



Shri Mohan Dharia, Union Minister of Commerce, Civil Supplies and Cooperation, and President ISI (third from left), addressing the thirtythird meeting of ISI General Council held in New Delhi in January 1978. Others in the picture are (from left): Shri Y. S. Venkateswaran, the then Additional Director General, ISI; Dr A. K. Gupta, the then Director General, ISI; and Shri D. C. Kothari, Vice-President, ISI

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INDIAN STANDARDS INSTITUTION

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DIRECTOR GENERAL'S REPORT

With the close of the year 1977-78 Indian Standards Institution (ISI) completed 31 years of service to the nation. During the year, the Institution made strenuous efforts to promote standardization and quality control and strengthen overall economy.

On 31 March 1978, the Institution had in force 9 483 Indian Standards covering a wide range of materials, industrial and agricultural products, test methods and codes for design and construction practices. This achievement reflects the result of the cooperative endeavour of more than 32 000 technical experts represented on some 2 100 councils and committees of ISI. These experts are drawn from Central and State Governments, industrial establishments, commercial organizations, and research and educational institutions in the country. It is a measure of the Institution's operational efficiency and popularity that this vast community of members and the organizations they represent are extending full support in a system of standardization which is primarily voluntary.

Realizing the importance of making the best use of Indian Standards, concerted efforts were made by the Institution to promote implementation of standards on a wider scale, with a view to building up a competitive industry, reducing cost of production, attaining self-sufficiency, improving quality of goods and services, and developing export trade.

The ISI Certification Marks Scheme, which provides a proving ground for implementation of standards, registered considerable progress during the year. By

31 March 1978, 6 965 licences were granted covering goods valued at Rs 16 000 million a year. A number of consumer items were brought under the Scheme including saccharine, malted milk food, rubber mats for electrical purposes, household electrical appliances, fire fighting pumps, multipurpose dry batteries, piston rings for internal combustion engines, hypodermic syringes, steel ingots and billets, and steel wires for the manufacture of wood screws.

To promote adoption of standards in farms and factories and in the market place, an effective system is required for making readily available reliable information on various aspects of standards to numerous users to see that they receive maximum guidance from this national resource in the matter of production, planning, management and marketing. The Institution is engaged in developing a computer-based standards information system with the help of the Electronics Commission to meet this need. During the year, the computer terminal project made satisfactory progress. Work for site preparation on an area measuring 100 m² for housing the terminal and key-to-tape units has been completed and installation is to be undertaken soon. Meanwhile, some pilot studies have been conducted with the help of National Informatics Centre of the Electronics Commission. The information needs of some departments of the Institution have been identified and programmes for different types of data written and tested on HP 21 MX Computer of the Electronics Commission. These studies have yielded encouraging results and will enable a phased programme of work to be taken up soon after the Centre is equipped with the necessary facilities.

During the year, the Institution continued to organize training programmes with the object of equipping the manufacturers with the techniques of quality control so that they could be authorized to use ISI Certification Mark on their products. Training programmes were arranged for manufacturers of household electrical appliances, tea-chest battens and plywood, diesel engines, food colours, LPG cylinders, electric motors and pesticides. These programmes led to wider adoption of the ISI Certification Marks Scheme and its smooth and efficient operation.

During the period under review, the Institution established a new Division Council for Petroleum, Coal and Related Products. The Council is the eleventh in the chain of high-powered technical bodies constituted by the Institution to guide development of standardization activity in specific fields of industry. The new Division Council has been created because of the increasing emphasis on coal as a primary source of energy and the importance acquired by petroleum not only as a fuel but also as a basic industrial raw material. With increasing quantities of petroleum becoming available both from inland and off-shore sources in the country, far-reaching developments are envisaged in plastics, fertilizers and general organic chemicals industries. It is hoped that the new Division Council would play a significant role in making available expeditiously national standards urgently needed in this growing and vital area.

The Seventeenth Indian Standards Convention was held in Jaipur from 27 November to 3 December 1977. The Convention was inaugurated on 27 November 1977 by Shri Raghukul Tilak, Governor of Rajasthan, and the inaugural function was presided over by Shri K. K. Goyal, Union Minister of State for Civil Supplies and Cooperation. The seven sessions of the Convention — one general and six technical — dealt with important topical themes, such as standards in daily life, voluntary *versus* compulsory certification of products, standardization and housing for *Janata*, educational utilization of Indian Standards, quality improvement in small scale industries, industrial safety and coordinated utilization of national testing facilities. Over 700 delegates representing Government, trade and industry, and scientists, engineers and others participated in the Convention.

An important event which synchronized with the Seventeenth Indian Standards Convention was the establishment of a Branch Office in Jaipur. This office will cater to the needs of industries in Rajasthan particularly those in the small scale sector, and help them produce goods in conformity with Indian Standards and in accordance with a well-defined scheme of quality control. It will also provide specialized on-the-spot services needed by the industry.

In the international sphere, the Institution actively participated in the work of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). At the 31st meeting of the ISO Council held in Geneva in September 1977, it regained its membership of the Council after a lapse of three years. It also attended meetings of the Planning Committee of ISO (PLACO), the ISO Committee on Certification (CERTICO), and the Standing Committee for the Study of Scientific and Technical Information on Standardization (INFCO) in addition to a number of other Technical Committee meetings for the development of International Standards. Director General, ISI, also attended a Seminar on the Importance of Standardization in the Context of National Development organized by the Nepal Institute of Standards in Kathmandu in December 1977.

Over the years, the Institution has been actively assisting developing countries in Asia, Africa and Latin America in establishing and promoting their standardization and quality control programmes. For this purpose, the United Nations Industrial Development Organization and some overseas governments have drawn on the services of several officers of the Institution. This speaks of the high reputation ISI has earned for itself in the international field.

The fifth meeting of the Indo-Soviet Working Group on Standardization and Metrology was held in Moscow in December 1977 in which a four-member Indian delegation led by Director General, ISI, participated. The meeting reviewed the progress achieved and chalked out the working programme for 1978.

As in previous years, a 15-week International Training Programme in Standardization was organized by the Institution for standards engineers from overseas countries for the study of principles of standardization and their application in industry. Under the Programme, 11 trainees from developing countries of Asia, Africa and Latin America, namely, Kenya, Guyana, Malaysia, Tanzania, Brazil, Barbados, Ghana and Iran received training in methodology and techniques of standardization. So far, 98 participants from 29 developing countries have taken advantage of these programmes.

PART I

THE YEAR IN RETROSPECT

Part I of the Report gives in brief the work of the Institution in different fields during the year 1977-78.

Standards Preparation — During the year under review, 784 Indian Standards were issued as against 771 in the preceding year. The number of Indian Standards in force, including those under print but excluding those withdrawn, increased from 9 051 as on 31 March 1977 to 9 483 as on 31 March 1978. Full information regarding total number of Indian Standards published, standards in force, standards revised and standards withdrawn is given below.

New standards issued during the year	480
Indian Standards revised during the year	304
Total number of standards (new and revised) issued during the year	784
Standards withdrawn during the year	48
Cumulative total of standards issued up to 31 March 1978	9 895
Cumulative total of standards withdrawn up to 31 March 1978	412
Indian Standards in force as on 31 March 1978	9 483
Cumulative total of standards revised up to 31 March 1978	2 955
Cumulative total of standards (new and revised) published up to 31 March 1978	12 850

A detailed report on standards formulation activity during the year under report is given in Part II.

Implementation of Indian Standards

Adoption of Indian Standards — Efforts were continued to ensure that the decisions regarding implementation of Indian Standards taken by the Central Government, various State Governments and public sector undertakings were carried out. As a result, 94 percent of Indian Standards were adopted by various Government departments.

