of Goods
4. ISO/TC 113 Measurement of Liquid Flow in Open Channels
5. ISO/TC 12/SC1 Inter Conversion of Values
6. ISO/TC 17/WG8 Dimensions of Hot-Rolled Steel Sections
7. ISO/TC 34/SC7 Spices and Condiments
8. ISO/TC 34/SC8 Stimulant Foods
9. ISO/TC 54/WG7 Vetiver Oil
10. ISO/TC 113/WG1 Measurement of Liquid Flow in Open Channels by Velocity Area Methods
11. ISO/TC 113/WG2 Measurement of Liquid Flow in Open Channels by Notches, Weirs and Flumes
12. ISO/TC 113/WG3 Glossary of Terms Relating to Measurement of Liquid Flow in Open Channels
13. ISO/TC 113/WG4 Measurement of Liquid Flow in Open Channels by Dilution Methods
14. IEC/TC 43 Electric Fans

*Sixth General Assembly and Associated Meetings of ISO in New Delhi* — A notable event took place during the year under review when, at the invitation of the Institution, the International Organization for Standardization (ISO) held its Sixth General Assembly and associated meetings in New Delhi from 8 to 21 November 1964, for the first time in the East.

The ISO Conference was inaugurated by Dr. Zakir Husain, Vice-President of India, on 9 November 1964, with Shri T. N. Singh, Union Minister for Industry & Heavy Engineering and President of ISI, presiding over the function.

In all, 543 persons consisting of delegates and observers from 42 countries including India and 7 international organizations together with the ladies accompanying them attended the ISO Conference. Besides, three other countries who could not participate in person were represented by proxy.

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During the Conference, 36 ISO Technical Committees and administrative bodies held their meetings. The ISO Council reviewed the progress of work since its last meeting in June 1963 and noted that 80 new ISO Recommendations (Standards) had been approved. The Council also set up five new technical committees to deal with various important subjects, in addition to a new Co-ordinating Committee for Standardization of the Writing of Dates.

The General Assembly of ISO was attended by representatives of 43 countries out of 51. Apart from considering administrative and other policy matters, the ISO General Assembly elected Shri Jehangir J. Ghandy, Vice-President of ISI, and Chairman of its Executive Committee as President of ISO for a three-year term beginning from January 1965.

The ISO meetings brought to India a large number of distinguished engineers from almost all industrially-advanced countries who freely exchanged views with their Indian counter-parts on matters of mutual interest. At some of these meetings, India along with others championed the cause of developing countries to ensure that special requirements imposed by the stage of their industrial development, climatic conditions and raw materials were built into international standards through the activities of the relevant technical committees.

During the ISO Conference, local visits of technical, historical and general importance; social events and entertainment; excursions to Bhakra-Nangal, Agra, and Bharat Darshan Tour by special air-conditioned trains; special visits to Jaipur and Khajuraho and to Sariska Game Sanctuary were organized.

An All-India Reception Committee was set up under the chairmanship of Dr. Bharat Ram; 241 members consisting of 41 Vice-Chairmen and 200 members joined the Reception Committee, and a sum of Rs 203 000 was collected as subscription.

A special Souvenir was brought out to mark the occasion, and advertisements of the value of more than rupees ninety-five thousand were secured for the publication. In addition an illustrated brochure "India Makes" indicating the part played by ISI in India's industrial development was published for distribution among delegates and abroad generally including the New York World Fair.

A detailed report on these ISO meetings was published in the January 1965 issue of ISI Bulletin.



## PART II DIVISIONAL REPORTS

### 0. INTRODUCTION

**0.1** This Part of the report gives, in brief, the record of technical work done by different Divisions and Sections of the Institution during the year 1964-65.

**0.2 Progress of Standards** — During the period under review 426 new Indian Standards were adopted and sent to press; 117 were revised ( *see* Appendix A); 572 new proposals for formulation of Indian Standards were received and 417 proposals ( including some made during the previous year ) were accepted and referred to various committees for further processing.

Figure 3 gives graphical representation of the growth of standards ( *see* P 21 )

**0.3 ISI Committees and Their Membership** — As on 31 March 1965, 1 486 committees of the Institution were at work for formulation of Indian Standards with a membership of 17 494 experts drawn from different interests — manufacturers, consumers, research and technical organizations, purchasers, and government departments.

Figures 4 and 5 show the rapid increase in the growth of committee membership and of ISI Committees and their activities ( *see* P 22 )

**0.4** Cumulative information about the work of different Divisions and Sections of the Institution is given in Table 1.

**TABLE 1 RECORD OF ISI TECHNICAL DIVISIONS AND SECTIONS  
(FOR THE YEAR 1964-65)**

[ For details of standards published and under print during 1964-65 ( *see* Appendix A ) ]

DIVISION OR SECTION	NO. OF COMMITTEES	NO. OF MEETINGS	NEW STANDARDS AND REVISED STANDARDS PUBLISHED AND UNDER PRINT	AMENDMENTS TO STANDARDS	DRAFT STANDARDS CIRCULATED	NEW SUBJECTS TAKEN UP
Agricultural and Food Products	119	78	62	27	62	48
Chemical	342	217	108	35	96	71
Civil Engineering	214	102	83	18	66	66
Consumer Products	58	42	28	1	24	23
Electrotechnical	115	80	59	37	61	23
Mechanical Engineering	248	117	75	20	73	82
Structural & Metals	251	79	68	18	63	51
Textile	117	87	57	18	55	49
Miscellaneous	22	38	3	—	3	4
<b>TOTAL</b>	<b>1 486</b>	<b>840</b>	<b>543</b>	<b>174</b>	<b>503</b>	<b>417</b>

## 1. AGRICULTURAL AND FOOD PRODUCTS DIVISION

**1.1** During the year under review the Agricultural and Food Products Division Council devoted considerable attention to the formulation of standards that would assist in augmenting agricultural production which is essential in the context of the existing food shortage in the country. Emphasis was, therefore, laid on the standards for improved agricultural implements and quality seeds. The standards finalized for publication on farm implements included thresher, *Olpad* type; pruning saw; rubber draining and tapping knife; *DAH*, jungle cutting; secateurs; bill hook, and budding and grafting knife, combined. Another series of 15 Indian Standards on farm implements had reached an advanced stage of finalization. The standards for seeds included those for tomato, garden beet, *BHINDI*, bean, pea, carrot, cabbage, cauliflower, turnip, brinjal and radish. Standards for grades of fresh vegetables like peas, cauliflower, cabbage, carrot, brinjal and tomato, and those for canned fruits, such as mango, pineapple and orange segments were covered. Pesticides and spraying equipment so necessary for crop protection also received due consideration.

The other standards published during the year under review covered consumer articles, such as ice-cream, cheese, soluble coffee, fish products like dried white baits and dried and laminated Bombay duck, and frozen frog legs.

**1.2** The Agricultural and Food Products Division Council held its annual meeting on 12 March 1965. In order to expedite its work, the Edible Starches, Confectionery and Cereal Products Sectional Committee, AFDC 10, was split up into three sectional committees, namely:

- a) Bakery and Confectionery Sectional Committee, AFDC 31;
- b) Processed Cereals and Pulses Sectional Committee, AFDC 32; and
- c) Edible Starches Sectional Committee, AFDC 33.

Besides, a new sectional committee for alcoholic drinks ( AFDC 30 ) was set up to formulate Indian Standard specifications for beer, rum, whisky, brandy and wines.

**1.3** Sixty-two Indian Standards formulated by the Agricultural and Food Products Division Council, which were sent to the press during the year under review, are given in Appendix A.

## 2. CHEMICAL DIVISION

**2.1** During the year under report, the Chemical Division prepared standards some of which fulfilled long felt needs of manufacturing and consuming interests. Among the subjects covered by these standards, special mention



may be made of barytes for chemical industry and oil-well drilling; nitrobenzene, technical; sulphanilic acid, technical;  $\beta$ -naphthol;  $\alpha$ -naphthylamine; aniline, technical; myrobalan extract; methods of test for petroleum and its products, Part III; method for temperature measurement of petroleum and its products, Part II; laundry soaps; radiator hose; tables for alcoholometry; and by-products of lac.

**2.2** During the period under report, 85 new subjects were approved for standardization.

**2.3** The various committees under the Chemical Division made special studies and collected important data, particularly in respect of adhesives, clinical thermometers; coal and coke, essential oils, gasoline, kerosine, leather, plaster of paris, thermal-insulating materials, treated fabrics, vegetable oils and vulcanized rubbers.

**2.4** The Standing Working Committee of the Chemical Division met on 10 July 1964, and the Chemical Division Council held its annual meeting on 22 March 1965.

**2.5** To cope up with the expanding work of the Inks and Allied Products Sectional Committee, CDC 13, and for giving more attention to the subject of printing inks, it was decided to bifurcate the existing Inks and Allied Products Sectional Committee, CDC 13, into two committees, namely, (i) Inks and Allied Products, CDC 13; and (ii) Printing Inks and Allied Products, CDC 47. Further, to meet the pressing need for formulation of national standards for polishes for different items like metals, rubber mattings and tiles, furniture and connected items, such as cobblers' wax, stick wax, cold finishing compositions for footwear, ski waxes, etc, Sectional Committee for Polishes ( CDC 48 ) was set up.

**2.6** One hundred and eight Indian Standards formulated by the Chemical Division, which were sent to press during the year under review, are given in Appendix A.

### **3. CIVIL ENGINEERING DIVISION**

**3.1** During the period under report standards on a number of important subjects were published. Of these, special mention may be made of the revision of the code of practice for plain and reinforced concrete and the loading standards which incorporate many important changes bringing the various provisions abreast of recent technological advances and in line with modern thinking on the subjects; similarly revision of the method of measurement of building works brings the earlier provisions up-to-date and clarifies many issues raised during the wide implementation of this standard. Among the new standards published, mention may be made of the specification for integral cement waterproofing compounds, and for steel scaffolding, and recommendations for preferred dimensions for storey heights.

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**3.2** Among the standards under print, standards relating to stage discharge relation and tidal flow measurement; and codes of practice for design and construction of pile foundations, and foundations for reciprocating type machines and design and construction of septic tanks — large installations, are of special importance.

**3.3** Of the work in hand, attention may be drawn to the codes of practice for the design and construction of reinforced and prestressed concrete structures for the storage of liquids, selection and use of heavy industrial floor finishes, detailing of reinforcement in reinforced concrete structures, laying of cast iron pipes, industrial ventilation, and safety in compressed air work, specification for low density polythene pipes for cold water services, standard relating to frictional resistance in straight pipes, and standard classification of bricks.

**3.4** The Building Division Council was redesignated as Civil Engineering Division Council.

**3.5** Prof. M. S. Thacker, Member, Planning Commission, Government of India, was elected Chairman of the Civil Engineering Division Council for a term of three years, at the twelfth meeting of the Division Council held on 17 April 1964. One of the important subjects considered by the Council at this meeting related to the formulation of national standards in the field of multi-purpose river valley projects. The Council felt the urgent need for taking up the work of standardization in this field as an integral part of standardization movement in civil engineering and approved the recommendations of the Advisory Committee for Standardization in Multi-Purpose River Valley Projects to set up 18 new sectional committees.

**3.6** Eighty-three Indian Standards formulated by the Civil Engineering Division, which were sent to press during the year under review, are given in Appendix A.

### **4. CONSUMER PRODUCTS DIVISION**

**4.1** The Consumer Products Division Council which was inaugurated on 17 March 1964, started in right earnest its task of establishing Indian Standards for various items of consumer interest including those for household and outdoor use and for use in hospitals, schools and other institutions of public importance.

**4.2** During the year, a number of preliminary draft specifications were proposed on important items including scalpels and knives, hypodermic syringes and needles, blood pressure apparatus, stethoscopes, anaesthesia equipment, sterilizers, incubators, dressing drums, etc. Formulation of Indian Standards in the fields of surgical instruments, medical equipment and hospital appliances has been taken up for the first time. Much work has been done by technical institutions in this field in the country. ISI is taking due advantage of the pioneering work.



**4.3** During the year, the following Sectional Committees held their inaugural meetings at which scope of their work was discussed and sub-committees set up to deal with specific subjects allotted to them:

- a) Classification and Nomenclature of Surgical Instruments and Medical Appliances, CPDC 10;
- b) Surgical Instruments, CPDC 11;
- c) Medical Glass Instruments and Appliances, CPDC 12;
- d) Anaesthesia, Resuscitation and Allied Equipment, CPDC 13;
- e) Hospital Equipment, CPDC 14;
- f) Dental Equipment, CPDC 15; and
- g) Domestic Hardware, CPDC 17.

**4.4** The Consumer Products Division Council held its second meeting on 19 March 1965; its Standing Working Committee had met earlier on 22 October 1964. Four new sectional committees were set up to deal with important subjects of (a) fountain pens and ball point pens; (b) domestic hardware items, such as charcoal *DHOB*I press iron, medical baths for limbs, buckets, padlocks, etc; (c) travel requisite items, such as suitcases, holdalls, brief cases and the like required by the general consumer; and (d) surgical dressings including sanitary auxiliaries.

**4.5** Twenty-eight Indian Standards, given in Appendix A, were formulated by the Consumer Products Division during the year and sent to press.

## **5. ELECTROTECHNICAL DIVISION**

**5.1** During the period under report, the standards published by the Electrotechnical Division covered a number of important subjects. Of these mention may be made of revisions of specifications for light electrical appliances, such as electric irons, electric radiators and electric hot plates, etc, which lay down minimum performance requirements and ensure personal safety against electric shock. Other notable subjects covered include textile motors, namely, loom motors and card motors; dimensions of vertical shaft motors for pumps; types of construction and mounting of motors; ac circuit breakers; ac contactors; electronic components, such as fixed carbon film resistors and rotary wafer switches; methods of measurements on radio receiver and hearing aids; and measurement of noise emitted by motor vehicles.

**5.2** Special mention may also be made of completion of work on metricization of conventional types of cables, such as rubber-insulated, pvc insulated, paper-insulated and varnish insulated. Another important achievement in this field was the preparation of specifications for insulated cables with aluminium conductors. These specifications will greatly assist in the substitution of aluminium for copper as conductor in insulated cables and will save considerable foreign exchange.

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**5.3** The important work in hand included a code of practice for earthing, this code, when published, will be of special interest to electrical engineers in the country. Another notable subject on which sufficient progress was made is the code of practice for climate proofing of electrical equipment.

**5.4** An important standard finalized during the year was the specification for appliance connector and appliance-inlets of the three-pin type. This standard when implemented fully by manufacturers and users will ensure safe connection of supply to appliances. As a natural corollary, no standard is being formulated to cover two-pin reversible type of appliance connectors and inlets to obviate the risks resultant from its reversible nature and lack of effective earth continuity. A recommendation is also with the Central Electricity Board to specify in the Indian Electricity Rules that only three-pin plugs and sockets should be permitted in all wiring installations both for lighting and power circuit and that a time limit should be set for changeover in the already existing wiring installations while it should be made obligatory for new wiring installations.

**5.5** The Standing Working Committee of the Electrotechnical Division Council met on 17 September 1964 and the Electrotechnical Division Council held its annual meeting on 10 March 1965.

**5.6** With a view to accelerating the pace of standardization in the field of electronic components, Electronic Components Sectional Committee, ETDC 25, was re-organized resulting in setting up of the following Sectional Committees:

- a) Capacitors and Resistors Sectional Committee, ETDC 36;
- b) Electromechanical Components for Electronic Equipment Sectional Committee, ETDC 37;
- c) Transformers and Coils for Electronic Equipment Sectional Committee, ETDC 38;
- d) Electron Tubes and Valves Sectional Committee, ETDC 39;
- e) Semi-conductor Devices Sectional Committee, ETDC 40;
- f) Piezo-Electric and Ferromagnetic Materials Sectional Committee, ETDC 41; and
- g) Cables, Wires and Waveguides for Telecommunications Sectional Committee, ETDC 42.

**5.7** The Electrotechnical Division also holds the Secretariat of the Indian National Committee of the International Electrotechnical Commission (IEC) and as such it continued to take active part in the deliberations of several committees of that organization. A detailed account of activities of IEC Committees of interest to India is given in Part III of this Report (*see P 55*).



**5.8** Fifty-nine Indian Standards formulated by the Electrotechnical Division, which were sent to press during the year under review, are listed in Appendix A.

## **6. MECHANICAL ENGINEERING DIVISION**

**6.1** Important subjects covered during the year under review included machine tools and small tools, chemical engineering, marine engineering, instruments, threaded fasteners and rivets, transmission devices and weights and measures.

**6.2** The Engineering Standards Sectional Committee EDC 1 of the Mechanical Engineering Division Council acted as the Secretariat of the National Co-ordinating Committee on Properties of Steam for India, and finalized the Steam Tables including Mollier diagrams for temperature up to 800°C and pressure up to 500 kgf/cm<sup>2</sup> in metric units on the basis of the Russian Steam Tables. This document would be helpful not only to the educational institutions and designers interested in the properties of steam but also to the boiler manufacturing industry in the country.

**6.3** The following new sectional committees were set up by the Standing Working Committee of the Mechanical Engineering Division Council (SWCE) at its twentieth meeting held on 14 August 1964 in New Delhi:

- a) Conveyors, Vertical Hoists and Bucket Elevators, EDC 61;
- b) Compressors, EDC 62;
- c) Lubricating Equipment, EDC 63;
- d) Pneumatic Tools, EDC 64; and
- e) Material Handling Equipment, EDC 65.

In order to bring their scope in line with the corresponding technical committees of the International Organization for Standardization (ISO) — the existing five sectional committees on mining were reorganized by SWCE into the following two sectional committees:

- a) Lifting Chains and Associated Fittings and Components, EDC 49; and
- b) Mining, EDC 50.

**6.4** The Mechanical Engineering Division Council (EDC) held its fifteenth meeting on 17 February 1965 in New Delhi at which activities of the Division since its last meeting were reviewed.

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

- a) Industrial Instruments, EDC 60;
- b) Compressors, EDC 62;

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- c) Lubricating Equipment, EDC 63; and
- d) Material Handling Equipment, EDC 65.

The Sectional Committees discussed their respective scopes of work and set up subcommittees to deal with the subjects allotted to them.

6.6 Seventy-five Indian Standards formulated by the Division, which were sent to the press during the period under review, are given in Appendix A.

## 7. STRUCTURAL AND METALS DIVISION

7.1 The important work done by the Structural and Metals Division during the period under report included the preparation of structural engineers' slide (steel) to assist design engineers in obtaining ready values of structural properties of hot-rolled steel sections, tubes, rivets, bolts, etc, and publication of an Indian Standard giving typical compositions of 14, 12 and 9 carat gold alloys, in view of the promulgation of the Gold Control Order. Some positive steps were taken to ensure the indigenous production of alloy and special steels included in IS: 1570-1961 'Schedules for wrought steels for general engineering purposes'.

7.2 Of the standards finalized for publication, mention may be made of cast iron pipe flanges and flanged fittings for petroleum industry, aluminium bronze ingots and castings for overhead fittings in electrical traction; gold and silver leaves, silver thread, gold and silver embroidery materials, comparison of Indian and overseas standards for wrought steels for general engineering purposes, corrosion resistant steel castings, steel tubes for automotive purposes; foundry pig iron (coke) for general purposes; and code of practice for design of overhead travelling cranes and gantry cranes other than steel works cranes, Part II Mechanical, electrical, inspection and testing.

7.3 Among the draft standards issued for wide circulation special mention may be made of glossary of terms relating to corrosion of metals; interrupted and non-interrupted creep testing of steel at elevated temperatures; specification for hot rolled mild steel strip for cold reduced tinplate; steel for volute, helical and laminated springs (for automobiles and railways rolling stock) steel for marine boilers pressure vessels and welded machinery structures; mild steel rivet bars for shipbuilding; aluminium-coated aluminium alloy sheet, strip and coil for aircraft purposes; aluminium alloy ingots and castings for aircraft purposes; copper strip for electrical purposes with drawn or rolled edges (above 150 mm width); cap copper alloy strip for bullets, cartridge cases and other ammunitions, lead cable; dental gold foils; testing of fusion welded joints and weld metal in steel; code of practice for welding pressure vessels; code of practice for oxy-acetylene welding for structural work in mild steel; high chrome molybdenum steel seamless boiler and superheater tubes; code of practice for cleaning of basis metals prior to electroplating; steel tubes for mechanical and general engineering purposes;



code of practice for hot dip galvanizing of iron and steel; glossary of terms relating to metallic finishes (excluding organic coatings) and glossary of terms used in magnetic particle flaw detection.