Recommendations on Specific Items — During the period under review, various organizations took steps to implement various Indian Standards as indicated below:

<i>Organization</i>	<i>Products/ Indian Standards</i>	<i>Directives</i>
a) Andhra Pradesh State Board for Prevention and Control of Water Pollution, Secunderabad	Laboratory equipment, glassware and chemicals	The Board has specified that if ISI has approved any item under the list of chemicals, glassware, etc, the same may be mentioned while inviting quotations. The firms/suppliers will also be required to mention the IS No. against the materials which have the approval of ISI. Further, the Board will give preference to such materials bearing ISI Mark.
b) Ministry of Shipping and Transport, New Delhi	Indian Standards for mining safety	Have issued a circular letter to all Chairmen, Chief Engineers and other organizations under their control to incorporate Indian Standards, wherever feasible, in their purchase orders and tender enquiries prepared by their units. They have also been advised to instruct suitably all the officers concerned to implement Indian Standards, especially for acceptance tests and safety requirements.
c) Bihar State Electricity Board, Patna	Galvanized stay strands	Have decided to make purchases of galvanized iron stranded stay wires conforming to Indian Standard only. In the case of ISI certified products, exemption is to be given to testing of the product in the factory prior to despatch.

Adoption by Manufacturers/Consumers — To enable the Institution to provide information about manufacturers/consumers operating to Indian Standards, 50 enquiries were issued on various subjects covering 1 418 Indian Standards, codes of practice and methods of test.

The information so far received from the manufacturers, consumers, etc, is as under:

<i>Nature of Adoption</i>	<i>No. of Organizations</i>	<i>No. of Standards Adopted</i>
For manufacture	69	137
For purchase	131	406
For testing and inspection	135	375
General adoption	30	213

Identifying Sources of Supply of Products According to Indian Standards — A sizable number of industries and consuming organizations approach ISI for information on manufacturers who can supply products conforming to the relevant Indian Standards. Such information pertaining to products covered under the ISI Certification Marks Scheme is available in "Buyers' Guide" being published by ISI periodically; for products not yet covered under the Scheme, the available information on manufacturers claiming conformity to Indian Standards is being furnished on request. During 1 April 1977-31 March 1978 such information was furnished to 54 parties on products covering 158 Indian Standards.

Scrutiny of Tender Notices — To ensure that decisions taken by various organizations for adoption of Indian Standards are adhered to, the Institution continued to scrutinize tender notices published in daily papers and journals. Cases where Indian Standards existed but were not quoted by Government purchase authorities, public sector undertakings, electricity boards, etc, in their tender notices for some reason were referred to the indentors. A number of organizations to whom such references were made intimated that they would in future accept goods on the basis of Indian Standards only.

Company Standardization

Survey-cum-Training Programme — Two survey-cum-training programmes on company standardization were organized during the period under review — one at Chandigarh and the other at Jamshedpur. A total of 49 standards engineers/executives from 23 organizations participated in these programmes.

Interplant Standardization in Steel Industry — The activity concerning standardization of consumable stores and general equipment used in steel plants continued to make progress during the year under report. The highlights are as under:

- a) Ten interplant standards pertaining to lubricants, hoses, pulley blocks, gear boxes, couplings and compressors were printed; and

- b) The second Workshop on Interplant Standardization in Steel Industry was organized at Rourkela on 24 June 1977 when the problems and prospects of implementation of Interplant Standards were discussed and the difficulties faced by various users in the steel plants identified with solutions or follow-up action as considered necessary.

ISI Certification Marks Scheme

During the year, 946 licences were granted under the ISI Certification Marks Scheme, bringing the total number of licences issued since the inception of the Scheme to 6 965. The certification revenue reached the figure of Rs 14.63 million, registering a growth of 28.7 percent. The value of goods certified is estimated to be of the order of Rs 16 000 million.

Information regarding the applications received and licences granted since the inception of the Scheme is as under:

Applications received	13 280
Applications processed	10 938
Licences granted	6 965
Licences in operation	4 502

ISI Laboratories — During the period under review, the Central Laboratory at Headquarters and three Regional Laboratories at Bombay, Calcutta and Madras tested 18 996 samples in different disciplines, namely, chemical, electrical and mechanical. Details of the testing work are as under:

Samples received	19 961
Samples tested	18 996
Samples withdrawn	734
Testing charges estimated for the work done	Rs 2 640 220

A detailed report on the operation of the ISI Certification Marks Scheme is given in Part III.

Meetings of General Council and Executive and Finance Committees — The thirtythird meeting of the General Council of the Institution was held on 11 January 1978 under the chairmanship of Shri Mohan Dharia, Union Minister of Commerce, Civil Supplies and Cooperation and President, ISI. Shri D. C. Kothari and Shri Harish Mahindra were re-elected Vice-Presidents of ISI for a period of one year ending 31 December 1978. The Executive and Finance Committees held four meetings each during the year.

Finances — The total income of the Institution from various sources, such as Government of India grants, membership subscription, sale of Indian Standards and certification marking fees during 1977-78 amounted to Rs 29 740 195 as against an expenditure of Rs 28 334 920. A statement of

accounts for the year 1977-78 is given in Appendix A. The report from the Accountant General will be tabled at the meeting of the General Council.

Invisible Contribution — Besides income and expenditure during the year under review, the Institution received some invisible contributions. Expenses were incurred by members of ISI committees on TA/DA within the country and abroad. In addition, many organizations, both in public and private sectors, undertook testing work and supplied samples free of cost. The total value of such invisible contributions during the year is estimated at Rs 3.51 million.

Training Programmes

International Training Programme in Standardization — The 15-week International Training Programme in Standardization for Developing Countries, tenth in the series, commenced on 9 November 1977 and concluded on 24 February 1978. Eleven participants from Kenya, Guyana, Malaysia, Tanzania, Brazil, Barbados, Ghana and Iran attended the Programme.

Started in 1964, training has so far been imparted to 98 technical personnel from 29 countries, namely, Afghanistan, Barbados, Bangladesh, Brazil, Burma, Cyprus, Egypt, Ethiopia, Ghana, Guyana, Iran, Iraq, Jordan, Kenya, Kuwait, Malawi, Malaysia, Mexico, Nigeria, Panama, Philippines, Singapore, South Yemen, Sri Lanka, Sudan, Tanzania, Thailand, Trinidad and Tobago, and Zambia.

Assistance to Algerian National Standards Body — Under the first phase of bilateral cooperation between ISI and the Algerian national standards body (INAPI), the Institution sent a team of three experts to Algeria to organize two training programmes during 25 July-25 August 1977:

- a) Three-week training for development of national standardization,
- b) One-week training for development of company standardization.

Training Programmes in Testing of Products — A number of group training programmes in various fields of testing were organized in the Central Laboratory at the Headquarters for the benefit of testing personnel of the licensees operating under the ISI Certification Marks Scheme as also of the applicants for licences besides personnel from the Departments of Industries of various State Governments and concerned departments of the Central Government. Details of the training programmes organized during the year are as under:

<i>Programme</i>	<i>Period</i>	<i>Participants</i>
Tea-Chest Battens and Plywood	25-27 April 1977	1
Domestic Electrical Appliances	9-13 May 1977	5
Diesel Engines	22-26 August 1977	12
Food Colours	19-23 September 1977	5
LPG Cylinders	10-14 October 1977	4

<i>Programme</i>	<i>Period</i>	<i>Participants</i>
Electric Motors	28 November to 2 December 1977	13
Pesticides	5-16 December 1977	24
Domestic Electrical Appliances	6-10 February 1978	17
Physical Testing	6-10 March 1978	6

Besides, the Central Laboratory organized two training programmes in the testing of B-twill jute bags for the officers of Food and Supplies Directorates of Haryana, Punjab and UP and the Food Corporation of India. Organized at the request of the Director General, Supplies and Disposals, the training programmes were attended by 29 participants.

Training Programmes in Statistical Quality Control— Two training programmes in statistical quality control were organized during the year — one at Calcutta for the benefit of ISI licensees and applicants from cables and conductors industry and the other at Anand for dairy industry in collaboration with the National Dairy Development Board (NDDB). In all, 33 participants from 31 organizations participated in these programmes.

Progress of Plan Schemes

Science and Technology Project — For the Fifth Five-Year Plan, two projects, namely, Development Programme on Code Implementation for Building and Civil Engineering Construction and Typification Organization for Industrial Structures were allotted to ISI by the then Ministry of Industries and Civil Supplies. A brief review of the progress of these projects during the period under report is given below:

Implementation of National Building Code — An Implementation Conference at Bhopal and a Seminar at Nagpur were organized to promote implementation of the National Building Code in Madhya Pradesh and Vidharbha Region of Maharashtra respectively. A training programme was conducted in Kerala to propagate the contents of the new sets of Building Byelaws to engineers, architects, town planners, administrators and other officials directly dealing with their implementation.

Revision of Building Byelaws in line with the National Building Code were finalized for the corporations of Greater Bombay, Sholapur, Kolhapur, Pune and Nagpur and A, B and C class municipal councils of Maharashtra. With this, 15 sets of Building Byelaws were completely revised in accordance with the Code. Besides, revision of PWD specifications of Kerala, in accordance with the National Building Code, was completed.

Preliminary Handbooks were prepared on Steel Code, Masonry, Foundation of Buildings, Formwork, and Summary of Building Material Specifications.

Typification of Industrial Structures — Data on structures in the public

sector undertakings were collected with the help of the Bureau of Public Enterprises. Work on the collection of data from private sector industrial units in and around metropolitan cities was initiated.

Technical Information Services

ISI Library — The Library at the Headquarters processed 19 260 publications including standard specifications. The libraries at the Regional Offices were suitably strengthened to provide information services to members located in their respective regions. A total of 65 bibliographies and 263 documentation lists were prepared at the specific request of the technical staff and members. On an average, 30-35 reference questions were daily received in the Library which were suitably attended to. Besides, close liaison was maintained with ISO information services at the Central Secretariat in Geneva, which also sent copies of all bibliographies compiled by the ISI Library.

The Library also continued to prepare and circulate the following information lists for the benefit of its users:

- a) List of overseas standards received in ISI Library,
- b) List of books and pamphlets received in ISI Library, and
- c) List of current published information on standardization.

Salient features of the progress of work in the Library are as under:

a) Standards and specifications, and technical publications available in the Library as on 31 March 1978	3 48 266
b) New publications accessioned and processed	19 260
c) Technical journals received	571
d) Bibliographies prepared	65
e) Technical enquiries received and documentation lists prepared	263
f) Publications loaned out and consulted in the Library by subscribing members and visitors	68 000
g) Translations made of overseas standards	73

Technical Information — Two programmes on the utilization of Indian Standards in agriculture were organized, one at Anand (Gujarat) and the other at Hyderabad (Andhra Pradesh). In each programme, about 60 members of faculties drawn from technical institutions participated. The programmes reviewed standardization work in different fields of agriculture, food technology, dairy industry, pesticides, fertilizers, and agricultural machinery and equipment.

A Seminar on 'Standards and You' was organized in Nagpur in collaboration with the Institution of Engineers, at which experts from professional and educational bodies discussed the significance of utilization of standards.

To promote the study and reference to Indian Standards in education and vocational training, a working arrangement for periodic review of the course material was made between the Institution and the Central Staff and Training Research Institute (CSTRI), Calcutta, which trains teachers for various ITIs.

Besides, the following documents were compiled and circulated:

- a) Reviews of standardization in the fields of metallurgy, civil engineering, mechanical engineering and electrical engineering in relation to technical programmes;
- b) List of textbooks and reference books in the field of technical education incorporating information contained in the Indian Standards;
- c) List of consumer products with the ISI Mark, also giving information regarding manufacturers of ISI-marked products;
- d) Hindi version of the list of standards on common consumer goods;
- e) List of Indian Standards for items reserved for purchase from the small scale sector;
- f) Classified list of Indian Standards for packaging; and
- g) Subjectwise handbooks for ISI technical committees.

Computer Project — The computer terminal project made satisfactory progress during the year. Work for site preparation on an area measuring 100 m² for housing the terminal and key-to-tape units was completed and installation is to be undertaken soon. Meanwhile, some pilot studies have been conducted with the help of National Informatics Centre of the Electronics Commission.

The information needs of some departments of the Institution were identified and programmes for different types of data were written and tested on the HP 21 MX Computer of the Electronics Commission. The design and development of computer-based information systems was undertaken using the existing data from conventional files and storing them in computer storage media. The data available in the Handbook of ISI Publications, Keyword Index, Sectional Lists and Reference Cards of Indian Standards, etc, were also transcribed. A CMD data base was also developed.

Public Relations

Membership — The number of subscribing members of the Institution increased from 4 967 on 31 March 1977 to 5 371 on 31 March 1978, an increase of 404 members representing 8 percent. The revenue obtained from subscribing members during the year amounted to Rs 4·030 million as against the corresponding figure of Rs 3·686 million during 1976-77— an increase of 10 percent.

The detailed information about different categories of membership as on 31 March 1977 and 31 March 1978 is given in Table 1.

TABLE 1 DISTRIBUTION OF SUBSCRIBING MEMBERSHIP

CLASS OF MEMBERSHIP	NUMBER OF MEMBERS ON		NET GAIN/LOSS
	31 March 1977	31 March 1978	
Patrons	17	17	—
Donor Members	55	56	+1
Sustaining Members	1 767	1 764	-3
Associate Members	1 803	1 953	+150
Ordinary Members	1 046	1 308	+262
Individual Members	279	273	-6
TOTAL	4 967	5 371	+404

The position of Subscribing Membership since 1973-74 is graphically represented in Fig. 1.

Distribution Service — The Institution continued to distribute Indian and overseas standards and other publications to its members extensively. Besides, publications were supplied to ISO member-bodies. Details are given below:

<i>Nature of Publications</i>	<i>No. of Copies</i>
Indian Standards and Amendment Slips	829 200
ISI Bulletin	154 000
Standards: Monthly Additions	89 500
Miscellaneous Publications, such as Annual Report, Handbook, etc	2 700
Sectional Lists	55 000

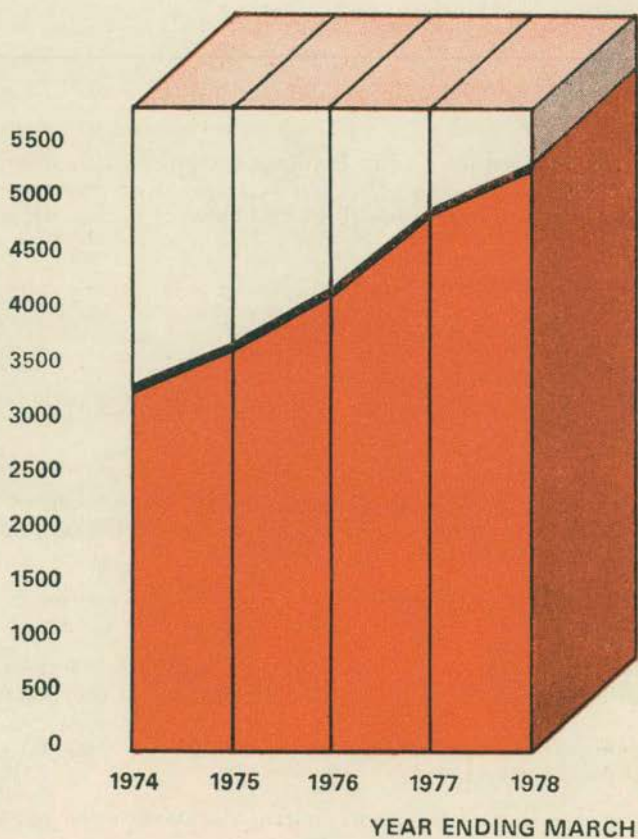
Sales Service — A comparative statement of the sale of Indian and overseas standards as also the commission earned by ISI on sale of overseas standards for the last three years is given below:

<i>Nature of Publications Sold</i>	<i>1975-76</i> Rs	<i>1976-77</i> Rs	<i>1977-78</i> Rs
Indian Standards	2 665 975	3 288 169	3 108 150
Overseas standards	1 425 522	1 601 950	1 428 732
Commission earned on the sale of overseas standards	454 329	560 000	476 000

During the year under report, Indian Standards were sold to a number

Fig. 1 ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS

— TOTAL SUBSCRIBING MEMBERS



of overseas standards organizations, including the following:

- a) British Standards Institution, London
- b) Standards Association of Australia, Sydney
- c) DIN Deutsches Institut für Normung, Berlin
- d) Iraqi Organization of Standards, Baghdad
- e) Bureau of Ceylon Standards, Colombo
- f) Japanese Standards Association, Tokyo
- g) American National Standards Institute, New York
- h) Nigerian Standards Organization, Lagos

Publicity and Conferences

Various media of publicity and public relations were utilized to project different activities of the Institution. A brief resumé is given below.