**7.4** Important new subjects taken up for standardization include colour code for identification of pig iron; code for designation of ferrous castings; methods of sampling ilmenite and rutile, rock phosphate and baryte ores; light rails for general engineering purposes, oil well drill pipes and fittings; aluminizing of bolts and nuts; and code of practice for tubular steel scaffolding.

**7.5** The Standing Working Committee of the Structural and Metals Division Council (SWCSM) held its fourth meeting on 15 September 1964 and the Structural and Metals Division Council (SMDC) its ninth meeting on 16 March 1965. During the year under review three more sectional committees dealing with non-destructive testing, cranes and allied appliances and metallography and heat treatment were formed and ten existing committees were reconstituted. In addition 32 new subcommittees and panels were set up.

**7.6** Sixty-eight Indian Standards formulated by the Structural and Metals Division, which were sent to press during the period under report, are given in Appendix A.

## **8. TEXTILE DIVISION**

**8.1** Important subjects covered by the Division during the year 1964-65 included standards for camel hair druggets for export, leather roller skins, flats and flats' screws, handloom pile fabric, shuttles for automatic cop changing jute looms, whipcord, braided cotton cord, worsted balaclava caps, wire healds for jacquard weaving, nylon dobby crepe, cotton selvedge tape for electric cables, code for seaworthy packaging of wool hosiery yarn and goods, and code for inland packaging of man-made fibre fabrics and man-made fibre yarns. Indian Standards on important items like Indian hessian, heavy cee jute bags, jute corn sacks and seaworthy packaging of jute products published during the year 1963-64 were withdrawn and circulated in draft form for eliciting technical comments from the concerned overseas consumers with a view to ensuring their adoption by exporters. These standards have since been printed. Indian Standards on grading and physical test methods for different classes of raw silk were revised.

**8.2** The Standing Working Committee of the Textile Division Council (SWCT) held its thirteenth meeting on 19 October 1964 in New Delhi, and the Textile Division Council (TDC) its fifteenth meeting on 16 March 1965 in New Delhi.

During the year seven sectional committees were re-constituted. In order to deal with the work pertaining to all types of jute products, Jute

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Bags Sectional Committee, TDC 41, and Jute Sectional Committee, TDC 3, were amalgamated to form one committee, namely, Jute and Jute Products Sectional Committee, TDC 3.

**8.3** Fifty-seven Indian Standards formulated by the Textile Division, which were sent to press during the period under review, are given in Appendix A.

### 9. SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

**9.1 Documentation (EC 2)** — During the year under report, one standard, namely, IS : 2550-1964 'Glossary of classification terms', was printed. Another standard, namely, IS : 792-1964 'Specification for title-page and back of title-page of book (*revised*)', amalgamating the two standards IS : 792-1956 'Title leaf of a book (*tentative*)' and IS : 793-1956 'Practice for author statement in the title-page of a book (*tentative*)', was under print.

The nineteenth meeting of the reconstituted Documentation Committee (EC 2) was held on 19-21 October 1964. The Sectional Committee finalized Indian Standard code of practice for binding of library books and periodicals, and approved three draft standards for wide circulation, namely, (a) Practice for alphabetical arrangement (revision of IS : 382-1952), (b) Guide for preparation of articles for learned periodicals, and (c) Code of practice for storage and use of microfilms of permanent value.

The Sectional Committee also revised the composition of five sub-committees and three panels.

**9.2 Quality Control and Industrial Statistics (EC 3)** — The Sectional Committee held its first meeting after its reappointment and decided to formulate, in the first instance Indian Standards on important subjects which would greatly promote the knowledge and application of statistical techniques in industry. These included control charts for attributes; control charts for variables; mean, standard deviation and normal distribution; correlation and regression; tests of significance; guide for interpretation of test results using precision data, and glossary of terms in work study.

**9.3 ISI Directorate Standards (EC 5)** — The Committee took up the revision of IS : 786-1965 'Conversion factors and conversion tables' and also prepared an Indian proposal on the selection of specific decimal multiples and sub-multiples of the primary SI (System International) Units for industry, trade and general use, for discussion by ISO/STACO (see 1.6 in Part III).

### 10. STATISTICAL SECTION

**10.1** During the year under review, the Section was actively engaged in the formulation of a number of Indian Standards on methods of sampling



for different types of materials. Preparation of basic standards on control charts, sampling inspection, random sampling methods, work study and other statistical techniques were taken up on a priority basis.

**10.2** The Section continued to scrutinize the draft Indian Standards with the object of introducing, wherever possible, statistical quality control concepts in them. During the year, statistically sound sampling plans were recommended for incorporation in 371 cases and in most of the cases those recommendations were accepted by the concerned sectional committees. In this connection, mention may be made of Indian Standard specifications for methyl parathion emulsifiable concentrates (IS : 2865-1964), asbestos cement building boards (IS : 2098-1964), myrobalan extract (IS : 2716-1964) carpenters' augers (IS : 2852-1964), dry batteries for transistor radio receivers (IS : 2576-1963), gilding metal strip for bullet envelope (IS : 2768-1964) worsted balaclava caps (IS : 2783-1964) and umbrellas (IS : 2920-1964). Efforts for introducing the process control provisions in the standards were also intensified during the year.

**10.3** The Section scrutinized 62 routine inspection schemes referred to it for the issue of licences under the ISI Certification Marks Scheme. The routine inspection data collected from different licencees in accordance with the recommended schemes were also statistically analysed to find out whether or not the certified products conformed to the relevant Indian Standards as also to examine the adequacy of the recommended frequencies of testing and inspection.

**10.4** The Section also carried out extensive investigations and statistical analysis of the data which were found to be extremely helpful. These pertain to the multifarious facets of the standardization work, namely:

- a) evaluation of the specification requirements, such as the minimum percentage of particle sizes for various grades of coffee powder, limits for moisture and crude fat for groundnut oil cake, the minimum life and luminous intensity requirements for gas mantles, etc;
- b) laying down of tolerances, such as permissible errors for the gross and net weights of instant coffee tins;
- c) determination of optimum weights of gross samples and increments for sampling of bulk materials like coal and iron ore; and
- d) correlation studies for effecting reduction in testing, such as decrease in the number of capacity verifications for metal containers achieved by increasing the number of checkings of the height and base dimensions.

**10.5** Comments and suggestions for improvement were sent on a number of draft proposals for ISO and overseas standards bodies pertaining to manganese ore, iron ore, statistical terminology and symbols necessary for the proper formulation of ISO standards, fats and fatty oils, asbestos cement products, and oil seeds.

## 11. RESEARCH AND INVESTIGATION

**11.1** During the year under review, the Institution carried out analytical studies in different fields for collecting data for formulation of Indian Standards.

In this connection, active assistance and close cooperation were received from national, state and private laboratories, testing organizations and research institutions. The Institution records its deep appreciation and gratitude to these organizations for the assistance received from them.

**11.2** Details of the research and investigations carried out during the period under report are given in the following paragraphs:

**Agricultural and Food Products Division** — Research and investigations related to the analysis of biscuits; fodder yeast; malt extract; *MAKHANNA* products; *RASOGOLLA* and *BURFI*; soluble coffee; roasted and ground coffee; black and green tea; pork sausages, fresh; colours—edicol supra greens BS, fast red E, annatto; chewing tobacco, minced type; cigarettes, tobacco mixture; emulsifiable concentrates; water dispersible powder concentrates; malathion, technical; BHC smoke generators; chlordane, technical; sulphur dusting powder, wettable sulphur; organo-mercurial dry seed-dressing formulations; ethylene dichloride—carbon tetrachloride mixture (3 : 1 v/v); and ethylene dibromide.

**Chemical Division** — Research and investigation related to free-flowing agent in table salt; suitability of indicator for determining free acidity in ammonium sulphate; effect of accelerated ageing on vulcanized rubbers at 70°C, 80°C, 100°C; and screening test with indigenous equipment for crank case lubricating oils. Data were collected with regard to oil of Bois de Rose; oil of Himalayan cedarwood; oil of vetiver; oil of pine (synthetic); potassium bromide; fire resistant brattice cloth; adhesives for footwear; sports goods leathers; orthopaedic leather; softening point and drop point of locomotive greases and on bleachability and refining loss of cottonseed oil. Collaborative investigations were carried out for determining the repeatability and reproducibility of the methods of test for coal and coke, and for fertilizers. Tests were also carried out for developing appropriate methods for identification of cinnamon bark and cinnamon leaf, plants of *Pelargonium* spp, and plants of roses from India and Bulgaria; and methods for determination of consistency of plaster of paris; thermal conductivity; and calcium in the dye ink blue by the EDTA method. Investigations were also undertaken for determining the smoke point of kerosine by different methods prescribed by competent authorities in the country and for correlating results of gasoline analysis by various laboratories in the country.

**Civil Engineering Division** — Research and investigation related to the quantity of water to be used in the compressive strength test for cement; mortar-making properties of Ennore sand; permissible limit for magnesia content in building limes; tests on samples of building limes available in the



respective regions to ascertain their chemical composition, strength values and classification; strength characteristics (compressive and transverse) of lime concrete; testing of natural building stones; thermal efficiency of brick kilns; requirements for abrasion resistance of cement concrete tiles field test for abrasion resistance of cement concrete tiles, soil for manufacture of Mangalore tiles; use of square and circular plates for load test on soils; effect of vibration on soils; testing and calibration of sieve shaker; performance of concrete mixers and vibrators; suitability of polythene pipes for potable water supply; requirements for moulded rubber rings for caulking purposes; effect of silt quantity on velocity distribution and hence on discharge; effect of silt quantity on rating of current meter; minimum number of verticles for discharge measurements in canals; position of current meter with reference to boat; use of bubble gauge; effect of silt quantity on the discharge coefficient of notches, weirs and flumes; collection of data for the determination of error in measurement of flow by velocity area methods; requirements for wooden flush door shutters; testing of jointed wood poles; cupping and twisting of fibre hardboard; and preservative treatment for block boards.

**Electrotechnical Division** — Investigations related to determination of insulation resistance values achievable in indigenous heating elements; testing of leclanché type dry batteries for telecommunication, signalling and general purposes to determine the low temperature at which such batteries will perform satisfactorily; testing of indigenous and imported plastic lenses for verification of requirements of plastic stability test to be specified in Indian Standard specifications for automobile lighting and signalling devices; tests to see whether or not pre-conditioning or conditioning of insulating materials has any effect on test results; vibration tests on lamps for lighting on board ships; measurement of noise and hum independent of distortion in signal generation; damp heat cycling tests on domestic radio receivers for proposing functional checks to be made at the end of conditioning; dry heat tests on domestic radio receivers for proposing functional checks to be introduced after the dry heat exposure; endurance test on domestic radio receivers; determination of severity of dry heat storage of low cost receivers; overload test on mains transformer for electronic equipment; determination of limit of temperature-rise during endurance test on fixed carbon resistors type I; discharge test and ionization test on shunt capacitors for power system; and test for determination of weather proofness of rubber-insulated weather-proof cable and maximum useful output requirements for transistorized community radio receivers.

**Structural and Metals Division** — The National Council for Applied Economic Research (NCAER), New Delhi continued its study of the case referred to it by the Institution with regard to arriving at an objective assessment of the saving expected to be made in the use of steel consequent on the full implementation of the Indian Standards published by ISI under the Steel Economy Programme. The study was expected to be completed in the near future.

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Important research and investigation work completed during the period related to determination of permanent stress value for different grades of aluminium bronze ingots and die castings; determination of optimum weight of the gross sample of iron ore and optimum size of the increment, establishing the relative merits of the two methods of sample reduction, namely, 'increment reduction method' and 'coning and quartering methods'; and determination of optimum size at which moisture determination of iron ore should be carried out. New items of research and investigation taken up included tests to investigate suitability of manganese-bronze components intended for substituting nickel-alloy components in water meters as nickel is an expensive imported material and determination of physical and chemical characteristics for highly polished copper plates for photo engraving purposes with a view to improving the indigenous material.

Investigations were continued on another 20 problems which had been referred to the various laboratories in India from time to time. Of these mention may be made of the short-term programme for corrosion research relating to light gauge steel sections. Substantial progress was made on this programme; reports on corrosion test conducted at Kanpur, Karaikudi and Jamshedpur had been received while those from Calcutta, Chittaranjan and Bombay centres were awaited.

**Textile Division** — Research and Investigations were carried out for evaluation of certain characteristics of cotton yarn, grey; cotton yarn for covering conductors; cotton fabrics; rayon taffeta and rayon bush shirt cloth; handloom silk *KORA* cloth; nylon ropes; webbing; tapes for electrical purposes woollen druggets; and dent wire. Trials were conducted to ascertain the reproducibility of the method for determination of total sulphur in rayon yarn evolved by the convener of one of the subcommittees.

Samples of various vat dyestuffs were collected to prepare dyeings on hanks of cotton yarn.



## PART III INTERNATIONAL ACTIVITIES

### 1. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

**1.1** Out of 113 technical committees of the International Organization for Standardization (ISO) as on 31 March 1965, the Institution participated actively in the work of 82 technical committees and was an observer member of 29 technical committees. Besides, the Institution held the Secretariat of 13 technical committees, subcommittees and working groups (see International Activities, Part I on P 17)

**1.2 ISO General Assembly** — The sixth General Assembly of ISO was held in New Delhi on 20 and 21 November 1964 under the presidentship of Mr. A. E. Viatkine. It was attended by 62 delegates and 19 observers from 43 member-countries. The Indian delegation comprised Shri Jehangir J. Ghandy, Dr. Lal C. Verman and Maj-General Harkirat Singh with Dr. A. N. Ghosh, Dr. D. V. Karmarkar and Shri K. N. P. Rao as observers.

Shri Jehangir J. Ghandy was unanimously elected President of ISO for a term of three years beginning from 1 January 1965. The General Assembly elected Bulgaria, Republic of South Africa and Switzerland as new members, and re-elected Germany and USSR for a term of three years beginning from 1 January 1965.

**1.3 ISO Council** — The ISO Council held its annual meeting in New Delhi from 16 to 18 November 1964 under the presidentship of Mr. A. E. Viatkine. India was represented by Shri Jehangir J. Ghandy, Dr. Lal C. Verman and Maj-General Harkirat Singh as delegates and Dr. A. N. Ghosh, Dr. D. V. Karmarkar and Shri K. N. P. Rao as observers.

Mr. H. A. R. Binney, Director of British Standards Institution was elected as Vice-President of ISO for a term of three years from 1 January 1964. The Council also decided to raise the value of its subscription unit from US \$ 330 to US \$ 400 from the year 1966.

A permanent committee entitled 'ISO/IEC' was set up to co-ordinate the activities of the two organizations in such fields as have boundary problems.

The Council considered measures for speeding up the processing of ISO Recommendations and adopted a comprehensive resolution aimed at reviewing the existing procedures and removing bottle-necks.

**1.4 ISO Development Committee (ISO/DEVCO)** — The ISO Development Committee (DEVCO) met in New Delhi on 12-13 November 1964 under the chairmanship of Mr. Jean Birlé (France), and considered ways and means for promoting standardization in developing countries. The Committee recommended the setting up of a 'Register of Correspondents' to which organizations concerned with standardization in countries

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where no standards bodies had been established could be admitted. The Committee further decided that standards organizations which acted as national standards bodies for more than one country may also be admitted as full members of ISO.

The Committee classified its activities into two major categories, namely, (a) training, scholarships, seminars, experts, etc; and (b) documentation, information and education. Mr. Roger E. Gay (USA) and Mr. Jean Birlé (France) were designated as Rapporteurs for the respective categories for maintaining close liaison with UN and UNESCO, respectively.

The Committee made certain recommendations regarding Seminar on 'Promotion of Standardization in Developing Countries' which the United Nations were organizing in Denmark in September 1965 with the assistance of the Danish Government and the Danish member-body.

**1.5 ISO Planning Committee (PLACO)** — The ISO Planning Committee (PLACO) is one of the standing committees of the Council of which Dr. Lal C. Verman, Director, ISI, is the Chairman and representatives of France, UK, USA, and USSR are the members. The Committee which met in New Delhi on 11 and 12 November 1964, and covered several important items dealing with modification of titles and scopes of ISO technical committees, and setting up of five new technical committees.

**1.6 ISO/STACO** — The twelfth meeting of the Standing Committee for the Study of Scientific Principles of Standardization (STACO), held during 9-13 November 1964 at New Delhi, was presided over by Mr. T. R. B. Sanders (UK) and attended by representatives from 13 countries. The Committee discussed a number of important subjects including adoption of SI (System Internationale) units, rules for identifying and marking of products conforming to ISO Recommendations, time factor in the preparation of standards, standardization of direction of movement, etc.

**1.7 ISO/METESCO — Co-ordinating Committee on the Mechanical Testing of Metals** — (Sectt: UK) — held its fourth meeting in New Delhi on 13 November 1964 under the chairmanship of Mr. G. Weston, Associate Director, British Standards Institution. Eleven delegates representing secretariats of ISO Technical Committees dealing with bolts, nuts and accessories; steel; copper and copper alloys; welding; and light metals and their alloys were present. In addition, five delegates representing India, Sweden, USA, and USSR attended the meeting as observers.

It was agreed that the drafts prepared by different technical committees of ISO should be placed before ISO/METESCO at the earliest possible opportunity and not when the drafts are in the process of finalization. The Committee also decided to invite ISO technical committees dealing with unification of boiler codes; zinc and zinc alloys; gas cylinders; conveyors,



vertical hoists and bucket elevators, and steel wire ropes to become its members.

**1.8 ISO Technical Committees** — A brief account of the work of the technical committees, subcommittees and working groups of interest to India and other relevant information is given below:

**ISO/TC 1 Screw Threads** — ( Sectt: Sweden ) — Seventh plenary meeting, 10-13 November 1964, New Delhi. India was represented. The Committee took a decision of far-reaching significance in adopting an international system of tolerance, both for ISO metric and ISO inch screw threads. This agreement will now allow production of the new ISO metric screw threads throughout the world to the same system.

The following two Working Groups were set up:

(a) WG/9 — To evolve proposals for revision of ISO/R 68 and thereby provide a new design profile for screw threads for horological purposes without altering the basic ISO profile; (b) WG/10 — To exchange experience in the introduction of ISO metric screw threads.

**ISO/TC 2 Bolts, Nuts and Accessories** — ( Sectt: Germany ) — Sixth meeting, 13-20 November 1964, New Delhi. India was represented. Of the various agreements reached, the decision arrived at regarding property classes of bolts, screws and studs was an important outcome of this meeting. The agreements reached during the meeting were on length of bolts and nuts; thread lengths, radius under head of bolts, larger bolt sizes in the range 40 to 100 mm and slotted screws.

On the question of slotted screws, it was agreed (a) to establish liaison with the corresponding committee of the International Electrotechnical Commission, IEC; and (b) to attempt some type of unification of the various types and sizes of heads now prevalent in different countries. For this purpose, a working group was set up which will also examine the head sizes of self-tapping screws. Among other items considered at the meeting were socket head cap screws, plain washers, cylindrical and taper pins, and nomenclature for bolts and nuts to be indicated in English, French, German, Italian and Russian.

From the point of view of the Indian fastener industry and also the Indian users, especially those who are collaborating with overseas companies, the agreements reached on property classes and other related features of bolts and nuts, are of primary importance, particularly in view of the change-over to ISO metric, threaded fasteners. The decisions reached at this meeting would facilitate the production of metric fasteners in this country which would be truly interchangeable with the fasteners produced abroad both in regard to dimensions and physical properties.

**ISO/TC 5 Pipes and Fittings** — ( Sectt: Switzerland ) — Draft ISO Recommendation for cast iron sanitary pipes and fittings for waste water

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and ventilation lines was received from the ISO General Secretariat for comments.

**ISO/TC 6 Paper** — (Sectt: France) — Draft ISO Recommendation No. 534 'Paper vocabulary' was accepted as ISO Recommendation and registered under reference ISO /R 372-1964 'Paper vocabulary, fourth series of terms'.

The following draft ISO Recommendations were received for approval:

(a) ISO/R 612 Determination of paper substance (DR 612); (b) ISO/R 649 Paper untrimmed stock sizes for the A-series (primary range) (DR 649); (c) ISO/R 650 Paper internal diameters of cores of reels (DR 650); (d) ISO/R 651 Paper untrimmed sizes, designation, tolerances (DR 651).

The following draft ISO proposals were received for comments:

(a) Determination of saleable weight, in lots, of pulp baled in sheet form; (b) Dichloromethane extract of pulp; (c) Dry matter in pulp; (d) Alkali solubility of pulp; (e) Method of sampling paper and board for testing (Revision of ISO 186); (f) Trimmed overall size of articles of stationery that include detachable sheets; (g) Sizes of folders and files; (h) Paper untrimmed stock sizes for the A-series (supplementary series); and (j) Alkali resistance of pulp.

**ISO/TC 8 Shipbuilding Details** — (Sectt: Netherlands) — Fifth meeting, 21-23 October 1964, Brussels. India was represented. At the instance of the Indian delegation, ISO/TC 8/WG 7 Inland Navigation was retained to continue its work on standardization of equipment needed for inland navigation. Six ISO drafts dealing with the subjects of ship screw propellers, conventional signs to be used in schemes for the installations of pipeline systems in ships, identification colours for pipes conveying fluids in liquid or gaseous condition, conventional signs to be used in schemes for the installations of sanitary systems in ships, glasses for side scuttles, and designation of light alloy rivets applied to shipbuilding were considered and accepted.

The following new subjects were included in the programme of work for which new working groups were set up:

(a) Study of standardization of plates for shipbuilding, (b) Auxiliary equipment on deck; (c) Panama chocks; (d) Standard forms for the loading gear on boardships; (e) Pilot and rope ladders; (f) Standard direction of motion of operating devices; (g) Symbols for fire control plans and conventional signs to be used in shipbuilding drawings; (h) Colours for lamps for remote alarming and signalling on boardships; and (j) Manufacturing tolerances for casting and finishing for ship screw propellers of 2.5 m and less.

The Committee decided to establish close collaboration with ISO/TC 21 Fire Fighting Equipment, ISO/TC 38 Textiles, ISO/TC 105 Steel Wire



Ropes, ISO/TC 111 Lifting Chains and Associated Fittings and Components, International Electrotechnical Commission ( IEC ) and Inter-Governmental Maritime Consultative Organization ( IMCO ).

**ISO/TC 12/SC 1 Procedures for Inter-conversion of Values from One System of Units to Another** — ( Sectt: India ) — First meeting, 9-10 November 1964, New Delhi, under the chairmanship of Dr. Lal C. Verman. Besides agreeing to the scope of the Sub-committee, the Committee decided to formulate a draft ISO proposal on inter-conversion of values based mainly on the Indian Standard on the subject ( IS : 787-1956 'Guide for inter-conversion of values from one system of units to another' ). It was also agreed that this draft ISO proposal should be more compact and self-explanatory, so that it could be used profitably for educational purposes.

**ISO/TC 17 Steel** — ( Sectt: UK ) — Eighth plenary meeting, 14-18 November 1964, New Delhi under the chairmanship of Mr. G. Weston, Associate Director, British Standards Institution. About 80 delegates representing 21 countries participated in the meeting. Besides, three delegates representing ISO/TC 105 Steel Wire Ropes and the International Union of Railways ( UIC ), were also present. India was represented by a delegation consisting of 28 members under the leadership of Shri Jehangir J. Ghandy.

At this meeting, 18 documents relating to methods of chemical analysis, methods of mechanical testing; Jominy test and determination of austenitic grain size; hot-rolled steel sections; structural steel; and alloyed and unalloyed heat treated steels were discussed and approved for postal ballot. In addition, reports prepared by subcommittee and working groups of ISO/TC 17 were considered and adopted.

It was decided to set up a new working group to formulate a draft ISO Recommendation for steel for pressure vessels and to take up work on the following 12 subjects which were allotted to the relevant working groups:

(a) Carbon steel blooms, billets and bars in the normalized condition primarily for machining; (b) Carbon steel bars, cold drawn from hot rolled or normalized condition; (c) 1-1/2 percent manganese-molybdenum steels for free cutting purposes; (d) Rotating bending fatigue testing; (e) Direct stress fatigue testing; (f) Torsional stress fatigue testing; (g) Dynamic calibration of fatigue testing machines; (h) Rockwell N scale hardness testing; (j) Rockwell T scale hardness testing; (k) Standardization of enlargements used for microscopic tests and micrographic examinations; (m) Measurement of the depth of carburization and decarburization and measurement of the depth of hardness; and (n) Non-metallic inclusions in steel.

**ISO/TC 17/WG 4 Heat Treated and Alloyed Steels** — ( Sectt: Germany ) — Fourth meeting, 25-27 May 1964, Dusseldorf. Draft proposals relating to quenched and tempered unalloyed steel; and quenched

and tempered steels with one percent chromium and 0.2 percent molybdenum were considered.

**ISO/TC 17/WG 7 Methods of Testing Steel ( Other than Mechanical Testing and Chemical Analysis )** — ( Sectt: France ) — India's comments on draft ISO proposals for micrographic determination of austenitic grain size of steel and hardenability test by end quenching steel ( Jominy test ) were sent to the secretariat.

**ISO/TC 17/WG 8 Dimensions of Hot Rolled Steel Sections** — ( Sectt: India ) — Third meeting of Working Group, 9-12 November 1964, New Delhi under the chairmanship of Shri O. S. Murthy, General Manager, Western Railway, Bombay. Twenty-eight delegates from 11 countries took part in the meeting. India was represented by a delegation consisting of seven members under the leadership of Shri M. Dhar.

On the basis of the recommendations made by the Working Group at this meeting the Technical Committee, ISO/TC 17 Steel, has agreed that the terms of reference of the Working Group should be extended to include work on dimensions of flats, rounds, squares and rectangles intended for final use in the hot-rolled condition.

Two draft ISO proposals (a) dimensions of hot rolled equal leg angles (b) metric series and dimensions of hot rolled unequal leg angles — metric series were finalized and submitted to the Secretariat ( UK ) of ISO/TC 17, for circulation to the member-countries for postal ballot. Draft ISO Recommendations specifying the tolerances on the dimensions included in these two draft proposals are under preparation. Separate recommendations for inch series of dimensions of hot rolled equal angles and unequal angles are currently under preparation. Documents on I-beam sections and I-column sections were considered and directives given for improving them.

Data are being collected from member-countries on dimensions of rounds, squares, flats and rectangles and draft proposals on these subjects are under preparation.

**ISO/TC 17/WG 9 Tinplate** — ( Sectt: UK ) — Third meeting, 2-4 June 1964, Paris. Mr. C. H. Watson, General Manager, Tinplate Co. of India Ltd., Calcutta attended the meeting on behalf of India. Draft ISO proposal for cold reduced tinplate and cold reduced blackplate was considered.

**ISO/TC 17/SC 1 Methods of Chemical and Spectrochemical Analysis of Steel** — ( Sectt: Italy ) — Second meeting, 13-14 May 1964, Rome. Scope extended to cover steels containing tungsten, titanium and niobium. Drafts considered were on spectrophotometric method for determination of manganese, phosphorus and silicon; combustion and gravimetric methods for determination of sulphur; determination of carbon; and determination of phosphorus by alkalimetric method.



**ISO/TC 18 Zinc and Zinc Alloys** — ( Sectt: Belgium ) — Second draft ISO Recommendation for zinc ingots and first draft ISO proposal for chemical properties of zinc alloy die castings received for comments.

**ISO/TC 21 Fire Fighting Equipment** — ( Sectt: Netherlands ) — The Secretariat intends to hold a meeting in October 1965 for preparing certain draft proposals, such as for portable fire extinguishers and classification of extinguishing media.

**ISO/TC 24 Sieves** — ( Sectt: Germany ) — A draft ISO proposal on nominal dimensions of sieve openings in test sieves ( for woven wire cloth and perforated plates ) was submitted to ISO General Secretariat as draft ISO Recommendation. A detailed proposal for test sieving, proposed by the Secretariat of Subcommittee SC 2 Test Sieving was circulated to member-bodies. A document on terms and definitions in the field of sieves and sieving was prepared for discussion in the first meeting of the Working Group on 'Terminology'. On the suggestion of ISO/TC 29 Small Tools, a questionnaire on the inclusion of methods and apparatus for sub-sieve sizing of powders in the scope of Technical Committee 24 was circulated to the members of ISO/TC 24.

**ISO/TC 25 Cast Iron** — ( Sectt: UK ) — The draft ISO proposal for beam unnotched impact test for grey cast iron was approved on behalf of India. India's comments were sent on the draft ISO proposal for designation for macrostructure of graphite in cast iron.

**ISO/TC 27 Solid Mineral Fuels** — ( Sectt: UK ) — Seventh meeting, 9-12 November 1964, New Delhi, under the chairmanship of Mr. D. Flint of UK. The sessions were attended by 28 delegates from Australia, Czechoslovakia, France, Germany, Hungary, Italy, Poland, United Kingdom, USA and India. There were also observers from the United Nations Economic Commission for Asia and the Far East ( ECAFE ) and from ISO/TC 24 Sieves. India was represented by a team of 12 delegates specialized in different fields of coal and coke industry under the leadership of Dr. J. W. Whitaker.

The Committee reviewed the work of the past three years conducted by its various subcommittees and working groups dealing with coal preparation, brown coals and lignites, ash and moisture, sampling, coke and oxygen, and gave its authority to proceed on various projects.

The Committee also discussed the results of experimental work carried out in the working groups and subcommittees, relating to direct determination of oxygen, sampling of coal and coke, determination of ash in brown coal and lignite, moisture-holding capacity of coal, and true relative density of coke. Much progress was also recorded on the preparation of detailed glossary of terms.

It was decided to set up new working groups, WG 10 and WG 11, to deal with grindability test and size analysis of coal, respectively.

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**ISO/TC 30 Measurement of Fluid Flow** — ( Sectt: France ) — Sixth meeting, 21-24 April 1964, Paris. Progress of Draft ISO Recommendation No. 532 'Measurement of fluid flow by means of orifice plates and nozzles' was considered.

The following new working groups were set up:

- (a) ISO/TC 30/WG 6 Orifice Plates with D and D/2 Tappings and
- (b) ISO/TC 30/WG 7 For the Study of Pressure Piping and Auxiliary Equipment Between the Primary and Secondary Elements.

Working Group 2 was reconstituted as Steering Group for the work of TC 30 and Working Group 5 on Numerical Tables and Charts was dissolved.

**ISO/TC 33/WG 2 Methods of Test for Refractoriness and Refractoriness Underload** — ( Sectt: UK ) — Sixth and seventh meetings, 26 May and 7-8 December 1964, respectively, London. At the sixth meeting, draft ISO proposals relating to determination of pyrometric cone equivalent of refractory products, and determination of refractoriness underload were considered.

**ISO/TC 33/WG 3 Refractories/Dimensions** — ( Sectt: UK ) — Third meeting, 27 May 1964, London. Draft ISO proposals relating to dimensions of rectangular refractory bricks, and arch brick sizes were considered.

**ISO/TC 34 Agricultural Food Products** — ( Sectt: Hungary ) — Fourth plenary meeting, 18 and 20 November 1964, New Delhi, under the chairmanship of Prof. L. Telegdy-Kovats of the Technical University, Budapest. Problems of pesticidal residues in agricultural food products, besides reports of its subcommittees were considered.

The following draft ISO Recommendations were approved by India:

- (a) Butyrometers for determination of the percentage of fat in milk by Gerber method ( DR 700 );
- (b) Methods of test for pulses ( DR 793 );
- (c) Determination of mass of 1 000 gram in cereals and pulses ( DR 794 );
- and (d) Standard methods for sampling of milk and milk products ( DR 803 ).

**ISO/TC 34/SC 2 Oleaginous Seeds and Fruits** — ( Sectt: Rumania ) — India's disapproval was conveyed in respect of draft ISO Recommendation No. 85 'Sampling of oilseeds'. The following final draft ISO proposals were received for approval:

- (a) Determination of oil content;
- (b) Determination of acidity;
- (c) Preparation of laboratory samples for analysis;
- (d) Determination of water and carriable substance content;
- (e) Determination of content in impurities insoluble in light petroleum;
- (f) Reduction of contract samples of oilseeds to samples for analysis;
- (g) Determination of moisture; and
- (h) Determination of impurity content.



The following three first draft ISO proposals were received for comments:

(a) Determination of residue insoluble in hydrochloric acid by oil cakes made from the extraction of oil from oilseeds by pressure or solvents; (b) Determination of crude ash from the extraction of oil from oilseeds by pressure or solvents; and (c) Determination of fatty matter content in cakes and flour of oilseeds.

**ISO/TC 34/SC 3 Fruits, Vegetables and Their Derived Products** — (Sectt: Poland) — Fourth meeting, 9 October 1964, Prague. India was not represented. The Subcommittee approved the reports of its four working groups, the meetings of which had preceded the meeting of the subcommittee.

**ISO/TC 34/SC 4 Cereals and Pulses** — (Sectt: Hungary) — Fourth meeting, 14, 16 and 17 November 1964, New Delhi, under the chairmanship of Dr. Janos Hollo of Hungary. The Subcommittee considered the following subjects:

(a) Sampling of cereals (as grain); (b) Method of test for infestation of cereals and pulses by X-ray examination; (c) Method of test for infestation of cereals and pulses by the determination of carbon dioxide production; (d) Pulses: Determination of hydrocyanic acid; (e) Basic reference method for the determination of moisture in cereals and derivatives (by-products); (f) First draft proposal, practical reference method for the determination of the moisture of cereals and milling products (ground grains, grits, meals); (g) Determination of protein in cereals and cereal products; (h) Methods for the determination of the ash content in cereal products; and (j) Determination of natural weight.

**ISO/TC 34/SC 6 Meat and Meat Products** — (Sectt: Germany) — Second meeting, 30 April 1964, Kulmbach (West Germany). India was not represented. The Subcommittee approved the reports of its three working groups, the meetings of which had preceded the meeting of the Subcommittee 6. India's agreement to draft ISO proposals for (a) determination of the moisture content of meat and meat products, and (b) determination of the free fat content of the meat and meat products, was conveyed to the Secretariat.

**ISO/TC 34/SC 7 Spices and Condiments** — (Sectt: India) — Third meeting, 13-14 November 1964, New Delhi, under the chairmanship of Shri R. T. Mirchandani, Agricultural Marketing Adviser (AMA) to the Government of India. Following subjects were considered at the meeting:

(a) Methods of sampling and test for spices and condiments; (b) Specification for black and white pepper, whole and ground; and (c) Specification for ginger, whole, in pieces and ground.

**ISO/TC 34/SC 8 Stimulant Foods** — (Sectt: India) — First meeting, 12 November 1964, New Delhi, under the chairmanship of Dr. Y. K. Subrahmanyam, Assistant Director General of Health Services, Ministry of Health, Government of India. The Subcommittee decided to take up the following subjects:

(a) Method(s) of sampling of tea; (b) Methods of test for tea; (c) Method(s) of packaging tea; (d) Specification for tea; (e) Method(s) of sampling of Coffee; (f) Methods of test for coffee; (g) Method(s) of packaging coffee; (h) Specification for coffee; and (j) Classification of cocoa beans.

**ISO/TC 35 Raw Materials for Paints, Varnishes and Similar Products** — (Sectt: Netherlands) — ISO 339 'Definitions of terms' has been published. Draft ISO Recommendations on the following subjects were approved by India:

(a) Gum spirit of turpentine and wood turpentine (DR 364); (b) Sampling raw materials for paints and varnishes (DR 731); and (c) Red lead (DR 32).

**ISO/TC 37 Terminology (Principles and Co-ordination)** — (Sectt: Austria) — Draft ISO Recommendation No. 676 'Naming principles' and the revised texts of the following two draft proposals were accepted by India:

(a) ISO/TC 37 (Sectt — 80) 143 Layout of multilingual classified vocabularies and (b) ISO/TC 37 (Sectt — 82) 145 International unification of concepts and terms.

**ISO/TC 38/SC 1 Colour Fastness Tests** — (Sectt: UK and USA) — Seventh meeting, 24 September and 27 September to 2 October 1964, North Carolina (USA). India was not represented. The report of the meeting is still awaited.

**ISO/TC 44 Welding** — (Sectt: France) — Four draft ISO proposals regarding (a) recommended joint preparations for fusion welding of steel, (b) standardization of wires for gas shielded bare-wire welding of mild steel, (c) dimensions for reels and coils for wire for automatic welding, and (d) code of symbols for hard-surfacing electrodes, were received for comments. The draft proposal at (c) has not been accepted by India as it did not include the dimensions for reels and coils for wire used in this country. India's comments were sent on draft ISO proposal at (d). The remaining two draft proposals are under consideration.

**ISO/TC 45 Rubber** — (Sectt: UK) — Twelfth meeting, 14-21 November 1964, New Delhi, under the chairmanship of Dr. D. G. Marshall of U.K. Fifty-seven delegates from 12 countries participated. Observers were present from the International Rubber Research and Development Board who have done pioneer work in the field of natural rubber,



India was represented by a team of 17 delegates under the leadership of Dr. D. Banerjee.

Altogether 13 draft ISO Recommendations were approved for submission to ISO Council, 8 of these related to the testing of latex and 5 to the mechanical testing of rubber. In addition, one draft proposal for testing of latex was approved as a draft ISO Recommendation.

Besides actively participating in the discussions of the meetings of the committees where India is a participating member, that is, Working Groups, A, B, D, F and Natural Rubber Task Group, Indian delegates also agreed to participate in the inter-laboratory test programme on the following subjects:

(a) Study of light ageing properties of rubber with Xenon lamp; (b) Determination of carbon black in the presence of china clay on the basis of the modified documents A 74 and A 86; and (c) Examination of the utility of the test for resistance to degradation on ageing of raw rubber to facilitate technical classification.

*Specification for Natural Rubber* — It was decided at the New Delhi meeting of ISO/TC 45 to specify three grades of natural rubber, purely based on technical classification, as recommended by the Special Task Group for Natural Rubber under WG C, set up at the suggestion of Indian delegation headed by Dr. Lal C. Verman, Director, ISI, during the Stockholm meet of ISO/TC 45.

**ISO/TC 46 Documentation** — (Sectt: Netherlands) — Tenth meeting, 14-17 October 1964, Budapest. Working groups also met during the period. The following draft proposals were considered:

(a) Abbreviations of typical words in bibliographical reference; (b) Index of a publication; (c) Title leaves of a book; (d) Abbreviation of generic names in periodical title; and (e) International system for the transliteration of Cyrillic characters.

**ISO/TC 46/SC 1 Documentary Reproduction** — (Sectt: France) — Tenth meeting, 12-13 October 1964, Budapest. A number of documents including those for preservation of microcopies, conventional ISO typographic characters for tests of readability, description and utilization of ISO microwire, etc, were considered. The draft on terminology of instruments for microcopies was adopted as ISO/R371-1964. Terminology of microcopy apparatus; and new draft proposals for filing boxes in libraries and record departments for developed microfilms rolls and microfilms of 16 and 35 mm were considered.

**ISO/TC 47 Chemistry** — (Sectt: Italy) — India's approval was conveyed for draft ISO Recommendation No. 761 'Sampling of and methods

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of test for formic acid'. The following two draft ISO proposals were received for comments:

(a) Revision of Section 7 and Sub-section 8.1 of ISO/R 78 'Guide on the form for standards for chemical products and for methods of chemical analysis'; and (b) Supplement to ISO/R 78.

**ISO/TC 48 Laboratory Glassware and Related Apparatus** — (Sectt: UK) — Ninth meeting, 1-5 June 1964, London. On behalf of India, Dr. A. N. Ghosh, Joint Director, ISI, attended the meeting. The meeting decided to submit revised texts to ISO Council for adoption as ISO Recommendation on the following subjects:

(a) Interchangeable spherical ground glass joints; (b) One-mark volumetric flasks; (c) One-mark pipettes; (d) Graduated pipettes (excluding blowout pipettes); (e) Precision thermometers; (f) Calorimeter thermometers; (g) Hydrometers for general purposes; (h) Thermal shock tests for laboratory glassware; (j) Hydrolytic resistance of glass grains; and (k) Alkali resistance of glass.