Exhibitions — The Institution participated in the following exhibitions:

<i>Sl No.</i>	<i>Name of Exhibition</i>	<i>Organized by</i>	<i>Place</i>	<i>Period</i>
1.	Exhibition on 'Consumer Education'	Consumer Guidance Society, Hyderabad	Hyderabad	16-17 July 1977
2.	Exhibition of ISI-Marked Products	Western Regional Office, ISI	Pune	16-18 Oct 1977
3.	Audyogic Pragati Pradarshni	Directorate of Industries, Government of Rajasthan	Jaipur	26 Nov 1977-1 Jan 1978
4.	Indo-Gurjari 1977 Exhibition	Board of Directors of Indo-Gurjari 1977 in collaboration with Gujarat Chamber of Commerce & Industry	Ahmadabad	27 Dec 1977-10 Jan 1978
5.	Exhibition on the occasion of 8th All-India Builders' Conference	Builders' Association of India	Madras	16-23 Dec 1977
6.	Food Machinery Fair	—	Bangalore	13-23 Jan 1978
7.	Exhibition on the occasion of 14th Dairy Industry Conference	—	Bangalore	18-20 Jan 1978
8.	Indian Engineering Trade Fair — 1978	Association of Indian Engineering Industry	New Delhi	2-14 Feb 1978

<i>Sl No.</i>	<i>Name of Exhibition</i>	<i>Organized by</i>	<i>Place</i>	<i>Period</i>
9.	World Book Fair III	National Book Trust, India	New Delhi	11-20 Feb 1978
10.	Ancillary Industries Development Exhibition	—	Ahmadabad	9-13 Feb 1978
11.	Exhibition on Loss Prevention	Loss Prevention Association of India	Bombay	16 Mar 1978
12.	Trichur Pooram Exhibition, 1978	Government of Kerala	Trichur	25 March-15 May 1978

Advertising Campaign

Radio Spot — A 15-second Radio Spot highlighting the ISI Mark was broadcast in different languages from the different stations of All India Radio in the commercial Broadcasting Service during November 1977-March 1978.

TV Spot — A 20-second Commercial Spot on ISI Mark was telecast from the various TV Centres during February and March 1978.

Exhibition of One-Minute Publicity Film in Cinema Halls — A one-minute publicity film on ISI Certification Marks Scheme was screened in various cinema halls in New Delhi and in places where ISI Regional and Branch Offices are located during November 1977-March 1978.

Press Advertising — To give publicity to the ISI Certification Mark through the press on all-India basis, advertisements were released in important newspapers of the country.

ISI Foundation Day — The ISI Foundation Day, marking completion of thirtyone years of the Institution's services to the nation, was celebrated on 6 January 1978. A special advertisement highlighting the achievements of the Institution was released in prominent newspapers in the country.

Chandigarh Branch Office observed 'Open Day' on this occasion when public was invited to visit the Branch Office. A declamation contest on 'ISI Protects Consumer Interests Through Standardization' was organized at Eastern Regional Office, Calcutta. A lecture meeting at Bhubaneshwar was devoted to the theme 'Standards and You'.

Presentation of Indian Standards — A complete set of Indian Standards was presented, as gift, to Tanzania on 5 April 1977. The Institution has been presenting complete sets of Indian Standards to developing countries under its scheme of sharing technical knowhow with them.

Seventeenth Indian Standards Convention — The Seventeenth Indian Standards Convention was held at Jaipur during 27 November-3 December 1977. The Convention was inaugurated by Shri Raghukul Tilak, Governor of Rajasthan, and the inaugural function was presided over by Shri K. K. Goyal, Union Minister of State for Civil Supplies and Cooperation.

Over 700 delegates representing scientific and technical institutions, industrial organizations in public and private sectors, Government departments, purchasers, consumers and other concerned interests participated in the Convention.

The Convention programme provided one general and six technical sessions dealing with importance of standardization and quality control in diverse fields, namely, standards in daily life, housing for *Janata*, coordinated utilization of national testing facilities, voluntary *versus* compulsory certification of products, educational utilization of standards, industrial safety and standardization, and quality improvement in small scale industries. A total of 135 technical papers were presented at the technical sessions.

Conference on Standardization and Quality Control of Alcoholic Drinks — A Conference on Standardization and Quality Control of Alcoholic Drinks was held in New Delhi on 25 April 1977 under the chairmanship of Dr P. P. Goel, Director General, Health Services, New Delhi. The Conference was attended by some 70 delegates representing manufacturers, users, technologists and State excise authorities.

World Standards Day — The Institution celebrated the World Standards Day at the Headquarters and Regional and Branch Offices on 14 October 1977. At the Headquarters, the Day was celebrated by observing 'Open Day', franking of all out-going dak with the slogan on World Standards Day, exhibition of ISI-certified products, arranging tests of some important consumer items, display of Indian Standards and publication of special supplements by important newspapers. At Regional and Branch Offices, the Day was marked by rubber-stamping of out-going dak and organization of exhibitions and seminars.

Shri K. K. Goyal, Union Minister of State for Civil Supplies and Cooperation, visited the Institution on this occasion and was apprised of the progress made by ISI in various fields.

K. L. Moudgill Prize — The K. L. Moudgill Prizes for 1975 and 1976 were awarded to Dr D. Banerjee, Managing Director, ESCON Consultants Pvt Ltd, Calcutta, and Maj-Gen K. K. Mehta, Adviser, Standardization, Testing and Quality Control, Department of Electronics, Government of India, respectively, for their valuable contributions in the field of standardization at the Seventeenth Indian Standards Convention held at Jaipur during 27 November-3 December 1977.

ISI Fellowships — Thirty-nine engineers and technologists were admitted

to the Fellowship of ISI in recognition of their distinguished services to the cause of standardization as Chairmen, Vice-Chairmen and Members of Division Councils, Sectional Committees, Advisory Committees, Sub-committees and Panels of ISI. Of these, 20 Fellowships were awarded for 1976 and 19 for 1977.

Use of Hindi in ISI Work

Various steps were taken for the implementation of the provisions of the *Official Languages Act* in the day-to-day working of the Institution and for arranging training of ISI employees under the Hindi Teaching Scheme. Hindi versions of some 110 notifications pertaining to ISI Certification Marks Scheme were prepared for publication in the Gazette of India. Press notes relating to Indian Standards on consumer items and various activities of the Institution, general orders, office notes and covering letters of draft Indian Standards and amendments for wide circulation were also issued in Hindi. In all, about 270 such documents were issued bilingually during the year.

Press releases on the deliberations of the various sessions of the Seventeenth Indian Standards Convention held at Jaipur during November-December 1977 were also issued in Hindi which were carried by Hindi papers of Rajasthan and outside the State. Hindi was also used for speeches, placards, banners, pamphlets, etc.

The ISI Official Languages Implementation Committee held two meetings during the year and took, *inter alia*, the following important decisions regarding progressive use of Hindi:

- a) To facilitate issuing of ISI Certification Marks licences in Hindi also, a list of Indian Standards covering items carrying Certification Marks licences be prepared in Hindi.
- b) Indian Standards be translated into Hindi and printed in Hindi-English together in diglot form. To begin with, Indian Standards relating to common consumer items and small scale industries may be selected from among those under processing for the purpose of printing diglot standards.

As for translation of printed Indian Standards, the work could be examined and taken up at the appropriate time.

- c) The glossary of terms in English-Hindi circulated by the Ministry of Civil Supplies and Cooperation be revised to include the specific words in use in ISI and the names of various ministries and departments of the Government of India.
- d) Hindi-English name plates of officers and departments be prepared.
- e) Advertisements relating to publicity and staff recruitment be issued both in English and Hindi-English version for English papers and Hindi version for Hindi papers.