Progress was also made in preparing ISO Recommendations on the following subjects:

(a) Methods of verification and use of volumetric glassware; (b) Graduated measuring cylinders; (c) Adjustable range thermometers; (d) Laboratory glass beakers; (e) Glass tubing for laboratory purposes; (f) Porcelain and silica crucibles; and (g) Laboratory flasks.

The meeting adopted suggestions received from member-bodies or arising out of working group discussions for the following items to be added to the programme of work:

(a) Colour coding for one-mark and graduated pipettes; (b) Classification of laboratory glasses according to chemical and thermal resistance properties; (c) Compatibility of laboratory tubing defined by physical and thermal properties; (d) Terminology relating to defects in laboratory glassware; (e) Terminology for items of laboratory apparatus; (f) Quality and methods of test for laboratory porcelain; and (g) Correction of hydrometer readings.

**ISO/TC 50 Lac** — (Sectt: India) — Draft ISO Recommendation No. 633, draft revision of ISO/R 56-1957 'Specification for shellac', was approved by a majority of ISO member-bodies, and was being put up to ISO Council for approval as an ISO Recommendation. This document gives the changes consequent upon the decision to drop consideration of methods for acid value, flow tests and rosin content from the programme of work. Another draft proposal on method of determination of adhesion of shellac to mica was circulated to members of ISO/TC 50 for approval.

Further investigations were carried out in India regarding the modifications suggested by UK and USA in respect of photoelectric colorimeter given in the Indian method for determination of bleach index.



**ISO/TC 54/WG 7 Oil of Vetiver** — (Sectt: India) — Second meeting, 20 November 1964, New Delhi. Dr. K. L. Moudgill from India presided. Delegates from France, India and UK participated. The Working Group disposed of the item in respect of the determination of optical rotation and made its recommendations. India and France agreed to exchange samples of oil of vetiver of different geographical origins for further examination.

**ISO/TC 55 Hewn, Sawn and Planed Timber** — (Sectt: USSR) — Revised draft ISO proposals for sizes of coniferous sawn timber were prepared. The following draft ISO proposals were circulated to member-bodies:

(a) Coniferous sawn timber, defects, classification; (b) Coniferous sawn timber, defects, measurement; (c) Coniferous sawn timber, defects, terms and definitions; and (d) Coniferous sawn timber, sizes, terms and definitions.

**ISO/TC 56 Mica** — (Sectt: India) — This Committee did not meet during the period under review. However, draft Recommendation for methods for grading phlogopite mica blocks, thins and splittings was approved by ISO member-bodies and submitted to ISO Council for acceptance as ISO Recommendation.

The Committee is scheduled to meet next in New York from 28 June to 1 July 1965.

**ISO/TC 61 Plastics** — (Sectt: USA) — Fourteenth meeting, 10 October 1964, Budapest, Hungary. India could not be represented. Draft ISO Recommendations for the following were approved for submission to ISO Council for publication:

(a) Definitions of four terms, namely, rigid plastics, semi-rigid plastics, non-rigid plastics, and unplasticized polyvinyl chloride; (b) Determination of tensile strength properties of plastics; (c) Testing plastics with torsion pendulum; (d) Methods for maintaining constant relative humidity in small enclosures by means of aqueous solution; (e) Determination of refractive index of transparent plastics; and (f) Determination of melt flow index of polyethylene and polyethylene compounds.

Draft ISO proposals for the following were approved as draft ISO Recommendations for circulation to the ISO member-bodies:

(a) Determination of the melt flow index of polyethylene and polyethylene compounds; (b) Methods of determining the brittleness point of plastics by impact; (c) Determination of viscosity number and viscosity ratio of cellulose acetate; (d) Determination of density and specific gravity of non-cellulose plastics; (e) Determination of water vapour transmission rate of plastic films and thin sheets; (f) Determination of viscosity number of methylmethacrylate polymers and copolymers in dilute solution; (g) Determination of vinyl acetate in vinyl chloride; (h) Determination of chlorine

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in the polymers and copolymers of vinyl chloride; (j) Phenolic moulding materials; and (k) Determination of resistance of plastics to moulds by visual examination.

**ISO/TC 62 Sheet and Wire Gauges (Designation of Diameters and Thicknesses)** — (Sectt: Australia) — Third meeting, 9-10 November 1964, New Delhi, Mr. K. Heiberg, former Director of Norges Standardiserings Forbund, presided. Twenty delegates representing eight different countries and ISO/TC 105 Steel Wire Ropes, attended the meeting. India was represented by a delegation consisting of eight members with Shri R. G. Bhatawadekar, Technical Director, Binani Metal Works Ltd., Calcutta, as the leader.

The Committee finalized draft ISO Recommendation No. 324 International metric series for basic thicknesses of sheet and diameters of wire, the main purpose of which is to provide a basic set of metric sizes for thicknesses of sheet and diameters of wire to replace existing gauge systems. The sizes stipulated in the draft ISO Recommendation have already been adopted by India in IS : 1137-1959 'Thicknesses of sheet and diameters of wire'.

**ISO/TC 65 Manganese Ores** — (Sectt: USSR) — Fifth meeting, 12-14 November 1964, New Delhi, under the chairmanship of Dr. A. N. Ghosh, Joint Director, ISI. The meeting was attended by 21 delegates from eight countries. India was represented by a delegation consisting of six members under the leadership of Dr. A. V. Sukhatme. The Committee considered the first draft proposal on the methods of sampling manganese ores from ships and stocks, and decided to enlarge the scope of the draft ISO proposal to cover all types of manganese ores under all conditions excepting those which have been covered in ISO/R 309, Part I 'Methods of sampling manganese ores loaded in wagons'. It was also agreed that the samples be drawn, as far as possible, from ores in motion and that the sampling methods evolved should give due consideration to both mechanical and non-mechanical sampling.

The Secretariat was requested to prepare a second draft proposal taking into consideration all the decisions of the Committee.

**ISO/TC 71 Concrete and Reinforced Concrete** — (Sectt: Austria) — The following documents were under preparation:

(a) Second draft proposal on terminology; (b) Third draft proposal on testing methods, measurement and making specimens; (c) Preliminary work by Brazil for collecting the documents in the field of designations for the calculation on constructions of reinforced and non-reinforced concrete; and (d) Tolerances for concrete specimen and concrete specimen moulds.

**ISO/TC 72 Textile Machinery and Accessories** — (Sectt: Switzerland) — The following draft ISO Recommendations were circulated by



## ISO Secretariat for comments:

(a) Revision of ISO R/R 364-1964 'Twin wire healds for frame weaving' (DR 701); (b) Revision of ISO/R 365-1964 'Twin wire healds for jacquard weaving' (DR 702); (c) Heald frames for single or double row of healds (DR 703); (d) Heald frames, Relationship with pitch of the harness (DR 704); (e) Heald carrying rods, Co-ordination with end loops of the healds (DR 705); (f) Revision of ISO/R 366-1964 'Pitch bound reeds' (DR 706); (g) Revision of ISO/R 367-1964 'Metal reeds with plate baulk' (DR 707); (h) Metal reeds with double-spring baulk (DR 708); (j) Shuttles for pirn changing automatic looms (DR 709); (k) Dobby lags and pegs in wood, metal or other suitable material (DR 710); (m) Perforated parallel tubes for cheese dyeing (DR 711); (n) Transfer cones for yarn dyeing (half-angle  $4^{\circ} 20'$  (DR 712); and (p) Paper patterns for dobbies (DR 713).

**ISO/TC 74 Hydraulic Binders** — (Sectt: Belgium) — The following draft ISO Recommendations were adopted by the Committee and circulated to ISO member-bodies for approval as ISO Recommendations:

(a) Definitions and terminology of cement (DR 771); (b) Method of testing strength of cement, compressive and flexural strengths of plastic mortar (Rilem - Cembureau Method) (DR 772); (c) Chemical analysis of cements - main constituents of portland cement (DR 773); (d) Chemical analysis of cements — minor constituents of portland cement (DR 774); and (e) Chemical analysis of cements — Determination of sulphur as sulphide (DR 775).

**ISO/TC 77 Products in Asbestos Cement** — (Sectt: Switzerland) — Ninth plenary meeting, 8-12 June 1964, The Hague. The following draft ISO Recommendations were approved as ISO Recommendations:

(a) Sampling and inspection of asbestos-cement products (DR 688); (b) Building and sanitary pipes in asbestos-cement (DR 689); (c) Asbestos-cement pipe fittings for buildings and sanitary purposes (DR 690); (d) Asbestos-cement corrugated sheets for roofing and cladding (DR 691); (e) Asymmetrical section corrugated sheets in asbestos-cement for roofing and cladding (DR 692); (f) Asbestos-cement slates for roofing and cladding (DR 693); and (g) Asbestos-cement flat sheets (DR 694).

**ISO/TC 78 Aromatic Hydrocarbons** — (Sectt: UK) — Fifth meeting, 29-30 October 1964, Essen, Germany. India could not be represented. Draft proposal on the following subjects were discussed:

(a) Specifications and methods of test for benzenes, toluenes and xylene; (b) Sampling of benzole and allied products; and (c) Specifications and methods of test for solvent naphthas.

**ISO/TC 79 Light Metals and Their Alloys** — (Sectt: France) — Fifth meeting, 9-12 November 1964, New Delhi. India was represented by 19 delegates. Thirty-three delegates representing 12 'P' members and 5 'Observer' members participated.

Mr. Duval (France) was unanimously elected Chairman of the Committee. Mr. Laurent (France) was Secretary at this meeting.

Work at the meeting was done under the following groups:

*Chemical Analysis of Aluminium and Magnesium* — Draft ISO proposals on aluminium and aluminium alloys—photometric determination of silicon and manganese; magnesium and magnesium alloys — photometric determination of manganese; were considered in detail in the light of comments received from member-countries.

*Mechanical Properties of Aluminium and Aluminium Alloys* — Four draft ISO proposals on mechanical properties of rolled products of aluminium and aluminium alloys; mechanical properties for extruded products of aluminium and aluminium alloys; mechanical properties for rivet stock; and mechanical properties of forging stock were approved by the Committee with some amendments.

*Methods of Mechanical Testing* — Draft proposals regarding aluminium and aluminium alloys—tensile test for wire; flattening test on tubes; simple torsion test for wire; and wrapping test for wire were approved with certain amendments.

The Committee also considered the work done by its various working groups.

**ISO/TC 79/SC 1 Methods of Chemical and Spectrochemical Analysis of Light Metals and Their Alloys** — (Sectt: Italy) — Seventh meeting, 20-22 October 1964, Madrid (Spain). India could not participate. The following draft proposals were considered:

(a) *Magnesium and Magnesium Alloys* — Photometric determination of silicon; polarographic determination of zinc; gravimetric determination of zinc; and photometric determination of zirconium.

(b) *Aluminium and Aluminium Alloys* — Gravimetric determination of zinc; photometric determination of titanium; silicon; and zinc.

**ISO/TC 79/WG 6 Methods of Mechanical Testing (Light Metals and Their Alloys)** — (Sectt: UK) — India's approval to draft ISO proposal relating to tensile test in full sections for aluminium and aluminium alloy tubes was conveyed to the Secretariat of the Working Group subject to certain comments.

**ISO/TC 81 Common Names for Pesticides** (Sectt: UK) — India's approval to draft ISO Recommendation No. 725 'Common names for pesticides (seventh list)' was communicated to the ISO General Secretariat.



**ISO/TC 86 Refrigeration** — (Sectt: UK) — Second plenary meeting, 7-10 December 1964, London. Work done by subcommittees and working groups was considered and future programme of work was drawn up. The following subcommittees met on dates shown against each:

SC 1 Safety (Sectt: Germany) 27-29 October 1964, Weisbaden  
 SC 6 Testing of Factory Assembled Air Conditioning Units (Sectt: USA) 7-10 December 1964, London

**ISO/TC 87 Cork** — (Sectt: Portugal) — Draft ISO Recommendation on cork vocabulary prepared by the technical committee was adopted and submitted to ISO member-bodies for approval as an ISO Recommendation.

**ISO/TC 88 Pictorial Markings for Handling of Goods** — (Sectt: India) — Second meeting, 17-20 November 1964, New Delhi. Two third draft proposals concerning pictorial markings for handling of dangerous goods and goods generally were finalized for processing as draft ISO Recommendations.

Owing to considerable difference of opinion about the need for symbols denoting the message 'Perishable Goods', 'Do not Drop', 'Hermetic Packaging' and 'Protection Against Cold' for transport of goods, the Secretariat was given the responsibility of evolving such symbols and putting up the matter at the next meeting.

**ISO/TC 89 Derived Timber Products** — (Sectt: Germany) — Third plenary meeting, 23 September 1964, Lisbon. The Committee discussed about the division and scope of ISO/TC 89 and its subcommittees.

**ISO/TC 89/SC 1 Fibre Building Board** — (Sectt: Germany) — Fourth meeting, 21-23 September 1964, Lisbon. Documents on (a) Fibre building boards, determination of density; and (b) Fibre building boards, definition and classification; were discussed.

**ISO/TC 89/SC 2 Particle Boards** — (Sectt: Germany) — Second meeting, 24-26 September 1964, Lisbon. Following documents were discussed:

(a) Particle boards — measurement of dimensions of test pieces; (b) Particle boards — method of determination of moisture content; (c) Particle boards — determination of density; (d) Particle boards — method of determination of bending strength & apparent modulus of elasticity; (e) Particle boards — definition and classification; and (f) Particle boards — method of determination of swelling in thickness, length and width and of water absorption after total immersion in water.

**ISO/TC 89/SC 3 Plywood** — (Sectt: Germany) — Second meeting, 28-29 September 1964, Lisbon. Documents on (a) Plywood —

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definitions and classification, and (b) Standard thicknesses of plywood after sand papering ( except for plywood glued with phenol ), were discussed.

**ISO/TC 91 Surface Active Agents** — ( Sectt: France ) — Draft proposals on the following subjects were received for comments:

(a) Analysis of soaps — determination of total free alkali; (b) Analysis of soaps — determination of total alkali; (c) Analysis of soaps — determination of glycerol; (d) Determination of settled and compacted apparent densities of washing powders; (e) Classification of surface active agents; (f) Analytical methods for technical alkyl sulphates of sodium; (g) Analytical method for technical sodium alkylarene sulphonates; (h) Surface active agents vocabulary; (j) Measurement of the foaming capacity; and (k) Methods of analysis for technical alkyl sulphonates of sodium.

**ISO/TC 92 Fire Tests on Building Materials and Structures** — ( Sectt: UK ) — The draft ISO proposal for fire resistance tests of structures was circulated to member-bodies for voting it as draft ISO Recommendation.

**ISO/TC 98 Bases for Design of Structures** — ( Sectt: Poland ) — Second plenary meeting, 25-29 May 1964, Warsaw. Meetings of the following subcommittees were also held as shown below:

ISO/TC 98/SC 1 Terminology and Symbols	25 May 1964, Warsaw
ISO/TC 98/SC 2 Safety of Structures	25-26 May 1964, Warsaw
ISO/TC 98/SC 3 Loads, Forces and Other Actions	25-26 May 1964, Warsaw
ISO/TC 98/SC 4 Limitation of Deformations	27 May 1964, Warsaw

Document on principles of calculation of structures and foundations was discussed at the meeting of the Technical Committee.

**ISO/TC 99 Semi-Manufactures of Timber** — ( Sectt: Rumania ) — A draft ISO proposal on mosaic parquet panels proposed by this Committee was circulated to member-bodies for voting it as ISO Recommendation.

**ISO/TC 102/SC 1 Sampling of Iron Ores** — ( Sectt: Japan ) — Second meeting, 16-18 November 1964, New Delhi, under the chairmanship of Prof. K. Ishikawa of University of Tokyo. Twenty-seven delegates from ten countries participated. India was represented by a delegation consisting of seven members under the leadership of Dr. A. V. Sukhatme. The Subcommittee considered the third draft ISO proposals on sampling and preparation of samples of iron ore. It was agreed that the sampling methods should be applicable to all iron ores, whether natural or processed



(pelletes, concentrates or agglomerates). It was also agreed to cover both the mechanical and manual methods. As regards the hammer and shovel method of sampling in the later case, the Secretariat was requested to conduct an enquiry among its member-bodies for setting up a working group. The Subcommittee after prolonged discussions decided to incorporate both the sample reduction methods, namely, 'coning and quartering' and 'increment reduction' in the draft ISO proposals.

The Secretariat was requested to prepare the fourth draft ISO proposals in the light of the decisions taken at the meeting.

**ISO/TC 102/SC 2 Chemical Analysis of Iron Ores** — (Sectt: Japan) — Second meeting, 13-16 October 1964, Dusseldorf (Germany). India was not represented. The following draft ISO proposals were considered:

Determination of sulphur, manganese, titanium oxide, copper, calcium oxide, chromium, magnesium oxide; volumetric and gravimetric determination of aluminium oxide; alkalimetric determination of phosphorus; determination of ferrous oxide; volumetric determination of total iron gravimetric determination of silicon dioxide; and determination of hygroscopic moisture.

**ISO/TC 103 Packaging Dimensions** — (Sectt: Israel) — A document prepared by the Swedish Committee for volume packages on investigations concerning standard sizes of transport and consumer packages in food trade and proposals for packaging dimensions was circulated to member-bodies. The first draft proposal on dimensions of rigid rectangular packages was also circulated to member-bodies.

**ISO/TC 104 Freight Containers** — (Sectt: USA) — Third meeting, 1-5 June 1964 Hamburg. Third draft proposal on dimensions and ratings of freight containers was being put up to the General Secretariat as a draft ISO Recommendation. Second draft ISO proposal for the specification, testing and marking of series 1 freight containers having a maximum weight of 10 and 20 tons, and the second draft ISO proposal for the testing of series 1 freight containers having a maximum gross weight of 10 and 20 tons, were circulated to member-bodies for approval for submission to ISO General Secretariat as Draft ISO Recommendations.

**ISO/TC 107/WG 3 Electrodeposited Coatings** — (Sectt: UK) First meeting, 6-8 October 1964, London. India was not represented. Draft ISO proposal on electroplated coatings of nickel and chromium and electroplated coatings of cadmium and zinc on iron and steel were considered. India's comments on electroplated coatings of nickel and chromium were sent to the Secretariat.

**ISO/TC 113 Measurement of Liquid Flow in Open Channels** — (Sectt: India) — The ISO Council, at its meeting held in New Delhi

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on 17 November 1964, elevated ISO/TC 30/SC 1 to the status of a full-fledged technical committee as ISO/TC 113.

The following draft ISO proposals were circulated to ISO member-bodies and would come up for discussion at the next meeting of this Committee and its 4 working groups in London in May-June 1965:

(a) Measurement of liquid flow in open channels by velocity area methods; (b) Measurement of liquid flow in open channels by the use of weirs and flumes, Part I, thin plate weirs and venturi flumes; (c) Glossary of terms and symbols; (d) Instructions for collection of data for the determination of errors in measurement of flow by velocity area methods; (e) Slope area method; (f) Tidal flow; (g) Stage discharge relation; (h) Broad crested weirs; (j) Triangular and trapezoidal weirs; (k) Brink depth method; (m) Sudden injection method; and (n) Radio active methods.

Liaison was established with ISO/TC 30 Measurement of Fluid Flow in Closed Conduits, IEC Technical Committee 4 Hydraulic Turbines, Economic Commission for Asia and the Far East (ECAFE), International Association of Scientific Hydrology (IASH) and International Commission on Irrigation and Drainage (ICID).

### **2. INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)**

**2.1** As on 31 March 1965, there were 58 IEC technical committees, 60 sub-committees, 4 expert committees and 129 working groups. India took part in all technical committees and subcommittees and in a few working groups, besides holding the secretariat and chairmanship of the technical committee on Electric Fans.

**2.2** A brief report on the work of IEC committees of interest to India is given below:

### **XXIX ANNUAL GROUP MEETINGS AT AIX-LES-BAINS (FRANCE)**

The Twenty-ninth Annual Group Meetings were held in Aix-les-Bains (France) from 19 to 30 May 1964. Besides IEC Council and Committee of Action, 36 advisory committees, technical committees, subcommittees and working groups met on that occasion. Dr. A. N. Ghosh, Joint Director, ISI, represented India at these meetings.

An IEC/ISO round table meeting was also held on that occasion. At this meeting, it was agreed to set up a Standing Co-ordinating Committee, ISO/IEC, at the highest echelon to co-ordinate the activities of ISO and IEC in those fields where border line problems arise. IEC also agreed to nominate its representative on ISO/DEVCO (Development Committee).

**IEC Council** — At the out set, the Council condoled the death of India's Prime Minister, Shri Jawaharlal Nehru, and conveyed its profound



grief to ISI. The Council then accepted the recommendation of a working group to amend, with certain modifications, the statutes and rules of procedure of IEC and approved them for circulation to the National Committees under the Six Months' Rule.

Another subject of vital interest to India concerned the treasurer's proposal to raise the contribution of National Committees to meet the increased expenditure. The proposal was eventually accepted in spite of opposition from Greek and USSR delegates. In view of the proposals having been accepted, India's contribution for the year 1965 would increase from Sw Fr 19 205 to Sw Fr 21 850.

At this meeting it was reported that the Democratic People's Republic of Korea had been admitted as the thirty-seventh member of IEC. It was also decided to hold the next General Meetings in Tokyo (Japan) from 10 to 23 October 1965 and the 1966 General Meetings in Israel.

The Council elected Prof. R. Radulet (Rumania) as the new President of IEC and Mr. J. O. Knowles (UK) as the new Treasurer.

The Council accepted the recommendation of the Committee of Action and set up the following new technical committees:

(a) TC 56 Reliability of Electronic Components and Equipment; (b) TC 57 Line Traps; and (c) TC 58 Methods of Measurement of Resistivity of High Conductivity Materials.

**Committee of Action** — Though India is not a member of the Committee, Dr. A. N. Ghosh, Joint Director, ISI, attended its meeting as an observer since several items on the agenda were of interest to this country.

Apart from approving 91 documents processed by different technical committees for circulation to National Committees for approval under the Six Months' Rule/Two Months' Procedure, the following more important decisions were taken:

(a) A proposal for standardization of fans for industrial use in which India was interested, was considered. As it was reported at the meeting that a similar proposal was under consideration of ISO, it was agreed to reconsider this proposal later, if ISO did not agree to take up this subject; (b) TC 4 Hydraulic Turbines, was authorized to carry on with the preparation of a code for the operation and maintenance of hydraulic turbines, for printing as a 'Report' and not as a 'Recommendation'; (c) The scope of TC 15 Insulating Materials, was extended to include the preparation of specifications for insulating materials; (d) TC 10 Insulating Oils, was authorized to deal with insulating fluids other than oils and also insulating gases; (e) Recommendations were made to IEC Council to set up new technical committees to deal with:

- 1) line traps,
- 2) reliability of electronic components and equipment; and
- 3) methods of measurement of resistivity of high conductivity materials.

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**TC 10 Insulating Oils** — (Sectt: Belgium) — The Committee considered the question of extending the scope of its work to include insulating fluids and insulating gases. The matter was referred for advice to the Committee of Action which has since agreed to the request of TC 10 to deal with both insulating oils and fluids.

**SC 14C Reactors** — (Sectt: Belgium) — The Sub-committee had discussion on draft IEC Recommendations for reactors. It was agreed that a new draft should be prepared for consideration at the next meeting.

**TC 19 Internal Combustion Engines** — (Sectt: USA) — Plenary meeting, 20-23 May 1964, Aix-Les-Bains (France). India was represented. Draft IEC publication on reciprocating internal combustion engines (excluding carburetor type) Part 1 Doc: 19 (Central Office) 4 was considered in detail in the light of voluminous comments received from member-countries. It was decided to re-examine the document at the next meeting when attempts would be made to make it truly international.

**TC 28 Insulation Co-ordination** — (Sectt: France) — The Committee considered the introduction of reduced insulation levels below 100 kV covered in Doc: 28 (Sectt) 34 Draft supplement to Pub 71 (1960) recommendations for insulation co-ordination concerning the tables of standard insulation levels, but decided to hold the matter over for a later discussion.

**TC 29 Electro-Acoustics** — (Sectt: Netherlands) — The meeting was preceded by the meetings of SC 29A Sound Recording, and of several working groups. Documents relating to reference coupler for the calibration of earphones used in audiometry; marking of control settings on hearing aids; characteristics of audio-apparatus; specification for filters for the analysis of vibrations, etc, were recommended for circulation under the Six Months' Rule. The Committee also endorsed the recommendation of the Sound Recording Subcommittee (SC 29A) that standardization of sound recording be kept within IEC and that a separate committee be appointed to deal with the recording problems.

**TC 37 Lightning Arresters** — (Sectt: USA) — The Committee approved for publication draft Appendix C to IEC Pub 99-1 'Guide to the application of non-linear resistor type lightning arresters for alternating current system'.

**TC 39 Electronic Tubes and Valves** — (Sectt: Netherlands) — Documents relating to measuring methods for television picture tubes, noise effects, spurious and unwanted electrode currents in tubes and designation of cathode-ray tube electrodes were approved for circulation under the Six Months' Rule.

**SC 39/48 Sockets and Accessories for Electronic Tubes and Valves** — (Sectt: Netherlands) — This joint Subcommittee of TC 39



and TC 48 recommended circulation of the article sheets for socket for one of the tube bases included in IEC Publication 67, under Six Months' Rule.

**TC 40 Capacitors and Resistors for Electronic Equipment** — (Sectt: Netherlands) — Two draft recommendations, one covering dimensions of ceramic dielectric capacitors of plate type and the other on code marking of capacitance value and resistance value, were approved for circulation under the Six Months' Rule. The Committee also discussed to undertake work, subject to approval by Committee of Action, on the preparation of an international recommendation on standard colours for colour coding of components for electronic equipment and the method of describing these colours.

**TC 50 Environmental Testing** — (Sectt: UK) — The Committee received and approved reports from Subcommittee 50A Shock and Vibration Testing, Subcommittee 50B Climatic Testing, as well as working groups on corrosion, mould growth, solar radiation, dust and sand test. Two draft recommendations, one on vibration test for electronic equipment and components and the other covering requirements of enclosures and method for maintaining constant relative humidity for test purposes, were recommended for circulation under the Six Months' Rule. The Committee formulated the procedure (subject to approval by the Committee of Action) for liaison with ISO/TC 20 Aircraft, which is also vitally interested in detailed environmental tests for electrical and electronic items used in aircrafts. The proposed layout of the future edition of IEC Pub 68 was discussed by the Committee, which also received and noted a report on microminiaturization as prepared by a working group of the Advisory Committee on Electronics and Telecommunications.

**WG 5 of TC 50 Mould Growth Test** — (Sectt: UK) — This Working Group, of which India is a corresponding member, considered detailed procedures for practical measurements with mould growth on electronic components and equipment, conditions for such tests, choice of mould spores, duration of exposure, preparation of suspension, virility of moulds and other aspects. The Group also discussed a report on mould growth test on synthetic materials used in electronic components.

**WG 8 of TC 50 Soldering Test** — (Sectt: UK) — The Working Group discussed the details of various aspects of solderability of wire terminations including accelerated ageing, soldering iron details, thermal shock, application of flux, cleaning of specimens, and duration of soldering, and made its recommendations to TC 50.

**SC 50A Shock and Vibration Tests** — (Sectt: UK) — The Subcommittee recommended for circulation under the Six Months' Rule, a document on vibration test for electronic equipment and components for inclusion in IEC Pub 68. Preliminary proposals on acceleration (steady state) test, shock and bump test, preferred severities for vibration,

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definitions of terms used in vibration test and guidance on application of vibration test procedure were also discussed. In its future programme of work, the Subcommittee agreed to take up tests for random vibration and high intensity noise.

**WG 1 of SC 50A Special Problems** — (Sectt: France) — The Working Group of which India is a corresponding member, discussed in detail some of the special problems concerning procedure for shock and vibration test and took up for immediate future work the drafting of shock and bump test and test for random vibrations.

**SC 50B Climatic Tests** — (Sectt: Netherlands) — The Subcommittee discussed and approved for publication draft recommendations on dry heat test, low air pressure test and cold test, as parts of IEC Pub 68, Part II, 2nd edition. The Committee also got ready, for six months' circulation a draft recommendation giving the requirements of enclosures and methods of maintaining constant relative humidity for test purpose.

**WG 1 of SC 50B Damp Heat (Cycling Test)** — (Sectt: UK) — Six working groups had been set up by SC 50B to consider the whole question of damp heat testing and to formulate a guidance document on the subject. Accordingly, the Group considered various basic points on the subject and agreed upon a questionnaire to be issued to the members on the effects to be expected from damp heat test and which needed further investigation.

### MEETINGS AT OTHER PLACES

**Committee of Action** — The Committee met at Paris on 7 December 1964, and set up two new technical committees, namely, TC 59 Standard Methods of Measuring Performance of Domestic Electrical Appliances, and TC 60 Sound and Video Recording, with France and Netherlands as secretariats, respectively.

Thirty-five documents for circulation were approved under the Six Months' Rule. IEC Central Office was directed to prepare a study of the time taken at different stages in the formulation of IEC Recommendations.

**TC 15 Insulating Materials** — (Sectt: Italy) — This Committee, its steering committee and working groups met at Prague on 19-27 October 1964. Shri Y. S. Venkateswaran, Head, Electrotechnical Department, ISI represented India at these meetings.

The following three drafts were recommended for issue under the Six Months' Rule:

(a) Temperature rating of insulating materials; (b) Evaluation of the temperature properties of electrical insulation varnishes by the helical coil test; and (c) Test methods for determining electrolytic corrosion of insulating materials.



Since document at (c) covered two different methods, it was agreed to carry out comparative tests in accordance with these methods to decide whether one method can be preferred to the other.

The following three subcommittees were set up:

SC 15A Short Time Tests (Sectt: Germany)

SC 15B Endurance Tests (Sectt: USA)

SC 15C Specifications for Insulating Materials (Sectt: Netherlands)

Working Group 5 Encyclopaedia would, however, continue to function directly under TC 15.

**SC 22D Single-Phase Power Convertor for Electric Traction**— (Sectt: France) — This Subcommittee met at Rome on 14-19 September 1964. Shri N. B. Satarwala of the Indian High Commission in the United Kingdom represented India at the meeting. The Committee discussed, in detail, draft recommendation for power convertors for use on electrically—powered rolling stock and agreed that a fresh draft, prepared in the light of the discussions, may be considered at the next meeting. It was also agreed that the Subcommittee may take up later the work on polyphase static power convertors for traction vehicles.

**TC 43 Electric Fans** — The secretariat and chairmanship of this Committee are held by India. Though the Committee did not meet during the period under report, draft IEC Recommendations for the following, approved at the Venice meeting in June 1963, were finalized for publication:

(a) ac electric ceiling fans and regulators; (b) ac table type electric fans and regulators; and (c) ac pedestal type electric fans and regulators.

In addition, draft recommendations for the following were circulated to National Committees of IEC for consideration at the next meeting to be held in Tokyo in October 1965:

(a) Electric fans and regulators for use on board ships; (b) ac electric ventilating fans and regulators for non-industrial use; and (c) Safety requirements of all types of fans.

**TC 47 Semiconductor Devices** — (Sectt: France) — At the Philadelphia meeting of the Committee held from 14 to 25 September 1964, a large number of documents on terminology; letter symbols; essential ratings and characteristics; and measuring methods and mechanical standardization of semiconductor devices were approved for circulation under the Six Months' Rule. Following are the principal documents, among others, which are to be circulated under the Six Months' Rule:

(a) Terminology on thyristors; (b) Letter symbols for thyristors; (c) Letter symbols for tunnel diodes; (d) Essential ratings and characteristics of rectifier diodes; (e) Essential ratings and characteristics on multiple semiconductor devices having a common encapsulation; (f) Test for voltage

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and current for power devices; (g) Standard format for the presentation of essential ratings and characteristics; (h) Mechanical data to be given under essential ratings and characteristics; (j) Methods of measurement — thermal conditions for electrical reference measurements; (k) Measuring methods of collector base output capacitance and storage time (transistors); (m) Mechanical standards—additional outline drawings of semiconductor devices; and (n) Measuring methods—high frequency parameters for transistors.

A preparatory working group was set up to deal with hall devices. The preparatory working group on micro-electronics also made some progress on the work allotted to it.

### 3. ECAFE SUBCOMMITTEE ON METALS AND ENGINEERING

3.1 The tenth session of the ECAFE Subcommittee on Metals and Engineering was held in Tokyo on 13-23 July 1964. A four-man delegation attended this session on behalf of the Government of India. The following plan of work was recommended by the Subcommittee for adoption, to promote standardization of metal products in the ECAFE countries:

(a) To establish national standards organizations where they do not exist at present; the initiative in this matter may be taken by the Governments with the co-operation of private industry; (b) To train standards engineers to man the national standards bodies to be established; (c) To develop common regional standards for the ECAFE region, taking into consideration ISO Recommendations to promote trade amongst these countries and to exploit, to the best advantage, regional resources; (d) To make a comprehensive survey of the position of national standards, Government standards and company standards being used by various countries in the region; (e) To organise training courses under the auspices of the United Nations in one of the countries of the region having the necessary facilities to train standards engineers; and (f) To convene a regional conference on standardization to enable delegates from all ECAFE countries to take note of the progress and exchange ideas for future work in order to achieve unification of standards prevalent in the region.

In view of the importance of standardization, the Subcommittee requested the ECAFE Secretariat to allot high priority to implement the foregoing recommendations and to keep this item on the agenda of the Subcommittee for regular review.

The Subcommittee allotted priority to the following subjects as far as standardization is concerned:

(a) To survey the existing standards and to study the possibilities of evolving uniform standard specifications for steel, as well as selected engineering products including machine tools, barges and coastal vessels; (b) To convene a working group on standardization at an appropriate date; and (c) To assist in the training of standards engineers.



## PART IV APPENDICES

### APPENDIX A

( See page 6 )

#### INDIAN STANDARDS PUBLISHED AND IN PRESS DURING 1964 - 65

( This list gives the new Indian Standards and revisions published during 1964-65 and those which were under print on 31 March 1965. It does not include standards which were under print on 31 March 1964 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
<b>AGRICULTURAL AND FOOD PRODUCTS</b>		
<b>Animal Feeds</b>		
1.	IS : 1374-1964 Poultry feeds ( revised )	5.50
<b>Cereals and Pulses Products</b>		
2.	IS : 2813-1964 Terminology for foodgrains	1.00
3.	IS : 2814-1964 Method for sampling of cereals and pulses	2.00
4.	IS : 2815-1964 Slotted tube sampler	1.50
5.	IS : 2816-1964 Grain sampler ( <i>PARKHI</i> type )	1.00
6.	IS : 2821-1964 Thermo-sampler	1.50
<b>Coffee Products</b>		
7.	IS : 2791-1964 Soluble coffee powder	2.50
<b>Dairy Equipment</b>		
8.	IS : 2688-1964 Insulated stainless steel milk storage tank	3.00
9.	IS : 2689-1964 Batch pasteurizer ( stainless steel )	2.00
10.	IS : 2703-1964 Hand-operated butter churn ( end-over-end )	2.00
11.	IS : 2706-1964 Batch pasteurizer ( aluminium )	2.00
12.	IS : 2822-1964 Butter moulding machine	1.00
13.	IS : 2829-1964 Steam-jacketed ghee pans	1.50
<b>Dairy Industry, Layout Plans</b>		
14.	IS : 2981-1964 Layout plan for dairy laboratories	7.00
<b>Dairy Laboratory Apparatus</b>		
15.	IS : 2803-1964 Capillary pipette for direct microscopic count of milk	1.50
<b>Dairy Products</b>		
16.	IS : 2785-1964 Hard cheese, processed cheese and processed cheese spread	4.00
17.	IS : 2802-1964 Ice-cream	5.50
<b>Fish and Fishery Products</b>		
18.	IS : 2883-1964 Dried white baits ( <i>Anchoviella</i> SP )	2.00
19.	IS : 2884-1964 Dried and laminated Bombay duck	2.50
20.	IS : 2885-1965 Frozen frog legs	3.00

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<b>Food Colours</b>		
21.	IS : 2923-1964 Carmoisine ... ..	2.50
22.	IS : 2924-1964 Fast red E ... ..	2.50
<b>Food Grain Handling and Storage</b>		
23.	IS : 607-1965 Code of practice for construction of bagged food grain storage structures suitable for trade and government purposes ( revised ) ...	4.50
<b>Fruits and Vegetables</b>		
24.	IS : 2773-1964 Cauliflower ... ..	1.50
25.	IS : 2774-1964 Cabbage ... ..	1.50
26.	IS : 2775-1964 Carrots ... ..	1.50
27.	IS : 2776-1964 Brinjals (egg plant ) ... ..	1.00
28.	IS : 2777-1964 Peas-in-pods ... ..	1.50
29.	IS : 2778-1964 Tomatoes ... ..	1.50
30.	IS : 2860-1964 Methods of sampling and test for processed fruits and vegetables ... ..	6.00
31.	IS : 2867-1964 Canned mangoes ... ..	3.50
32.	IS : 2868-1964 Canned pineapples ... ..	3.50
33.	IS : 2869-1964 Canned orange segments ... ..	3.50
<b>Livestock Housing</b>		
34.	IS : 2732-1964 Code of practice for poultry housing ... ..	3.00
35.	IS : 2733-1964 Code of practice for sheep and goats housing ... ..	2.50
36.	IS : 2734-1964 Code of practice for equine housing ... ..	2.50
<b>Meat and Meat Products</b>		
37.	IS : 3044-1965 Mutton and goat meat, curried and canned ... ..	1.50
38.	IS : 3060-1965 Pork sausages, canned ... ..	2.50
39.	IS : 3061-1965 Pork sausages, fresh ... ..	2.00
<b>Pest Control Equipment</b>		
40.	IS : 2870-1964 Charge pump for pressure-retaining knapsack sprayer ... ..	2.50
41.	IS : 2928-1964 Pressure-retaining knapsack sprayer ... ..	3.50
42.	IS : 3062-1965 Rocker sprayer ... ..	3.50
<b>Pesticidal Formulations</b>		
43.	*IS : 2682-1964 Chlordane emulsion concentrates ... ..	2.50
44.	IS : 2861-1964 Diazinon emulsifiable concentrates ... ..	4.00
45.	IS : 2862-1964 Diazinon water dispersible powder concentrates ... ..	4.00
46.	IS : 2864-1964 Chlordane dusting powders ... ..	3.00
47.	IS : 2865-1964 Methyl parathion emulsifiable concentrates ... ..	4.50
<b>Pesticides</b>		
48.	IS : 2863-1964 Chlordane, technical ... ..	3.50
<b>Propagation Materials</b>		
49.	IS : 2729-1964 Methods of sampling and test for seeds ... ..	3.50
50.	IS : 2735-1964 Seeds of tomato ... ..	1.50
51.	IS : 2736-1964 Seeds of garden beet ... ..	1.50

\*Specification WHO/SIF/12.R1-1958 of the World Health Organization recognized as Indian Standard with some modifications.