- f) The number of Hindi typewriters in ISI be increased. Accordingly, an order for the purchase of four Hindi typewriters was placed with the suppliers.
- g) A quarterly Hindi Newsletter be brought out to publicize ISI activities and foster standards-consciousness among people.

REGIONAL AND BRANCH OFFICES

To meet the ever-increasing demand on the services of the Institution, Regional Offices have been established in Calcutta, Bombay and Madras. Besides, Branch Offices have been set up in most of the State capitals and Inspection Offices at other important industrial centres. A brief resumé of the important activities of the various regions is given in the following paragraphs:

Eastern Region

The Eastern Region consists of the Regional Office at Calcutta; Branch Offices at Bhubaneshwar and Patna; and Inspection Offices at Asansol, Bhilai, Bokaro, Durgapur, Jamshedpur, Rourkela and Tinsukia.

The offices in the Eastern Region continued their efforts to secure wider involvement of industries in the activities of the Institution. A number of seminars were sponsored in association with other professional bodies besides participating in seminars/training programmes organized by other organizations.

As a result of promotional efforts, various departments of the Central and State Governments took a number of decisions of which the following are worthy of mention:

- a) The Directorate of Industries, Government of Assam, directed the local manufacturers to produce their goods in accordance with the requirements laid down in Indian Standard specifications and to preferably cover them under the ISI Certification Marks Scheme.
- b) The Director General of Mines Safety (DGMS) directed that all the three types of flame safety lamps being supplied to mines should carry ISI Mark in addition to the approval mark of DGMS.
- c) The Government of West Bengal decided that henceforth they would purchase only ISI-certified stationery articles, wherever available.
- d) The Bihar State Electricity Board decided to give exemption from pre-purchase testing to ISI-certified galvanized stay strands.
- e) The Director of Export Promotion and Marketing, Government of Orissa, directed the small scale units to implement the relevant Indian Standards and to cover their products under the ISI Certification Marks Scheme.
- f) The Directors of Industries of West Bengal and Bihar as also Director, SISI, Assam, advised manufacturers of steel tubes under

their jurisdiction to obtain licences for covering their products under the ISI Certification Marks Scheme.

- g) The Bihar State Water Development Corporation decided to give preference to ISI-certified RCC pipes.
- h) The Irrigation Research Institute agreed to make available to ISI laboratory facilities for testing of RCC pipes and similar products for certification purposes.

The eighth Review Meeting of licensees for plywood panel of the Calcutta region was held on 6 July 1977 at Calcutta while ninth meeting of those of the Assam region for the same item was held on 7 March 1978 at Tinsukia to assess the level of performance in order to do away with the grouping system gradually as also to streamline the techniques for the implementation of the quality control scheme for effective operation of the licences.

A Seminar on 'Introduction of Use of Modular Bricks in West Bengal' was sponsored jointly by the West Bengal Housing Board, Birla Industrial and Technological Museum and ISI. It was attended by the users and manufacturers of bricks and its deliberations led to the formation of an action Committee to coordinate the requirements of modular bricks in Government departments and supply of such bricks by the manufacturers. The Seminar was inaugurated by Shri Chittabrata Majumdar, Minister for Cottage and Small Scale Industries, West Bengal.

Efforts were also made to have expedited transfer of management of the Testing Laboratory at Patna to ISI. It is expected that the management of the laboratory, which will also house ISI office, will be handed over to the Institution shortly.

Western Region

The Western Region consists of the Regional Office at Bombay, Branch Office at Ahmadabad and Inspection Offices at Nagpur and Pune.

ISI offices in the region made concerted efforts to promote standardization, quality control and quality certification. A resumé of the important activities is given in the following paragraphs:

For the construction of office-*cum*-laboratory building at Bombay, the Government of India had sanctioned Rs 1.5 million against the total outlay of Rs 2.1 million for the first phase of the project, the shortfall of Rs 0.6 million having to be raised by ISI from industries and others in the region. A plot of land measuring about 4 000 square metres in Marol Industrial Area, Andheri, Bombay, was taken possession of on 10 January 1978 from the Maharashtra Industrial Development Corporation (MIDC) at a cost of Rs 0.13 million. Preliminary work of construction of a compound wall and levelling and earth filling of the plot has been undertaken.

To promote implementation of the National Building Code in Maharashtra, the State Government set up a committee to recommend unified byelaws for corporations and municipalities in the State. The Committee finalized three sets of building byelaws and development control rules for municipal corporations, municipalities and A, B and C class municipal councils. The finalized versions of these documents were formally handed over to Shri Udaysinh Gaikwad, Minister of State for Urban Development.

Laboratory facilities in the Bombay Regional Office were augmented to provide better service to the industry in connection with certification marking activity. With the addition of testing equipment in the laboratory in early 1978 it is hoped that it would be possible to take up more and more items for testing.

Technical advice was rendered to the Tariff Advisory Committee (TAC) for General Insurance in Bombay in various meetings held with them. Officers of the Institution also participated in the work of the panels set up by TAC.

A meeting of ISI licensees of 18-litre square tins in the Western Region was held at Ahmadabad on 10 May 1977 when difficulties faced by the licensees in operating the ISI Certification Marks Scheme were discussed.

On the basis of the recommendation of the Ahmadabad Branch Office recognition was accorded to the National Textile Corporation Ltd, Ahmadabad, for testing textile and chemical items.

The Government of Gujarat decided to enhance the quantum of subsidy from Rs 2 500 to Rs 10 000 to small scale units required to instal testing equipment for the purpose of securing recognition from ISI, Quality Marking Scheme, etc.

The Bombay Regional Office and Ahmadabad Branch Office participated in a number of seminars, meetings, exhibitions, etc, organized at different places, with a view to spreading the message of standardization and quality control. Besides, ISI officers delivered talks/lectures at different forums to promote implementation of Indian Standards.

Southern Region

The Southern Region consists of the Regional Office at Madras and Branch Offices at Bangalore, Hyderabad and Trivandrum.

With a view to promoting standards-consciousness in industry, the Regional Office at Madras participated along with the Small Industries Service Institute in the modernization programmes for aluminium industries and domestic electrical appliances. The Regional Office also participated in the meetings connected with quality aspects of copper for electrical applications, mobile testing facilities for motors, packaging management, etc.

Inclusion of standardization as a subject in the curricula for all branches of learning in the engineering and technical Institutions is under consideration of the Directorate of Technical Education, Madras. In this connection, the Regional Office provided the necessary reference material on the subject of standardization for use by students.

The Public Works Department of the Union Territory of Pondicherry constituted an Action Committee for implementation of the National Building Code under the chairmanship of the Secretary of the Department.

A special Review Committee for Modifying the Building Rules of Local Bodies of Tamil Nadu met a number of times during the year and discussed in detail the manner in which development as well as building rules of the local bodies could be aligned with those of the National Building Code.

Certification Marking licences were granted for new items like cotton vests, handloom bedsheets, rubber latex and raw natural rubber. A number of manufacturers of hosiery items in Tiruppur were brought under the ISI Certification Marks Scheme. Applications for grant of licences were received from the manufacturers of safety matches in Sivakasi which is the main centre of handmade match industry in South India.

For successful implementation of the Certification Marks Scheme, testing facilities were developed at the Southern Regional Laboratory for power-operated pneumatic sprayer-cum-dusters, fire extinguishers, PVC water pipes, cement, rubber gaskets, safety matches, etc.

The Central Power Research Institute, and the Controllerate of Inspection Electronics, Bangalore, agreed to provide the necessary testing facilities for most of the items included in the *Household Electrical Appliances (Quality Control) Order* for the purpose of giving licences under the ISI Certification Marks Scheme.

To promote implementation of Indian Standards close liaison was maintained by ISI offices in the region with various State and Central Government departments, professional organizations and associations through active participation in seminars, symposia, industrial clinics and meetings organized by them. A number of lectures and talks were also arranged on standardization and quality control.

On the completion of 10 years of its service to industry in the area, the Hyderabad Branch Office organized a two-day Conference on 'Standardization and Quality Control in Andhra Pradesh' at Hyderabad during 14-15 November 1977. About 175 delegates representing large, medium and small scale industries, purchase organizations, testing authorities, research institutions and other organizations participated in the Conference. Shri Y. Narayana-swamy, Minister for Small Scale Industries, Andhra Pradesh, inaugurated the Conference.

The Director of Agriculture, Andhra Pradesh, decided to give preference to plant protection equipment bearing ISI Mark as also that conforming to Indian Standards while approving the rates of contract.

The Statutory Soft Wood Committee of the Government of Kerala, which allocates timbers at subsidized rates, decided to allocate soft wood only to such units manufacturing tea-chest battens and plywood panels as hold valid licences under the ISI Certification Marks Scheme.

Northern Region

In the Northern Region, there are three Branch Offices located in Chandigarh, Jaipur and Kanpur functioning directly under the Headquarters in New Delhi.

The Branch Offices in the region continued their efforts to maintain close liaison with Government departments, industrial units, associations, etc, for promoting wider implementation of Indian Standards and greater acceptance of goods bearing ISI Mark. For this purpose, they participated in a number of seminars and meetings organized by different organizations to give a fillip to standards activity in the region. Besides, ISI officers delivered talks/lectures on standardization and quality control at different forums.

The Chandigarh Branch Office assisted the Directorate of Industries, Government of Jammu and Kashmir, by supplying information relating to testing equipment required for setting up Common Facilities Testing Centres at Jammu and Srinagar. These centres are being set up by the Government of J & K with the assistance of Small Industries Service Institutes and ISI in collaboration with the Government of India.

The construction of ISI Regional Centre at Mohali was formally taken up by the Public Works Department, Government of Punjab, on behalf of the Directorate of Industries, Punjab. Further details like the equipment to be provided in phases, load requirements and airconditioning details of the various laboratories were worked out and submitted to the concerned departments.

A new Branch Office of the Institution was opened in Jaipur in October 1977 to make available the services of the Institution in standardization and quality control to the industrial units in Rajasthan.

The Cabinet Subcommittee of the Government of Uttar Pradesh took the following decisions in respect of preference to ISI-marked diesel engines:

- a) No 'Q'-marked engine from outside the State would be financed by the Land Development Bank after 1 April 1978;
- b) No manufacturer categorized as 'large' would be recognized by

the Land Development Bank for any ratings of engines not ISI-marked after 30 June 1978; and

- c) No diesel engine manufacturer would be registered with the Land Development Bank after 31 March 1979 unless it has a licence to use the ISI Mark.

The Directorate of Industries (Stores Purchase), UP, transferred a number of stationery items like carbon paper, duplicating ink and stencil paper to the category 'Should be ISI-Marked' to qualify for consideration under rate contract.

A plot of land was finally allotted to the Kanpur Branch Office at Panki Industrial Estate, Kanpur by the UP State Industrial Development Corporation Ltd (UPSIDC) for its Laboratory-cum-Office building. An agreement to this effect was signed on 8 March 1978.

COORDINATION AT INTERNATIONAL LEVEL

The Institution participated actively in the work of organizations devoted to standardization at international level including the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the Commonwealth Standards Conference (CSC). Sustained efforts were also made to establish and maintain close liaison with standards bodies of other countries, particularly those of the developing nations.

Shri D. C. Kothari, Vice-President of ISI, and Director General, ISI, attended the thirtyfirst meeting of the ISO Council held in Geneva during 21-23 September 1977.

India attended two meetings of the ISO Planning Committee (PLACO) held in Geneva during 19-20 September 1977 and 22-24 February 1978. It also participated for the first time in the meeting of the ISO Committee on Certification (CERTICO) held in Geneva during 14-16 September 1977.

Director General, ISI, participated in the meeting of the Technical Division of ISO relating to mechanical engineering in Geneva on 16 September 1977. He also took part in the meeting of the ISO Group on Metrology held in Geneva during 20-21 February 1978.

A Seminar on the Importance of Standardization in the Context of National Development was organized by the Nepal Institute of Standards in Kathmandu during 26-28 December 1977. Director General, ISI, attended the Seminar at which he also represented ISO.

Indo-Soviet Cooperation in the field of standardization and metrology made considerable progress during the year. In pursuance of the decisions

taken at the fourth meeting of the Indo-Soviet Working Group on Standardization and Metrology held in New Delhi in December 1976, there were mutual exchange of visits by experts between India and USSR.

The fifth meeting of the Working Group was held in Moscow during 13-19 December 1977 in which a four-member Indian delegation participated under the leadership of Dr A. K. Gupta, Director General, ISI. The Soviet side was headed by Prof V. V. Boitsov, President, GOSSTANDART, USSR. In this meeting, the Working Programme for 1978 was chalked out in detail and four new themes were included at the suggestion of the two sides.

Detailed report on the international activities of the Institution is given in Part IV.

PART II

FORMULATION OF INDIAN STANDARDS

INTRODUCTION

Given here, in brief is the record of technical work done during 1977-78 by different divisions and departments of the Institution in respect of the formulation of Indian Standards.

Formulation of Standards — During the year 1977-78, 480 new standards were adopted and sent to press, 304 standards were revised, 463 new proposals for formulation of Indian Standards were received and 403 proposals (including some made during the previous year) were accepted and referred to various committees for further processing.

A graphical representation of the cumulative growth of Indian Standards since 1973-74 is given in Fig. 2.

Technical Committees of ISI — As on 31 March 1978, some 2 153 technical committees with a total membership of 32 555 experts representing various interests, namely, manufacturers, consumers, scientists, technical and research organizations, Government departments and purchasers, were engaged in the task of formulation of Indian Standards. During the year, 923 committee meetings were held.

Growth in the membership and activities of the technical committees since 1973-74 is shown in Fig. 3 and 4.

Record of Work — Cumulative information about the work pertaining to different divisions and departments of the Institution is given in Table 2.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

The Agricultural and Food Products Division Council formulated 82 Indian Standards (including revision of 30 existing standards) on important subjects relating to food and agriculture of which particular mention may be made of the following:

- a) *IS: 8427-1977 Rubber roll for paddy dehusker* — Rubber rolls are major wearing components of modern rice dehusker. The rolls