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Sl. No.				Rs
52.	IS : 2737-1964	Seeds of <i>BHINDI</i> ( lady's finger )	...	1·50
53.	IS : 2738-1964	Seeds of bean	...	1·50
54.	IS : 2739-1964	Seeds of pea	...	1·50
55.	IS : 2936-1964	Seeds of carrot	...	1·50
56.	IS : 2937-1964	Seeds of cabbage	...	1·50
57.	IS : 2999-1965	Seeds of cauliflower	...	1·50
58.	IS : 3000-1965	Seeds of turnip	...	1·00
59.	IS : 3001-1965	Seeds of brinjal	...	1·00
60.	IS : 3002-1965	Seeds of radish	...	1·00
<b>Spices and Condiments</b>				
61.	IS : 2799-1964	Mustard, whole, for use as condiment	...	1·50
<b>Tobacco Products</b>				
62.	IS : 3041-1965	Chewing tobacco, manufactured minced type	...	5·00
<b>CHEMICAL</b>				
<b>Adhesives</b>				
63.	IS : 2880-1964	Pressure sensitive adhesive cellulose tape	...	3·00
64.	IS : 2886-1964	Labelling paste for automatic machines	...	2·00
<b>Alcohols and Allied Products</b>				
65.	IS : 2979-1964	Fusel oil	...	2·50
<b>Alkalis</b>				
66.	IS : 296-1965	Sodium carbonate, anhydrous ( <i>revised</i> )	...	4·50
67.	IS : 1021-1964	Caustic soda, pure ( <i>revised</i> )	...	4·50
68.	IS : 2697-1964	Ammonium bicarbonate for food industry	...	2·50
<b>Brushware</b>				
69.	IS : 384-1964	Brushes, paints and varnishes, flat ( <i>second revision</i> )	...	3·50
70.	IS : 2701-1964	Brush, carriage washing ( without handle )	...	2·00
71.	IS : 3008-1964	Brush, shoe blacking	...	2·50
72.	IS : 3009-1964	Brushes, shoe polishing	...	2·50
73.	IS : 3015-1964	Brush, scrubbing	...	2·50
<b>Ceramicware, Enamelware and Laboratory Porcelain</b>				
74.	IS : 2717-1964	Glossary of terms used in vitreous enamelware industry	...	4·50
75.	IS : 2781-1964	Glossary of terms relating to ceramicware	...	1·50
76.	IS : 2836-1964	Methods of test for laboratory porcelain	...	1·50
77.	IS : 2837-1964	Porcelain crucibles and basins	...	2·50
78.	IS : 2838-1964	Stoneware containers for general purposes	...	2·50
79.	IS : 2839-1964	Industrial stoneware	...	3·00
80.	IS : 2857-1964	Earthenware dinnerware	...	1·50
<b>Chemicals, Inorganic ( Miscellaneous )</b>				
81.	IS : 250-1964	Potassium bichromate, technical and analytical reagent ( <i>revised</i> )	...	3·00
82.	IS : 573-1964	Trisodium phosphate, technical ( <i>revised</i> )	...	2·50

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141.	IS : 2543-1964 Cellulose acetate moulding and extrusion materials ...	6.00
142.	IS : 2798-1964 Methods of test for polyethylene containers ...	1.00
143.	IS : 2828-1964 Glossary of terms used in the plastic industry ...	4.00
<b>Ready Mixed Paints and Enamels</b>		
144.	IS : 101-1964 Methods of test for ready mixed paints and enamels ( <i>second revision</i> ) ...	8.00
145.	IS : 117-1964 Ready mixed paint, brushing, finishing, exterior, semi-gloss, for general purposes, to Indian Standard colours ( 46 shades ) ( <i>revised</i> ) ...	1.50
146.	IS : 130-1964 Ready mixed paint, spraying, finishing, for railway wagon stock, to Indian Standard colour No. 446, red oxide, and red oxide ( colour unspecified ) ( <i>revised</i> ) ...	1.00
147.	IS : 641-1964 Ready mixed paint, brushing, finishing, interior, semi-gloss, for general purposes, white ( <i>revised</i> ) ...	1.00
148.	IS : 1232-1964 Ready mixed paint, brushing, yellow ochre, semi-gloss, for general purposes ( <i>revised</i> ) ...	1.50
149.	IS : 2931-1964 Ready mixed paint, brushing, aluminium-zinc oxide composite primer ...	1.00
150.	IS : 2932-1964 Enamel, synthetic, exterior, type 1 (a) undercoating (b) finishing, colour as required ...	3.00
151.	IS : 2933-1964 Enamel, exterior, type 2 (a) undercoating (b) finishing, colour as required ...	2.50
<b>Rubber and Rubber Products</b>		
152.	IS : 444-1964 Water hose of rubber, low pressure, with woven reinforcement ( <i>revised</i> ) ...	2.00
153.	IS : 445-1964 Water hose of rubber, high pressure, with woven reinforcement ( <i>revised</i> ) ...	1.50
154.	IS : 446-1964 Air hose of rubber, light duty, with woven reinforcement ( <i>revised</i> ) ...	1.50
155.	IS : 447-1964 Welding and cutting hose of rubber with woven reinforcement ( <i>revised</i> ) ...	1.50
156.	IS : 635-1964 Oil and solvent resisting hose of rubber with woven reinforcement ( <i>revised</i> ) ...	1.50
157.	IS : 2765-1964 Radiator hose ...	2.50
<b>Safety Matches</b>		
158.	IS : 2653-1964 Safety matches in boxes ...	3.00
<b>Soaps and Other Surface Active Agents</b>		
159.	IS : 285-1964 Laundry soaps ( <i>revised</i> ) ...	1.50
160.	IS : 2887-1964 Laundry soap powders ...	1.00
161.	IS : 2888-1964 Toilet soaps ...	1.50
<b>Treated Fabrics</b>		
162.	IS : 1421-1964 Cellulose nitrate coated fabrics ( <i>revised</i> ) ...	3.50
163.	IS : 2789-1964 Special proofed paulins ( tarpaulins ) ...	3.50
<b>Water and Water Treatment</b>		
164.	IS : 201-1964 Quality tolerances for water for textile industry ( <i>revised</i> ) ...	1.00
165.	IS : 1069-1964 Water for storage batteries ( <i>revised</i> ) ...	2.00
166.	IS : 1622-1964 Methods of sampling and test for microbiological examination of water used in industry ...	6.00



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Sr. No.		Rs
167.	IS : 2724-1964 Quality tolerances for water for pulp and paper industry ...	1-00
168.	IS : 2725-1964 Quality tolerances for water for rayon manufacturing industry ...	1-00
169.	IS : 2859-1964 Code of practice for treatment of water for locomotive boilers ...	1-50
170.	IS : 3025-1964 Methods of sampling and test ( physical and chemical ) for water used in industry ...	10-00
<b>CIVIL ENGINEERING</b>		
<b>Aggregates</b>		
171.	IS : 2686-1964 Cinder aggregates for use in lime concrete ...	2-00
<b>Boards and Sheets</b>		
172.	IS : 2095-1964 Gypsum plaster boards ...	1-50
<b>Bricks and Blocks</b>		
173.	IS : 2691-1964 Burnt clay facing bricks ...	2-00
174.	IS : 2849-1964 Non-load bearing gypsum partition blocks ( solid and hollow types ) ...	1-50
<b>Codes of Practice</b>		
175.	IS : 456-1964 For plain and reinforced concrete ( <i>second revision</i> ) ...	10-00
176.	IS : 661-1964 For insulation and safe operation of cold storages ( <i>revised</i> ) ...	2-00
177.	IS : 2470 ( Part II )-1964 For design and construction of septic tanks : Part II Large installations ...	3-00
178.	IS : 2663-1964 Relating to primary elements in the design of buildings for archives ...	2-00
179.	IS : 2685-1964 For selection, installation and maintenance of sluice valves ...	1-00
180.	IS : 2700-1964 For roofing with wooden shingles ...	2-00
181.	IS : 2792-1964 For design and construction of stone slab over joist floor ...	2-00
182.	IS : 2858-1964 For roofing with Mangalore tiles ...	3-50
183.	IS : 2911 ( Part I )-1964 For design and construction of pile foundations : Part I Load bearing concrete piles ...	
184.	IS : 2974 ( Part I )-1964 For design and construction of machine foundations : Part I Foundations for reciprocating type machines ...	4-00
185.	IS : 3007 ( Part I )-1964 For laying of asbestos cement sheets : Part I Corrugated sheets ...	5-00
186.	IS : 3036-1965 For laying lime concrete for a waterproofed roof finish ...	1-50
<b>Construction Plant and Equipment</b>		
187.	IS : 2506-1964 Screed board concrete vibrators ...	2-50
188.	IS : 2722-1964 Portable swing weighbatchers for concrete ( single and double bucket type ) ...	1-50
189.	IS : 2750-1964 Steel scaffoldings ...	5-00
190.	IS : 3066-1965 Hot asphalt mixing plants ...	3-50
<b>Door and Window and Furniture Fittings</b>		
191.	IS : 281-1964 Mild steel sliding door bolts for use with padlocks ( <i>revised</i> ) ...	2-00
192.	IS : 2681-1964 Non-ferrous metal sliding door bolts for use with padlocks ...	2-00

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<b>Fire Fighting Equipment and Accessories</b>		
193.	IS: 927-1964 Fire hooks ( <i>revised</i> ) ... ..	1-00
194.	IS: 928-1964 Fire bell ( <i>revised</i> ) ... ..	1-50
195.	IS: 938-1964 1 350-l/min (or 300-gal/min) small fire engine ( <i>revised</i> ) ... ..	4-00
196.	IS: 956-1964 Rescue tender for airfields ... ..	3-50
197.	IS: 2696-1964 1 350-l/min (or 300-gal/min) light fire engine ... ..	3-00
198.	IS: 2745-1964 Firemen's helmets ... ..	2-50
199.	IS: 2871-1964 Branch pipe, universal, for fire fighting purposes ... ..	2-00
200.	IS: 2878-1964 Portable fire extinguishers, carbon-dioxide type ... ..	1-50
201.	IS: 2925-1964 Industrial safety helmets ... ..	4-50
202.	IS: 2930-1964 Hose laying tender for fire brigade use ... ..	3-00
<b>Fire Safety</b>		
203.	IS: 2726-1964 Code of practice for fire safety of industrial buildings : cotton ginning and pressing (including cotton seed delinting) factories ... ..	2-00
204.	IS: 3058-1965 Code of practice for fire safety of industrial buildings : viscose rayon yarn and/or staple fibre plants ... ..	2-50
<b>Flooring and Roofing Materials</b>		
205.	IS: 2690-1964 Burnt clay flat terracing tile ... ..	2-00
<b>Furniture</b>		
206.	IS: 2695-1964 Drawing filing equipment ... ..	3-50
<b>Lime</b>		
207.	IS: 712-1964 Building limes ( <i>revised</i> ) ... ..	6-50
<b>Measurement of Construction Work</b>		
208.	IS: 1200-1964 Method of measurement of building works ( <i>revised</i> ) ... ..	10-00
<b>Measurement of Flow</b>		
209.	IS: 2912-1964 Recommendation for liquid flow measurement in open channels by slope-area method (approximate method) ... ..	2-00
210.	IS: 2913-1964 Recommendation for determination of flow in tidal channels ... ..	5-00
211.	IS: 2914-1964 Recommendations for estimation of discharges by estab- lishing stage discharge relation in open channels ... ..	7-50
212.	IS: 2915-1964 Instructions for collection of data for the determination of error in measurement of flow by velocity area methods ... ..	4-50
213.	IS: 2952 (Part I)-1964 Recommendation for methods of measure- ments of fluid flow by means of orifice plates and nozzles : Part I Incompressible fluids ... ..	6-00
<b>Methods of Sampling and Testing</b>		
214.	IS: 2542 (Part I)-1964 Methods of test for gypsum plaster, concrete and products : Part I Plaster and concrete ... ..	5-00
215.	IS: 2542 (Part II)-1964 Methods of test for gypsum plaster, con- crete and products : Part II Gypsum products ... ..	3-00
216.	IS: 2720 (Part II)-1964 Methods of test for soils : Part II Deter- mination of moisture content ... ..	1-00
217.	IS: 2720 (Part III)-1964 Methods of test for soils : Part III Deter- mination of specific gravity ... ..	1-50



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Sl No.		Rs
218.	IS : 2720 ( Part VI )-1964 Methods of test for soils : Part VI Determination of shrinkage factors ... ..	2.00
219.	IS : 2720 ( Part VII )-1965 Methods of test for soils : Part VII Determination of moisture content — dry density relation using light compaction ... ..	2.50
220.	IS : 2720 ( Part VIII )-1965 Methods of test for soils: Part VIII Determination of moisture content — dry density relation using heavy compaction ... ..	2.50
221.	IS : 2720 ( Part X )-1964 Methods of test for soils: Part X Determination of unconfined compressive strength ... ..	2.00
222.	IS : 2720 ( Part XVIII )-1964 Methods of test for soils: Part XVIII Determination of field moisture equivalent ... ..	1.00
223.	IS : 2720 ( Part XIX )-1964 Methods of test for soils: Part XIX Determination of centrifuge moisture equivalent ... ..	1.50
<b>Pipes</b>		
224.	IS : 3006 - 1965 Chemically resistant salt-glazed stoneware pipes and fittings ... ..	5.50
<b>Planning, Regulation and Control and Building Byelaws</b>		
225.	IS : 2718-1964 Recommendation for preferred dimensions for storey-heights ... ..	1.00
<b>Poles</b>		
226.	IS : 785-1964 Reinforced concrete poles for overhead power and telecommunication lines ( revised ) ... ..	3.50
<b>Safety in Air Conditioning and Refrigeration</b>		
227.	IS : 659-1964 Safety code for air conditioning ( revised ) ... ..	2.00
<b>Standard Glossaries and Symbols</b>		
228.	IS : 2809-1964 Glossary of terms and symbols relating to soil mechanics ...	5.50
229.	IS : 2810-1964 Glossary of terms and symbols relating to soil dynamics ...	2.50
<b>Structural Safety</b>		
230.	IS : 875-1964 Structural safety of buildings : loading standards ( revised ) ...	5.50
<b>Timber</b>		
231.	IS : 656-1964 Logs for plywood ( revised ) ... ..	1.50
232.	IS : 2753 ( Part I )-1964 Methods for estimation of preservatives in treated timber and in treating solutions: Part I Determination of copper, arsenic, chromium, zinc, boron, creosote and fuel oil ... ..	3.00
<b>Timber Stores</b>		
233.	IS : 10-1964 Plywood tea-chests ( second revision ) ... ..	4.50
234.	IS : 2674-1964 Plywood cases — battened construction ... ..	2.50
235.	IS : 2891-1964 Wooden handles for felling axes and hand axes ... ..	1.00
236.	IS : 2892-1964 Wooden handles for picks and beaters ... ..	1.00
237.	IS : 2893-1964 Wooden handles for adzes ... ..	1.00
238.	IS : 2922-1964 Wooden tent mallets ... ..	1.50
239.	IS : 3053-1965 Cane baskets for general purposes ... ..	1.00
<b>Timber Treatment Plant</b>		
240.	IS : 2683-1964 Guide for installation of pressure impregnation plants for timber ... ..	2.50

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<b>Waterproofing and Damp-Proofing Materials</b>									
241.	IS :	1322-1965	Bitumen felts for waterproofing and damp-proofing ( revised )						3.00
242.	IS :	3037-1965	Bitumen mastic for use in waterproofing of roofs	...					1.00
<b>Water Supply, Sanitation and Drainage Fittings</b>									
243.	IS :	773-1964	Enamelled cast iron water closets, railway coaching stock type ( second revision )	...	...	...	...		1.50
244.	IS :	774-1964	Flushing cisterns for water closets and urinals ( valveless siphonic type ) ( second revision )	...	...	...	...		2.50
245.	IS :	778-1964	Gunmetal gate, globe and check valves for water, steam and oil ( not intended for use in petroleum industry ) ( revised )	...	...	...	...		6.00
246.	IS :	779-1965	Water meters ( domestic type ) ( second revision )	...	...	...	...		4.00
247.	IS :	2692-1964	Ferrules for water services	...	...	...	...		2.50
248.	IS :	2906-1964	Sluice valves for water works purposes ( 350 to 1 200 mm size )	...	...	...	...		4.00
249.	IS :	2963-1964	Non-ferrous waste fittings for wash-basins and sinks	...	...	...	...		1.50
250.	IS :	3004-1964	Plug cocks for water supply purposes	...	...	...	...		2.50
251.	IS :	3042-1965	Single faced sluice gates ( 200 to 1 200 mm size ) ( in press )	...	...	...	...		
<b>Unclassified</b>									
252.	IS :	2661-1964	Librachine ( mobile library )	...	...	...	...		1.50
253.	IS :	2662-1964	Packages for use of libraries	...	...	...	...		1.00
<b>CONSUMER PRODUCTS</b>									
<b>Coir and Coir Products</b>									
254.	IS :	898-1964	Coir fibre ( revised )	...	...	...	...		2.00
255.	IS :	1693-1964	Door mats — rod ( revised )	...	...	...	...		2.00
256.	IS :	1858-1964	Door mats, creel, bit and fibre ( revised )	...	...	...	...		2.50
257.	IS :	2295-1964	Superior ANJENGO type yarn	...	...	...	...		2.50
258.	IS :	2955-1964	Coir mattings for cricket pitches	...	...	...	...		1.50
259.	IS :	2956-1964	Coir mats for gymnasia	...	...	...	...		1.00
260.	IS :	2957-1964	Sinnet mats	...	...	...	...		1.00
261.	IS :	2958-1964	Corridor mats	...	...	...	...		1.00
<b>Cutlery</b>									
262.	IS :	990-1964	Spoons, stainless steel ( revised )	...	...	...	...		2.00
263.	IS :	991-1964	Spoons, brass and nickel silver ( revised )	...	...	...	...		2.00
264.	IS :	992-1964	Forks ( table, fish, pastry and serving ), stainless steel ( revised )	...	...	...	...		2.50
265.	IS :	993-1964	Forks ( table, fish, pastry and serving ), brass and nickel silver ( revised )	...	...	...	...		2.50
266.	IS :	994-1964	Butter knives and fish knives ( revised )	...	...	...	...		2.00
267.	IS :	995-1964	Table knives, dessert knives and fruit knives ( revised )	...	...	...	...		2.50
<b>Domestic Hardware</b>									
268.	IS :	726-1964	Galvanized steel buckets for general use ( revised )	...	...	...	...		2.00
<b>Oil Burning Appliances</b>									
269.	IS :	1238-1964	Hurricane lanterns ( revised )	...	...	...	...		4.50
270.	IS :	1342-1964	Oil pressure stoves ( revised )	...	...	...	...		4.50
271.	IS :	1384-1964	Oil pressure lanterns ( revised )	...	...	...	...		4.50
272.	IS :	2787-1964	Oil pressure heaters	...	...	...	...		3.00



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SL No.	Rs
273. IS: 2788-1964 Gas mantles ... ..	1·00
274. IS: 2795-1964 Oil pressure stoves ( large ) ... ..	3·50
275. IS: 2980-1964 Non-pressure stoves ... ..	2·00
<b>Sports Goods</b>	
276. IS: 2719-1964 Carrom boards ... ..	1·50
277. IS: 2746-1964 Spring boards ... ..	1·00
<b>Umbrella</b>	
278. IS: 2917-1964 Umbrella ribs ... ..	2·50
279. IS: 2918-1964 Umbrella tubes, sticks and handles ... ..	1·50
280. IS: 2919-1964 Umbrella fittings ... ..	2·00
281. IS: 2920-1964 Umbrellas ... ..	1·50
<b>ELECTROTECHNICAL</b>	
<b>Acoustics</b>	
282. IS: 2748-1964 Methods of measurements on microphones ... ..	3·50
283. IS: 3028-1965 Method of measurement of noise emitted by motor vehicles ... ..	1·00
<b>Appliances</b>	
284. IS: 365-1965 Electric hot-plates ( revised ) ... ..	3·00
285. IS: 366-1965 Electric irons ( revised ) ... ..	3·00
286. IS: 367-1965 Electric kettles ( revised ) ... ..	2·50
287. IS: 369-1965 Electric radiators ( revised ) ... ..	3·00
288. IS: 1287-1965 Electric toasters ( revised ) ... ..	2·50
289. IS: 2994-1965 Electric stoves ... ..	3·00
290. IS: 3017-1965 Thermostats for use with electric water heaters ... ..	3·50
<b>Batteries</b>	
291. IS: 586-1964 Leclanché type dry batteries for telecommunication, signalling and general purposes ( second revision ) ... ..	2·50
292. IS: 2652-1964 Schedule of terminals for leclanché type primary batteries ... ..	3·50
<b>Conductors and Cables</b>	
293. IS: 450-1964 Cotton-covered round copper conductors ( revised ) ... ..	2·50
294. IS: 1554 ( Part I )-1964 PVC insulated ( heavy duty ) electric cables: Part I For working voltages up to and including 1 100 volts ( revised ) ... ..	6·00
295. IS: 2593-1964 Flexible cables for miners' cap-lamps ... ..	3·00
296. IS: 2665-1964 Cadmium copper wire for telegraph and telephone purposes ... ..	2·00
297. IS: 2889-1964 Drums for trolley and contact wire ... ..	1·50
298. IS: 2982-1965 Copper conductors in insulated cables and cords ... ..	4·50
<b>Electronic Equipment</b>	
299. IS: 590-1964 Fixed paper dielectric capacitors for dc ( revised ) ... ..	4·50
300. IS: 591-1964 Mains transformers for electronic equipment ( revised ) ... ..	4·50
301. IS: 614-1964 Methods of measurements on receivers for amplitude modulation broadcast transmission ( revised ) ... ..	6·50
302. IS: 824-1965 Preferred values for resistors and capacitors ( revised ) ... ..	1·00
303. IS: 2106 ( Part V )-1964 Environmental tests for electronic equipment: Part V Low air pressure test ... ..	1·50
304. IS: 2106 ( Part VII )-1964 Environmental tests for electronic equipment: Part VII Bump test ... ..	1·00