Fig. 2 GROWTH OF INDIAN STANDARDS

- STANDARDS PUBLISHED
- STANDARDS IN FORCE
- STANDARDS REVISED

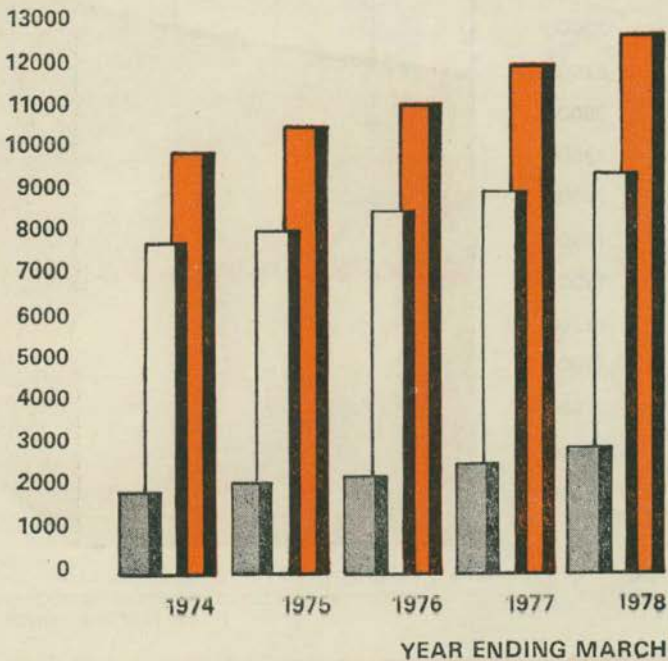


Fig. 3 GROWTH OF COMMITTEE MEMBERSHIP

— NUMBER OF COMMITTEE MEMBERS

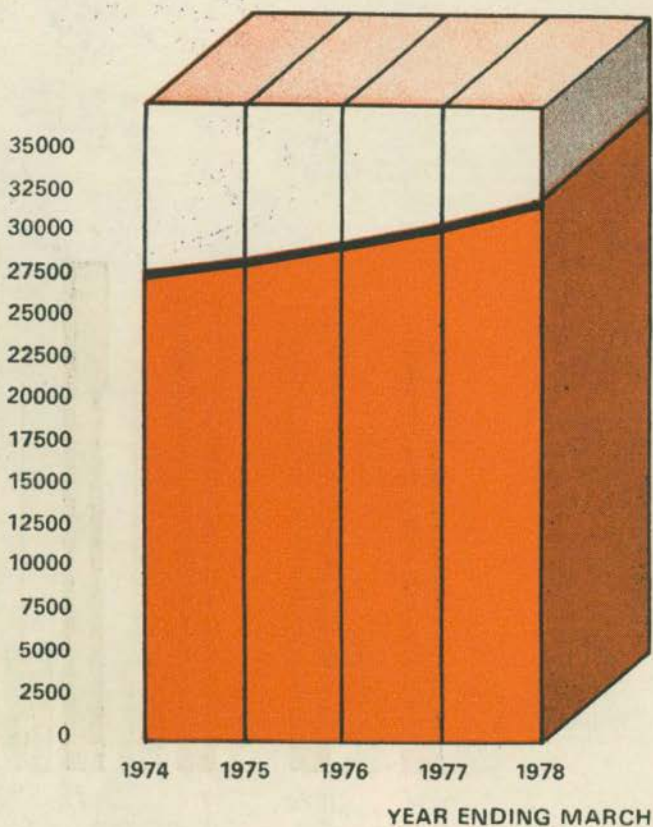


Fig. 4 GROWTH OF COMMITTEES AND THEIR ACTIVITIES

— NUMBER OF COMMITTEES
 ● NUMBER OF MEETINGS HELD

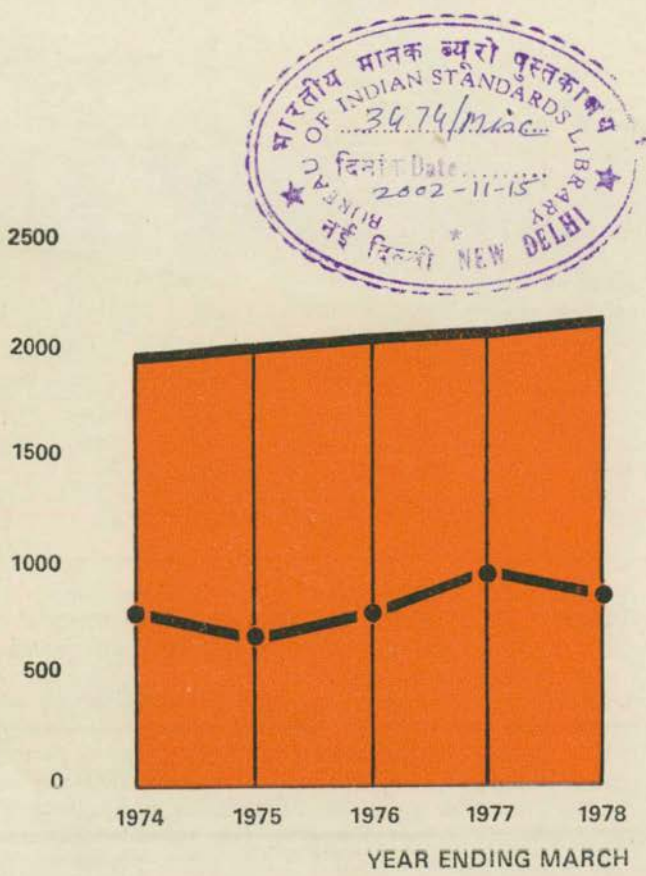


TABLE 2 RECORD OF WORK OF ISI TECHNICAL DIVISIONS AND DEPARTMENTS (FOR 1977-78)

DIVISION OR DEPARTMENT	NO. OF COMMITTEES	NO. OF MEETINGS	NEW AND REVISED STANDARDS PUBLISHED AND UNDER PRINT	AMENDMENTS TO STANDARDS	DRAFT STANDARDS CIRCULATED	NEW SUBJECTS TAKEN UP
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Agricultural and Food Products	155	61	82	48	76	43
Chemical	245	155	91	51	76	17
Civil Engineering	357	136	109	79	128	30
Consumer Products and Medical Instruments	107	68	58	41	78	85
Electronics and Telecommunication	63	34	42	30	54	8
Electrotechnical	193	62	68	89	73	56
Marine, Cargo Movement and Packaging	88	39	34	7	25	5
Mechanical Engineering	293	124	122	95	161	119
Petroleum, Coal and Related Products	161	73	34	7	45	24
Structural and Metals	305	97	82	45	102	16
Textiles	111	46	57	43	40	—
Miscellaneous	75	28	5	1	3	—
Total	2 153	923	784	536	861	403

manufactured in the country differ in dimensions and other quality characteristics. This specification covers material requirements, dimensions, physical properties and other characteristics necessary for quality rubber rolls.

- b) *IS : 8453-1977 Code of practice for construction of polyethylene embedded earthen bins for bulk storage of foodgrains* — These bins are gaining popularity with the farmers as they are cheap, easy in construction, efficient in use and made from locally available materials, namely, bricks, mud, timber and polyethylene film.
- c) *IS : 8461-1977 Cane knives* — This standard has been formulated to ensure interchangeability and mass production of cane knife which forms an important component of sugar machinery.

- d) *IS : 8464-1977 Squeezed honey* — Squeezed honey is collected in large quantities from jungles. It contains wax, insect parts and other impurities. This Indian Standard has been formulated to distinguish this type of honey from extracted honey and to provide guidance on its various quality characteristics.
- e) *IS : 8479 (Parts I & II)-1977 Method for determination of phosphatase activity in milk and milk products: Part I Routine method, Part II Reference method* — Phosphatase activity in milk is used to test whether prescribed heat-treatment has been properly carried out. The methods are, therefore, applied for the control of proper pasteurization.
- f) *IS : 8524-1977 Solar wax extractor* — With a view to utilizing solar energy for melting and, to some extent, bleaching bees-wax from wax combs, this standard provides guidelines on the manufacture of solar wax extractor with easily available materials.
- g) *IS : 8665-1977 Protein fortified bread* — Protein fortification of commonly used foods is increasing to avoid protein calory nutrition which is very common especially amongst children. This standard would help in production of proper quality of protein-fortified bread using right quality fortifying ingredients.

Besides formulating new Indian Standards, steps were taken to revise standards already in existence. Of these, the following deserve special mention:

- a) *IS : 4468-1977 Dimensions for three-point linkage of agricultural wheeled tractors (first revision)* — This standard which was first published in 1967, covered the dimensions of three-point linkage of tractors of up to 50 drawbar horse power (dbhp) under two categories. With the increased use of tractors of more than 50 dbhp, this revision covers the tractors of more than 50 dbhp in three categories. It is hoped that this standard, when implemented, would regulate the manufacture of three-point linkage for achieving interchangeability of mounted implements on different makes of tractors.
- b) *IS : 4931-1977 Power take-off shaft of agricultural tractors (first revision)* — This standard was first published in 1968 and covered tractors up to 45 hp with nominal diameter of 35 mm and speed up to 540 rev/min. Since tractors of more than 45 hp are being manufactured and used in the country with pto speeds of 1 000 rev/min, these have also been covered in the present revision. It is hoped that this standard would help interchangeability of pto-operated agricultural implements.
- c) *IS : 5887 (Parts I to V)-1976 Methods for detection of bacteria responsible for food poisoning (first revision)* — This standard, which was published in 1970, and covers methods for detection of

bacteria responsible for food poisoning, was split up into parts. This was done with a view to making each part more comprehensive including various details of the methods.

A new panel for evolving codes for the radioactive animals laboratory meant for keeping or rearing animals exposed to radioactive isotopes was set up as quite a few laboratory animals were being used in some laboratories where work on radioactive elements was being carried out.

Handbook on Methods of Food Analysis — Based on a request received from the central committee for Food Standards of the Ministry of Health and Family Welfare and duly approved by the Agricultural and Food Products Division Council, a Handbook on Methods of Food Analysis was prepared consisting of 14 chapters, the Handbook runs into about 1 200 pages.