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305.	IS : 2106 ( Part VIII )-1964 Environmental tests for electronic equipment : Part VIII Impact or shock test ... ..	1·00
306.	IS : 2106 ( Part IX )-1964 Environmental tests for electronic equipment : Part IX Drop test ... ..	1·00
307.	IS : 2612-1965 Recommendation for type approval and sampling procedures for electronic components ... ..	3·50
308.	IS : 2684 ( Part I )-1964 Dimensions of electronic valves : Part I Miniature 9-pin noval type ... ..	1·50
309.	*IS : 2711-1964 Laboratory deflection pH meters ... ..	3·00
310.	IS : 2731-1964 Methods of measurements on receivers for frequency modu- lation broadcast transmissions ... ..	7·00
311.	IS : 2902-1964 Fixed carbon film resistors, type I... ..	4·50
312.	IS : 2903-1964 Fixed carbon film resistors, type II ... ..	4·50
313.	IS : 2926-1964 Dimensions of connectors for radio batteries ... ..	2·00
314.	IS : 2934 ( Part I )-1964 Non-wire-wound variable resistors ( potenti- meters ), type 2 : Part I Tests and general requirements ... ..	6·00
315.	IS : 2935-1964 Guide for use of quartz oscillator crystals ... ..	5·50
 <b>Fans</b>		
316.	IS : 2997-1964 Air circulator type electric fans ( <i>in press</i> )	
 <b>Instruments and Meters</b>		
317.	IS : 2806-1964 Methods of temperature measurement by electrical resist- ance thermometers ... ..	4·00
318.	IS : 2992-1965 Insulation resistance testers ( hand-operated ) ... ..	2·50
 <b>Instrument Transformers and Relays</b>		
319.	IS : 2705 ( Part I )-1964 Current transformers : Part I General require- ments ... ..	4·50
320.	IS : 2705 ( Part II )-1964 Current transformers : Part II Measuring current transformers ... ..	2·00
321.	IS : 2705 ( Part III )-1964 Current transformers : Part III Protective current transformers ... ..	4·50
 <b>Insulating Materials</b>		
322.	IS : 2824-1964 Method for determination of the comparative tracking index of solid insulating materials ... ..	2·00
 <b>Lamps and Lamp Accessories</b>		
323.	IS : 2418-1964 Tubular fluorescent lamps for general lighting service ... ..	4·50
 <b>Motors and Generators</b>		
324.	IS : 996-1964 Single phase small ac and universal electric motors ( <i>revised</i> )	4·50
325.	IS : 2253-1964 Types of construction and mounting of motors ... ..	3·00
326.	IS : 2968-1964 Dimensions of slide rails for electric motors ... ..	1·00
327.	IS : 2972 ( Part I )-1964 Textile motors : Part I Loom motors ... ..	3·50
328.	IS : 2972 ( Part II )-1964 Textile motors : Part II Card motors ... ..	3·50
329.	IS : 2993-1964 Motor capacitors ... ..	4·00
 <b>Nomenclature and Symbols</b>		
330.	IS : 2032 ( Part IV )-1964 Graphical symbols used in electrotechnology ; Part IV Rotating machines and transformers ... ..	4·00

\*This is B.S. 3422:1961 recognized as Indian Standard for certification marking purposes.



## ANNUAL REPORT 1964-65

SL No.		Rs
<b>Switchgear and Controlgear</b>		
331.	IS: 1356-1964 General requirements for electrical equipment of machine tools ( <i>revised</i> ) ... ..	6.00
332.	*IS: 2607-1964 Air-break switches and isolators for voltages not exceeding 660 volts ... ..	3.40
333.	†IS: 2675-1964 Enclosed distribution fuseboards for low and medium voltages ... ..	3.75
334.	IS: 2959-1965 ac contactors of voltage not exceeding 1 000 volts ...	5.50
<b>Transformers</b>		
335.	IS: 1180-1964 Outdoor type three-phase distribution transformers up to and including 100 kVA 11 kV ( <i>revised</i> ) ... ..	4.50
336.	IS: 2772 (Part I)-1964 Non-flameproof mining transformers for use below ground: Part I Oil-immersed type ... ..	2.50
<b>Winding Wires</b>		
337.	IS: 2659-1964 Enamelled round copper wire for elevated temperatures ...	5.00
<b>Wiring Accessories</b>		
338.	IS: 1653-1964 Rigid steel conduits for electrical wiring ( <i>revised</i> ) ...	3.00
339.	IS: 2667-1964 Fittings for rigid steel conduits for electrical wiring ...	4.50
<b>Unclassified</b>		
340.	IS: 2834-1964 Shunt capacitors for power systems ... ..	5.50
<b>MECHANICAL ENGINEERING</b>		
<b>Basic Engineering Standards</b>		
341.	ISI steam tables (including a Mollier diagram for temperature up to 800°C) ( <i>in press</i> )	
<b>Abrasives</b>		
342.	IS: 2832-1964 Waterproof silicon carbide paper ... ..	1.50
<b>Bicycle Components</b>		
343.	IS: 532-1964 Bicycle tube valves ( <i>revised</i> ) ... ..	2.50
344.	IS: 2973-1964 Bicycle steering head assembly ... ..	2.00
<b>Chemical Engineering</b>		
345.	IS: 2843-1964 Recommendation on nominal capacities for process equipment ... ..	1.00
346.	IS: 2844-1964 Recommendation on nominal diameters for process equipment ... ..	1.00
347.	IS: 2845-1964 Recommendation on nominal pressures for process equipment ... ..	1.00
348.	IS: 2846-1964 Recommendation on nominal temperatures for process equipment ... ..	1.00
349.	IS: 3030-1965 Recommendations for letter symbols, signs and abbreviations used in chemical engineering ... ..	

\*This is B.S. 861: Part 1: 1955 recognized as Indian Standard for certification marking purposes.

†This is B.S. 214: 1959 recognized as Indian Standard for certification marking purposes.

## APPENDIX A

Sl No.	Rs
<b>Engineering Metrology</b>	
350. IS: 2709-1964 Guide for the selection of fits ... ..	7·00
351. IS: 2921-1964 Vernier height gauges ... ..	2·50
352. IS: 2949-1964 V-blocks ... ..	2·00
353. IS: 2967-1964 External micrometers ... ..	2·50
<b>Hand Tools</b>	
354. IS: 663-1964 Adzes ( <i>revised</i> ) ... ..	2·00
355. IS: 2852-1964 Carpenters' augers ... ..	2·00
<b>Instruments ( Drawing, Optical and Surveying )</b>	
356. IS: 2666-1963 Slide rules ( linear type ) ... ..	1·50
357. IS: 2754-1964 General requirements for optical instruments ... ..	5·00
358. IS: 2966-1964 Internal micrometers ( including stick micrometers ) ... ..	3·00
359. IS: 2976-1964 Optical theodolite ... ..	3·50
360. IS: 2988-1965 Vernier theodolite ... ..	3·50
<b>Internal Combustion Engines and Automotive Vehicles</b>	
361. IS: 1543-1964 Single cylinder fuel injection pumps ( <i>revised</i> ) ... ..	2·00
362. IS: 2742-1964 Automotive brake lining ... ..	3·50
<b>Machine Tools and Small Tools</b>	
363. IS: 2251-1965 Plug and ring gauges for self-holding tapers ... ..	3·00
364. IS: 2340-1964 Dimension for self-release 7/24 tapers for arbors and spindle noses for milling machines ... ..	2·00
365. IS: 2428-1964 Application of carbides for machining, ranges of application and colour code ... ..	1·50
366. IS: 2608-1964 Reduction sleeves and extension sockets for Morse tapers ... ..	1·50
367. IS: 2668-1964 T-slot milling cutters ... ..	1·00
368. IS: 2669-1964 Milling cutters for woodruff keyslots ... ..	1·50
369. IS: 2670-1964 Thread milling cutters ( shell type ) ... ..	1·00
370. IS: 2671-1964 Interlocked milling cutters ... ..	1·00
371. IS: 2743-1964 Test chart for horizontal surface grinders ... ..	2·50
372. IS: 2769-1964 Sizes for squares and square holes for general engineering purposes ... ..	1·00
373. IS: 2793-1964 Dimensions for cranked handles ... ..	1·00
374. IS: 2794-1964 Truing tools, single diamond ... ..	2·50
375. IS: 2804-1964 Dimensions for palm grips ... ..	1·00
376. IS: 2805-1964 Dimensions for ball grips ... ..	1·50
377. IS: 2876-1964 3-jaw self-centering lathe chucks ... ..	3·50
378. IS: 2877-1964 Test chart for single and double column planning machines ... ..	2·50
379. IS: 2890-1964 Dimensions for taper handles for machine tools ... ..	1·00
380. IS: 2904-1964 Dimensions for ball handles ... ..	1·00
381. IS: 2908-1964 Dimensions for hand cranks ... ..	1·00
382. IS: 2909-1964 Dimensions for star grips ... ..	1·50
383. IS: 2975-1964 Dimensions for control levers with ball grips ... ..	1·00
384. IS: 2987-1965 Recommendations for direction of operation of controls for machine tools ... ..	1·00
385. IS: 2990-1965 Dimensions for tenons ... ..	1·00
386. IS: 2995-1965 Dimensions for set collars ... ..	2·00
387. IS: 2996-1964 Mounting dimensions for grinding wheels ... ..	2·00
388. IS: 3019-1965 High speed steel and carbon tool steel single point turning tools ... ..	3·50
389. IS: 3048-1965 Dimensions for hand wheels ( <i>in press</i> ) ... ..	3·50



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Sl No.			Rs
<b>Marine Engineering and Shipbuilding</b>			
390.	IS: 2800-1964	Code of practice for tubewell construction ...	5.00
391.	IS: 3045-1965	Marking of hatchway beams ...	1.00
392.	IS: 3046-1965	Marking of wooden hatchway covers ...	1.00
<b>Threaded Fasteners and Rivets</b>			
393.	IS: 554-1964	Dimensions for pipe threads for gas list tubes and pressure tight screwed fittings ( <i>revised</i> ) ...	4.00
394.	IS: 2585-1964	Black square head bolts ( M6 to M39 ) with square nuts and black square head screws ( M6 to M24 ) ...	2.00
395.	IS: 2687-1964	Cap nuts and domed cap nuts ...	2.00
396.	IS: 2728-1964	Memorandum on screw threads for bicycle components ...	1.50
397.	IS: 2907-1964	Non-ferrous rivets ( 1.6 to 10 mm ) ...	2.50
398.	IS: 2998-1965	Cold forged steel rivets for cold closing ...	2.50
399.	IS: 3063-1965	Spring washers for bolts, nuts and screws ...	1.50
<b>Transmission Devices, Pulleys and Belts</b>			
400.	IS: 2403-1964	Transmission steel roller chains and chain wheels ...	5.00
401.	IS: 2494-1964	V-belts for industrial purposes ...	6.00
402.	IS: 2693-1964	Cast iron flexible couplings ...	2.50
403.	IS: 2710-1964	Parallel keys and keyways for machine tools ...	1.50
<b>Weights and Measures</b>			
404.	IS: 1269-1964	Metric, woven metallic and glass fibre tape measures ( <i>revised</i> ) ...	2.00
405.	IS: 1270-1965	Metric steel tape measures ( winding type ) ( <i>revised</i> ) ...	2.00
406.	IS: 1433-1965	Beam scales ( <i>revised</i> ) ...	3.00
407.	IS: 1854-1964	Person weighing machines ( <i>revised</i> ) ...	2.00
408.	IS: 2747-1964	Performance requirements for taximeters ...	2.00
409.	IS: 3047-1965	Accuracy requirements for volumetric container filling machines used in petroleum trade ...	1.00
<b>Wire Ropes and Wire Products</b>			
410.	IS: 2363-1965	Glossary of terms relating to wire ropes ( <i>in press</i> ) ...	
411.	IS: 2721-1964	Galvanized steel wire chain link fences ...	1.00
412.	IS: 2762-1964	Wire rope slings and sling legs ...	5.00
<b>Unclassified</b>			
413.	IS: 2399-1964	Glossary of terms relating to rolling bearings ...	7.50
414.	IS: 2458-1965	Glossary of terms for toothed gearing ...	8.00
415.	- IS: 2898-1965	Chromium alloy steel balls ( <i>in press</i> ) ...	
<b>STRUCTURAL AND METALS</b>			
<b>Copper and Copper Alloys</b>			
416.	IS: 613-1964	Copper rods for electrical purposes ( <i>revised</i> ) ...	4.00
417.	IS: 2654-1964	Method for tensile testing of copper and copper alloys ...	2.00
418.	IS: 2655-1964	Method for tensile testing of copper and copper alloy tube ...	2.50
419.	IS: 2656-1964	Method for tensile testing of copper and copper alloy wire ...	2.00
420.	IS: 2704-1964	Brass wire for cold-headed and machined parts ...	1.50
421.	IS: 2768-1964	Gilding metal strip for bullet envelope ...	3.00
422.	IS: 2826-1964	Dimensions for wrought copper and copper alloy rods and bars ...	1.50

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Sl. No.		Rs
423.	IS: 2983-1964 Code of practice for hot tinning of brassware ...	1·50
424.	IS: 3051-1965 Dimensions for wrought copper and copper alloy plate ...	1·00
425.	IS: 3052-1964 Dimensions for wrought copper and copper alloys, sheet, strip and foil ...	1·50
426.	IS: 3057-1965 Copper sheets for photo process engraving ...	1·50
<b>Ferro Alloys</b>		
427.	IS: 1110-1964 Ferro silicon ( <i>revised</i> ) ...	1·00
428.	IS: 1111-1964 Spiegeleisen ( <i>revised</i> ) ...	1·00
429.	IS: 1171-1964 Ferro manganese ( <i>revised</i> ) ...	1·00
430.	IS: 2018-1964 Methods of chemical analysis of calcium silicon ...	2·00
431.	IS: 2277-1964 Methods of chemical analysis of metallic silicon ...	4·00
432.	IS: 2782-1964 Primary nickel ...	1·50
<b>Foundry</b>		
433.	IS: 2763-1964 Glossary of terms relating to foundry technology ...	10·00
434.	IS: 3021-1965 Bentonite for use in foundries ...	2·50
<b>Lead, Zinc, Tin, Antimony and Their Alloys</b>		
435.	IS: 403-1964 Methods of chemical analysis of lead and antimonial lead ( <i>revised</i> ) ...	5·50
436.	IS: 406-1964 Methods of chemical analysis of slab zinc and zinc base alloys ( <i>revised</i> ) ...	3·50
437.	IS: 2599-1963 Methods of spectrographic analysis of high purity zinc and zinc base alloys for die casting ...	4·50
438.	IS: 2600-1964 Methods of chemical analysis of high purity zinc and zinc base alloys for die casting ...	3·50
<b>Light Metals and Their Alloys</b>		
439.	IS: 2657-1964 Method for tensile testing of aluminium and aluminium alloy tube ...	2·50
440.	IS: 2658-1964 Method for tensile testing of aluminium and aluminium alloy wire ...	2·00
441.	IS: 2673-1964 Dimensions for wrought aluminium and aluminium alloys, extruded tube (round) ...	1·50
442.	IS: 2676-1964 Dimensions for wrought aluminium and aluminium alloys, sheet and strip... ..	2·50
443.	IS: 2677-1964 Dimensions for wrought aluminium and aluminium alloys, plate ...	1·50
444.	IS: 2678-1963 Dimensions for wrought aluminium and aluminium alloys, drawn tube ...	1·50
<b>Metallic Finishes</b>		
445.	IS: 2633-1964 Methods of testing weight, thickness and uniformity of coating on hot dipped galvanized articles ...	2·50
446.	IS: 2679-1964 Recommendations for equipment for electroplating ...	3·00
<b>Metallography and Heat Treatment</b>		
447.	IS: 2853-1964 Method of determining austenitic grain size of steel ...	1·50
<b>Non-Destructive Testing</b>		
448.	IS: 2953-1964 Glossary of terms used in radiographic inspection of castings ( <i>in press</i> )	



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Sl No.		Rs
<b>Pig Iron, Cast Iron and Malleable Cast Iron</b>		
449.	IS : 2749-1964 Austenitic iron castings ... ..	4.00
450.	IS : 2841-1964 Pig iron for special purposes ... ..	1.50
451.	IS : 2842-1964 Basic pig iron ( coke ) for steel making purposes ... ..	1.50
452.	IS : 3005-1964 Grey cast iron ingot moulds, stools and slag ladles ... ..	5.50
<b>Precious Metals</b>		
453.	IS : 2270-1965 Methods for assaying of platinum and platinum alloys ... ..	2.50
454.	IS : 2767-1964 Gold thread ( silver base ) ... ..	2.00
455.	IS : 2790-1964 14, 12 and 9 carat gold ... ..	1.00
<b>Steel Castings</b>		
456.	IS : 2707-1964 Carbon steel castings for surface hardening ... ..	2.00
457.	IS : 2708-1964 1.5 percent manganese steel castings ... ..	2.00
458.	IS : 2856-1964 Carbon steel castings suitable for high temperature service ( fusion welding quality ) ... ..	2.50
459.	IS : 2985-1964 Steel castings for ship's structure ... ..	2.00
460.	IS : 2986-1964 Steel castings for marine engines and boilers ... ..	1.50
461.	IS : 3038-1965 Alloy steel castings for pressure containing parts suitable for high temperature service ... ..	2.50
<b>Steel Products, Wrought</b>		
462.	IS : 1148-1964 Rivet bars for structural purposes ( revised ) ... ..	1.50
463.	IS : 1149-1964 High tensile rivet bars for structural purposes ( revised ) ... ..	1.50
464.	IS : 2507-1965 Gold rolled steel strip for springs ... ..	2.00
465.	IS : 2830-1964 Carbon steel billets for re-rolling into structural steel ( standard quality ) ... ..	1.50
466.	IS : 2831-1964 Carbon steel billets for re-rolling into structural steel ( ordinary quality ) ... ..	1.00
467.	IS : 2879-1964 Mild steel for metal arc welding electrode core wire ... ..	1.00
468.	IS : 3024-1965 Electrical steel sheets ( oriented ) ... ..	2.00
469.	IS : 3039-1965 Structural steel ( shipbuilding quality ) ... ..	2.50
<b>Steel Tubes and Pipes</b>		
470.	IS : 2039-1964 Steel tubes for bicycle and allied purposes ... ..	2.00
471.	IS : 2484-1964 Dimensions for steel tubes for bicycle purposes ... ..	1.00
<b>Structural Shapes</b>		
472.	Structural engineers' slide ( steel ) ... ..	22.00
473.	IS : 808-1964 Rolled steel beam, channel and angle sections ( revised ) ... ..	4.00
474.	IS : 2713-1964 Tubular steel poles for overhead power lines ... ..	4.50
<b>Welding</b>		
475.	IS : 823-1964 Code of procedure for manual metal arc welding of mild steel ... ..	10.00
476.	IS : 2680-1964 Filler rods and wires for inert gas tungsten arc welding ... ..	5.00
477.	IS : 2811-1964 Recommendations for manual tungsten inert-gas arc- welding of stainless steel ... ..	4.00
478.	IS : 2812-1964 Recommendations for manual tungsten inert-gas arc- welding of aluminium and aluminium alloys ... ..	4.50
479.	IS : 2927-1964 Brazing alloys ... ..	4.50
480.	IS : 3016-1965 Code of practice for fire precautions in welding and cutting operations ... ..	3.00
481.	IS : 3023-1965 Recommended practice for building-up by metal spraying... ..	3.00

## APPENDIX A

Sl. No.		Rs
<b>Unclassified</b>		
482.	IS : 2854-1964 Method of test for determining modulus of elasticity ...	1·00
483.	IS : 2855-1964 Method of test for determining flexivity of thermostat metal	1·50
<b>TEXTILES</b>		
<b>Aircraft Materials</b>		
484.	IS : 2965-1964 Breaking cord for cotton parachutes ...	1·50
485.	IS : 2970-1964 Cotton fabrics for supply dropping parachutes ...	2·50
486.	IS : 2971-1964 Cotton fabric for target sleeves ...	2·00
<b>Carpets and Druggets</b>		
487.	IS : 2882-1964 Camel hair druggets for export ...	2·00
<b>Chemical Test Methods</b>		
488.	IS : 392-1964 Method for measuring the water absorption and penetration in water-resistant fabrics ( permeable to air ) by a Bundesmann type apparatus ( revised ) ...	2·50
489.	IS : 2727-1964 Method for quantitative chemical analysis of binary mixture of manila and sisal fibres ...	1·00
490.	IS : 2964-1964 Methods for detection and estimation of damage in cotton fibres due to micro-organisms ...	2·00
491.	IS : 2969-1964 Method for determination of added oil content of jute yarn and fabrics ...	1·00
492.	IS : 2977-1964 Method for determination of dimensional changes of woven fabrics ( other than wool ) on soaking in water ...	1·50
<b>Cotton Hosiery and Knitted Garments</b>		
493.	IS : 2755-1964 Plain and interlock knitted cotton vests ...	4·00
<b>Cotton Spinning Machinery Components</b>		
494.	IS : 2699-1964 Flats and flats' screws ...	1·50
<b>Grading of Fibres</b>		
495.	IS : 2900-1964 Different grades/classes of raw wool for internal consumption ...	2·00
496.	IS : 2938-1964 Method of grading raw silk ...	7·00
<b>Jute Bags</b>		
497.	IS : 1943-1964 A-twill jute bags ( revised ) ...	2·50
498.	IS : 2566-1965 B-twill jute bags ( revised ) ...	2·50
499.	IS : 2874-1964 Heavy cee jute bags ...	2·50
500.	IS : 2875-1964 Jute corn sacks ...	2·50
<b>Jute Fabrics</b>		
501.	IS : 2818-1964 Indian hessian ...	2·50
<b>Jute Mill Accessories</b>		
502.	IS : 2784-1964 Shuttles for automatic cop changing jute looms	1·50
503.	IS : 2910-1964 Shuttles for jute broad looms ...	1·50
<b>Narrow Fabrics</b>		
504.	IS : 2847-1964 Cotton selvedge tape for electric cables ...	1·50



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SL No.		Rs
<b>National Flag of India</b>		
505.	IS: 1-1964 The national flag of India ( cotton khadi ) ( revised ) ...	3·50
506.	IS: 300-1964 The national flag of India ( silk khadi ) ( revised ) ...	3·50
507.	IS: 400-1964 The national flag of India ( wool khadi ) ( revised ) ...	3·50
<b>Nylon Fabrics</b>		
508.	IS: 2820-1964 Nylon doobby crepe ... ..	1·50
<b>Packaging</b>		
509.	IS: 2195-1964 Code for inland packaging of man-made fibre fabrics and man-made fibre yarns ... ..	2·00
510.	IS: 2518-1964 Code for seaworthy packaging of wool hosiery yarn and goods ... ..	2·00
511.	IS: 2873-1965 Packaging of jute products ( in press )	
<b>Physical Test Methods</b>		
512.	IS: 569-1964 Method for determination of breaking load ( strength ) of jute yarn ( revised ) ... ..	1·00
513.	IS: 570-1964 Methods for determination of universal count of jute yarn ( revised ) ... ..	1·50
514.	IS: 681-1964 Method for determination of universal count of woollen and worsted yarn ... ..	1·50
515.	IS: 832-1964 Method for determination of twist in yarn ... ..	2·00
516.	IS: 1349-1964 Methods for determination of wool fibre content of raw wool ( revised ) ... ..	2·50
517.	IS: 2939-1964 Methods for visual and tactual examination of raw silk ...	1·50
518.	IS: 2940-1964 Method for determination of conditioned weight of raw silk ... ..	2·00
519.	IS: 2941-1964 Methods for conducting winding test for raw silk ...	2·50
520.	IS: 2942-1964 Methods for determination of size ( count ) deviation and maximum deviation of raw silk ... ..	2·00
521.	IS: 2943-1964 Method for determination of conditioned size ( count of raw silk ) ... ..	1·50
522.	IS: 2944-1964 Method for determination of evenness and low evenness of raw silk ... ..	3·50
523.	IS: 2945-1964 Methods for determination of cleanness of raw silk ...	2·00
524.	IS: 2946-1964 Method for determination of neatness and low neatness of raw silk ... ..	2·00
525.	IS: 2947-1964 Method for determination of the tenacity and elongation of raw silk by serigraph test ... ..	1·50
526.	IS: 2948-1964 Method for determination of cohesion of raw silk ...	1·50
<b>Rayon Fabrics</b>		
527.	IS: 2228-1964 Rayon mix lining cloth ( revised ) ... ..	2·00
<b>Ropes and Cordages</b>		
528.	IS: 2807-1964 Whipcord ... ..	2·50
529.	IS: 2819-1964 Braided cotton cord ... ..	2·00
<b>Textile Mill Accessories</b>		
530.	IS: 2698-1964 Leather roller skins ... ..	2·50
531.	IS: 2823-1964 Wire healds for jacquard weaving ... ..	2·00
532.	IS: 2929-1964 Bushes for bottom shaft, rocking shaft and crank shaft used in plain calico looms ... ..	1·00

## APPENDIX A

Sl. No.		Rs
533.	IS: 3022-1965 All metal reeds with plate baulks for use in cotton and silk looms ... ..	1.50
534.	IS: 3049-1965 Vulcanized fibre sliver cans for spinning mills ...	2.00
<b>Wool Fabrics, Handloom</b>		
535.	IS: 2714-1964 Handloom pile fabric ... ..	2.50
536.	IS: 2715-1964 Handloom cloth, collar, white ... ..	1.50
537.	IS: 2901-1964 Handloom woollen blanket, scarlet ... ..	2.00
<b>Wool Hosiery and Knitted Garments</b>		
538.	IS: 2783-1964 Worsted balaclava caps ... ..	3.00
<b>Yarn and Similar Structures</b>		
539.	IS: 171-1964 Cotton yarn grey ( <i>revised</i> ) ... ..	1.50
<b>Unclassified</b>		
540.	IS: 3040-1965 Indian kapok for stuffing purposes ... ..	1.50
<b>EC</b>		
541.	IS: 12-1964 Guide for drafting Indian Standards ( <i>second revision</i> ) ...	4.00
542.	IS: 792-1964 Title-page and back of title-page of a book ( <i>revised</i> ) ...	5.50
543.	IS: 3050-1965 Code of practice for reinforced binding of library books and periodicals ... ..	2.00

### HINDI TRANSLATION OF INDIAN STANDARD

- |    |   |      |
|----|---|------|
| 1. | IS: 2344-1963 Chewing tobacco, <i>ZARDA</i> flake type ... .. | 4.50 |
|----|---|------|

### INDIAN STANDARDS WITHDRAWN DURING 1964-65

1. IS: 30-1953 Aluminium-coated high-tensile aluminium alloy sheets and coils for aircraft purposes
2. IS: 238-1952 Method for determination of twist in cotton yarn
3. IS: 257-1950 Magnesium sulphate ( epsom salt ), technical
4. IS: 377-1954 Epsom salt, pharmaceutical
5. IS: 429-1954 Methods for testing weight and uniformity of coating on galvanized iron and steel wires and steel sheets
6. IS: 497-1953 Tensile testing of metals ( non-ferrous )
7. IS: 568-1954 Method for determination of twist in single jute yarn
8. IS: 728-1956 Methods for determination of weight, thickness and uniformity of coating on galvanized articles other than wires and sheets
9. IS: 1138-1958 Sizes of metal strip, sheet, bars ( round and square ), flats and plate ( for structural and general engineering purposes )
10. IS: 1549-1960 Steel drums and kegs ( galvanized and ungalvanized )
11. IS: 2433-1963 Seaworthy packaging of jute products
12. IS: 2435-1963 Indian hessian
13. IS: 2436-1963 Heavy cee jute bags
14. IS: 2437-1963 Jute corn sacks



## APPEN

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## INCOME AND EXPENDITURE ACCOUNT FOR

## EXPENDITURE

SL No.	HEADS OF EXPENDITURE	AMOUNT Rs
1.	<i>Pay</i>	
	1.1 Officers	1 154 827.32
	1.2 Staff	1 205 719.63
2.	<i>Allowances</i>	
	2.1 Officers	230 519.08
	2.2 Staff	687 224.16
3.	<i>CHS and Other Medical Charges</i>	86 461.86
4.	<i>Provident Fund</i>	
	4.1 Contribution to CPF	183 853.00
	4.2 Interest to CPF	80 485.00
	4.3 Interest to GPF	—
5.	<i>Pension-cum-Gratuity Fund</i>	—
6.	<i>Staff Welfare</i>	9 866.30
7.	<i>TA</i>	
	7.1 Overseas	21 672.85
	7.2 Officers and Staff	288 905.61
	7.3 Committee Members	52 508.85
8.	<i>Subscription to International Organizations</i>	
	8.1 ISO	18 770.40
	8.2 IEC	24 197.20
9.	<i>Production</i>	
	9.1 Standards	289 516.85
	9.2 Bulletin	184 934.36
	9.3 Calculation Aids	62 555.40
	9.4 Miscellaneous	47 483.19
10.	<i>Research and Consultation</i>	1 394.28
11.	<i>Testing Fees</i>	44 942.75
12.	<i>Laboratory Apparatus and Stores</i>	23 198.21
13.	<i>Publicity</i>	
	13.1 Exhibitions	2 991.65
	13.2 Advertising	51 968.83
	13.3 Miscellaneous	1 397.72
	CARRIED OVER	4 755 394.50

# DIX B

Page 15)

THE YEAR ENDED 31 MARCH 1965

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## INCOME

SL. No.	HEADS OF INCOME	AMOUNT
		Rs
1.	Membership Subscription	898 440.46
2.	<i>Sales</i>	
2.1	Standards	582 595.16
2.2	Calculation Aids	77 138.00
2.3	Bulletin Subscription	3 436.50
2.4	Bulletin Advertisements	108 377.93
3.	Sales Commission	144 747.05
4.	Certification	805 712.10
5.	CHS Contribution	12 716.25
6.	<i>Conferences</i>	
6.1	Delegates Fees	91 422.92
6.2	Industries Contribution	126 450.00
6.3	Government Grant	280 000.00
6.4	Other Sources	298 982.90
7.	Miscellaneous	54 384.97
8.	Government Grant	2 900 000.00

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CARRIED OVER

6 384 404.24

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# APPEN

## INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE		
Sl No.	HEADS OF EXPENDITURE	AMOUNT
		Rs
	BROUGHT FORWARD	4 755 394.50
14.	Conferences	767 581.34
15.	Library	31 128.88
16.	<i>Office Expenses</i>	
	16.1 Stationery	151 769.17
	16.2 Postage	146 519.33
	16.3 Telephones	51 534.88
	16.4 Recruitment	4 975.75
	16.5 Miscellaneous	88 132.97
17.	<i>Office Equipment</i>	
	17.1 Furniture	22 484.33
	17.2 Other Equipment	23 815.12
18.	<i>Buildings</i>	
	18.1 Rent and Taxes	133 867.70
	18.2 Electricity and Water	50 896.29
	18.3 Maintenance	27 060.38
19.	<i>Local Transport</i>	
	19.1 Vehicles	—
	19.2 Maintenance	25 599.19
20.	Audit Fee	1 320.00
21.	Depreciation	168 702.57
	<b>TOTAL</b>	6 450 782.40

# DIX B — Contd

THE YEAR ENDED 31 MARCH 1965

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## INCOME

Sl No.	HEADS OF INCOME	AMOUNT
		Rs
	BROUGHT FORWARD	6 384 404.24

Deficit

66 378.16

TOTAL 6 450 782.40

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**A P P E N**  
**BALANCE SHEET AS**

SL No.	<b>LIABILITIES</b>	Rs	AMOUNT Rs
1.	<i>Capital Account</i>		
	a) As per last Balance Sheet	3 148 908-29	
	b) Lab Equipment formed out of Previous Provision	(+ ) 2 053-81	
		3 150 962-10	
	c) Lab Equipment transferred to Bldg & Lab Fund [ see 2.4.1 (c) below ]	(- ) 193 029-71	
	d) Unspent Govt. Grant refunded	(- ) 165 669-04	
	e) Excess of Expenditure/Income ( deficit )	(- ) 66 378-16	2 725 885-19
2.	<i>Reserve and Funds</i>		
2.1	<i>K. L. Moudgill Prize Fund</i>		
	a) As per last Balance Sheet	13 410-42	
	b) Receipt during the year	1 311-00	
		14 721-42	
	c) Expenditure during the year	1 060-00	13 661-42
2.2	<i>Gratuity Fund</i>		
	a) As per last Balance Sheet	31 559-76	
	b) Receipt during the year	27 574-34	59 134-10
2.3	<i>Company Standardization Training Fund</i>		
	a) As per last Balance Sheet	26 762-82	
	b) Receipt during the year	22 000-00	
		48 762-82	
	c) Expenditure during the year	27 487-50	21 275-32
2.4	<i>ISI Second Building and Laboratory Fund</i>		
2.4.1	<i>Government Grant</i>		
	a) As per last Balance Sheet	528 520-49	
	b) Transferred from Lab Equipment	6 970-29	
	c) Lab Equipment previously capitalised transferred from Capital A/c	193 029-71	
		728 520-49	
	<b>CARRIED OVER</b>		2 819 956-03

# DIX B—Contd

AT 31 MARCH 1965

## ASSETS

Sl. No.			AMOUNT
		Rs	Rs
	BROUGHT FORWARD		4 153 614-13
2.3	Contributory Provident Fund		
	a) National/Defence Savings Certificates	2 115 000-00	
	b) Balance of advances to members	111 064-00	
	c) Bank Balance ( State Bank of India, Delhi )	278 675-00	
	d) Cash in hand	1-00	2 504 740-00
3.	<i>Current Assets</i>		
3.1	Stock of Printing Paper ( at cost )		333 514-15
3.2	Sundry Debtors		
	a) Sale of Publications	328 895-26	
	b) Advertisements in Bulletin and ISO Souvenir	104 063-38	432 958-64
4.	<i>Loans and Advances</i>		
4.1	Conveyance and Other Advances		
	a) Conveyance Advances to Staff	119 345-46	
	b) Advances to Staff for Purchases etc	2 391-25	
	c) Advances to others	48 731-63	170 468-34
4.2	Security Deposits		22 564-00
4.3	Pre-paid Expenses		
	a) Controller of Stationery, Calcutta	10 683-17	
	b) Ghosh Estates, Calcutta	5 028-75	
	c) Estate Office, New Delhi	7 421-71	
	d) Tamil Nad Congress Charitable Trust, Madras	3 000-00	26 133-63
5.	<i>Cash and Bank Balance</i>		
5.1	With Bankers		291 530-83
5.2	In Hand ( Including Imprest )		9 917-20
5.3	Postage Stamps in Hand		476-52
	TOTAL		7 945 917-44

Sd. HARBANS LAL  
Secretary (Administration)  
Indian Standards Institution, New Delhi



# INDIAN STANDARDS INSTITUTION

## GENERAL INFORMATION

The Indian Standards Institution (ISI) started functioning in 1947 as the national standards organization of India, with the principal object of preparing and promoting the general adoption of standards on national and international basis.

The overall control of ISI, which is run and financed jointly as a non-profit making body by the Central Government and private enterprise, is exercised by a General Council, composed of representatives of the Government of India and State Governments, leading industrial, trade scientific and technical organizations, and subscribing members. The Union Minister for Industry is *ex-officio* President of ISI.

The technical activity of ISI is carried out through eight Division Councils—one each for Agricultural and Food Products, Chemical, Civil Engineering, Consumer Products, Electrotechnical, Mechanical Engineering, Structural and Metals, and Textile. All technical work relating to the formulation and revision of standards is done by committees consisting of experts drawn from manufacturing units, technical institutions, consuming organizations and other bodies concerned, who are appointed by and work under the direction of their respective Division Councils.

To make benefits of standardization available to the common man, ISI is operating, under the Indian Standards Institution (Certification Marks) Act, 1952, as amended by the Amendment Act, 1961, the ISI Certification Marks Scheme. According to this Scheme, quality goods produced, in conformity with the provisions of the relevant Indian Standards, by manufacturers holding a licence from ISI can carry the ISI Certification Mark. This Certification Mark is a third-party guarantee of the quality of marked goods, and licences for its use are granted by ISI to manufacturers producing goods conforming to Indian Standards and maintaining quality control at different stages of production. Checks on the quality of marked goods are exercised by ISI through periodical and surprise factory inspections, testing in independent laboratories of such products obtained from factories and open market, etc.

In the international field, ISI represents India on International Organization for Standardization (ISO), which links 50 countries and functions through 113 technical committees; International Electrotechnical Commission (IEC); and Commonwealth Standards Conference. At present, ISI participates in the work of 82 technical committees of ISO and all technical committees of IEC, covering a wide range of subjects; and holds the Secretariats for 14 committees, subcommittees and working groups of ISO and IEC dealing with subjects of interest to India, including lac, mica, electric fans, pictorial markings for handling of goods, liquid flow measurement through open channels, and spices and condiments.

**DIX B — Contd**  
**AT 31 MARCH 1965**

Sl. No.	ASSETS		AMOUNT
		Rs	Rs
1.	<i>Fixed Assets</i>		
1.1	ISI Building ( Manak Bhavan )		
	a) As per cost value up to 31-3-64	2 081 849.54	
	b) Depreciation w/o up to 31-3-64	(-) 397 944.17	
	c) Depreciation w/o during the year	(-) 91 972.12	1 591 933.25
1.2	ISI Second Building		
	a) Work in progress up to 31-3-64	155 704.58	
	b) Additions during the year	992 774.95	1 148 479.53
1.3	Laboratory Equipment		
	a) As per cost value up to 31-3-64	220 629.86	
	b) Additions during the year	72 881.73	
		293 511.59	
	c) Depreciation w/o up to 31-3-64	(-) 20 677.22	
	d) Depreciation during the year	(-) 27 007.79	245 826.58
1.4	Furniture and Office Equipment		
	a) As per cost value up to 31-3-64	391 028.82	
	b) Additions during the year	85 526.59	
		476 555.41	
	c) Depreciation w/o up to 31-3-64	(-) 200 673.57	
	d) Depreciation during the year	(-) 36 207.59	239 674.25
1.5	Staff Cars		
	a) As per cost value up to 31-3-64	65 011.48	
	b) Additions during the year	35 573.73	
		100 585.21	
	c) Depreciation w/o up to 31-3-64	(-) 33 009.87	
	d) Depreciation during the year	(-) 13 515.07	54 060.27
1.6	Library Books		
	a) As per cost value up to 31-3-64	15 987.51	
	b) Additions during the year	3 801.46	19 788.97
2.	<i>Investments ( At Cost )</i>		
2.1	Deposits with the Banks		842 451.28
2.2	K. L. Moudgill Prize Fund ( Shares of Jay Engg. Works )		11 400.00
	CARRIED OVER		4 153 614.13



# APPEN BALANCE SHEET AS

Sl. No.	LIABILITIES	Rs	AMOUNT Rs
	BROUGHT FORWARD		2 819 956-03
2.4.2	Interest Free Deposits ( Repayable within 5 years )		
	a) As per last Balance Sheet	485 250-00	
	b) Receipt during the year	120 501-00	
		605 751-00	
2.4.3	Donations etc		
	a) As per last Balance Sheet	49 344-00	
	b) Receipt during the year ( in cash )	38 338-76	
	c) Receipt during the year ( in kind )	35 125-00	
		122 807-76	
2.4.4	Transferred from Manak Bhavan Fund	21 397-66	1 478 476-91
2.5	Contributory Provident Fund		
	a) As per last Balance Sheet	2 022 193-00	
	b) Receipt during the year	482 310-00	
	c) Due to ISI	237-00	2 504 740-00
3.	<i>Current Liabilities</i>		
3.1	Advance Subscription		
	a) For 1965	756 129-80	
	b) For 1966	350-00	
	c) For 1967	350-00	756 829-80
3.2	Sundry Creditors		
	a) Inland	143 996-75	
	b) Abroad	227 145-45	
	c) Earnest Money	14 772-50	385 914-70
	TOTAL		7 945 917-44

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. D. D. DHINGRA  
Accountant General  
Commercé, Works & Miscellaneous, New Delhi