CHEMICAL DIVISION

The work of the Chemical Division Council was reorganized in 1977, and a new Division Council (Petroleum, Coal and Related Products Division Council) started functioning with effect from 1 July 1977. Consequently, work in respect of the following specific areas, earlier dealt with by the Chemical Division Council, was transferred to the Petroleum, Coal and related Products Division Council:

'Standardization and other related activities in the field of solid mineral fuels, petroleum products, rubber, plastics, lubricants, organic chemicals, coal carbonization products, dye intermediates, perfumery material, cosmetics and toilet goods, fuel gases, biogas, natural gas, drug intermediates and fertilizers.'

Of nearly 1 000 standards printed so far by the Chemical Division Council, about 350 were published more than 10 years ago and another 350 some 5 to 10 years ago. All these 700 standards have been reviewed by the respective Sectional Committees; as a result, 115 have been taken up for revision and 382 reaffirmed. The remaining standards are being investigated for revision or reaffirmation as necessary.

The Chemical Division formulated 92 Indian Standards (including revision of 42 existing standards) of which the following were of special importance:

IS : 8635-1977 Limits for gaseous emissions from sulphuric acid and phosphatic fertilizer industries, and IS : 8636-1977 Limits for gaseous emissions from petroleum refineries — For control of air pollution from industry, a series of Indian Standards covering different industries are under preparation. These two are among the first in the series.

Preparation of Indian Standards for Industrial Eye Protectors — Arising from a request received from the Industrial Safety Advisory Committee of

ISI, the Glassware Sectional Committee (CDC 10) has undertaken preparation of a series of standards for industrial eye protectors. The Committee had already published IS: 5983-1971 'Protective glass filters for welding cutting and similar operations'. However, in order to deal with the field of industrial eye protector in a comprehensive manner, a series of standards have been published on methods of test for eye protectors. These are in the form of IS: 7524, Part I covering routine tests, Part II covering special tests and Part III covering optical tests. The material specification for industrial eye protectors is being processed as a revision of IS: 5983-1971. It is intended to cover all types of industrial eye protectors made of glass.

CIVIL ENGINEERING DIVISION

In all, 110 Indian Standards were formulated by the Civil Engineering Division Council including revision of 74 existing standards of which the following deserve special mention:

- a) *IS : 3362-1977 Code of practice for natural ventilation of residential buildings* (first revision) — Provision for ventilation in residential buildings is necessary for the supply of fresh air for breathing, dilution of inside air, control of odours, removal of products of combustion and maintenance of a satisfactory thermal environment. The Code recommends rules and guidelines for the design of residential buildings for natural ventilation. In this revision, requirements for comfort ventilation in hot and humid regions, details regarding calculation of probable indoor wind speed and some typical illustrative examples have been included.
- b) *IS : 4082-1977 Recommendations on stacking and storage of construction materials at site* (first revision) — Planned stacking and storage of materials at construction site can ensure efficient and effective methods of work and construction operations. Losses due to unsuitable and haphazard storage and stacking of material are minimized by sound organization, stacking and storage at site. This standard has been prepared to provide guidance in this regard. In this revision, provisions regarding stacking of AC pressure pipes and sanitary appliances have been incorporated besides other modifications based on experience gained from the use of the original version of the standard.
- c) *IS : 4138-1977 Safety code for working in compressed air* (first revision) — Many works in the field of civil engineering construction, such as under-water works, deep foundations and tunnel works require workmen to carry out their jobs in compressed air. Working in such conditions requires several precautions to be observed for safeguarding workmen against severe hazards to life, compressed air disease and related ailments. This standard was formulated to give the necessary guidance in regard to safety requirements in such cases. In this revision, based on experience

gained since publication of the original standard, a new set of decompression tables has been included, adoption of which is expected to ensure greater safety to workmen. The revision also includes modifications relating to the size of man-lock and sources of air for medical-lock.

- d) *IS:8605-1977 Code of practice for construction of masonry in dams*— Stone masonry for dams, if properly constructed, satisfies the requirements of strength and durability and at the same time, being labour-oriented, is particularly suitable for Indian conditions. Its use for modern structures is increasing steadily. This Code has been formulated to serve as a guide to engineers in construction practices and quality control for stone masonry used in dams and masonry structures.
- e) *IS : 8758-1978 Recommendations for fire precautionary measures in the construction of temporary structures and pandals* — Temporary structures including large pandals normally erected at fairs, festivals and such other outdoor assemblies have not, in general, been subjected to adequate regulations relating to fire safety though in certain regions minimum fire precautionary measures are ensured in their construction before giving permission for the erection of such structures. This code has been formulated for providing the necessary guidance in regard to fire protection measures to be adopted in their erection.
- f) *IS : 8759-1977 Code of practice for maintenance and preservation of stones in buildings* — Atmospheric agencies bring about physical and chemical changes in building stones and cause their deterioration. Suitable preventive measures to minimize such decay are, therefore, essential. This code has been formulated to provide guidance in this regard.
- g) *IS : 8763-1978 Guide for undisturbed sampling of sands* — Undisturbed samples of soils are required for the determination of their engineering properties for use in the design of structures. Obtaining undisturbed samples of sand is quite a difficult process. This code has been prepared to provide guidance for obtaining undisturbed samples of sands.

CONSUMER PRODUCTS AND MEDICAL INSTRUMENTS DIVISION

The Consumer Products and Medical Instruments Division sent 58 standards for printing of which special mention may be made of the following:

Standards in Medical Field

IS : 3390-1977 Sphygmomanometers, mercurial (first revision)— The revised version incorporates modification in the fastening device of the cuff and certain changes in dimensions and other

requirements to take care of the difficulties the manufacturers face in implementing the Standard and to suit export needs of the product.

Standards in Non-medical Field

- a) *IS : 1660 (Part IV)-1977 Wrought aluminium utensils: Part IV General requirements* — Aluminium utensils are being extensively used in this country and are also being exported to countries in the Middle East, Africa and South Asia. Since the middle of 1956 the Government of India has made it mandatory under *Indian Customs Act, 1962* for aluminium utensils to bear the ISI Mark before export.
- b) *IS : 7371-1977 Blades, razor, safety (first revision)* — This standard has been revised to increase the minimum permissible number of satisfactory shaves for stainless steel blades from 4 to 6 and to specify separate performance tests for stainless steel blades and carbon steel blades. Besides, dimensions other than critical have been made optional.
- c) *IS : 8087-1976 Briefcases* — The standard covers requirements and performance test of briefcases which are generally used for carrying files, office correspondence, stationery, etc. It will help manufacturers orient their production to the prescribed requirements.
- d) *IS : 8391-1977 Rubberized coir sheets for cushioning* — This standard has been formulated after extensive testing and investigational work at the Central Coir Research Institute, Kalavoor, Dist Alleppey (Kerala). Rubberized coir is a cushioning material, specially suitable for tropical climate and considerably economical as compared to rubber foam. Investigations were conducted on different Indian-made rubberized coir samples for fixing the norms for different requirements like indentation hardness index and flexing which ultimately affect the performance of the product. It is expected that the quality of rubberized coir cushioning material will improve as a result of implementation of this standard.
- e) *IS : 8755-1977 Method for testing biological compatibility of metals for surgical implants* — This standard lays down the procedure for experimental testing of biological compatibility of metals for surgical implants including preparation of specimens, number of specimens and test hosts, test sites, exposure schedule and method of specimen retrieval. The choice of metal for surgical implants is crucial for the safety of the patient bearing an implant.

ELECTRONICS AND TELECOMMUNICATION DIVISION

A total of 42 new and revised Indian Standards were sent for printing. Of these the following are of special importance:

- a) *IS : 4547-1978 Receivers for monochrome television broadcast*

transmissions (first revision) — It was originally published in 1968 when the TV industry was at a nascent stage. With rapidly growing manufacture of TV receivers in the country and keeping in view the technological developments a need was felt for revising the standard to incorporate requirements for all tube, hybrid and solid-state types. To ensure reliability, which is very essential an account of high cost of TV receivers, a life test of 1 000 h duration has been added.

- b) *IS : 6842-1977 Limits for electromagnetic interference* (first revision) — This standard was formulated in 1972 taking into account the need and urgency of controlling electromagnetic interference which causes disturbance in the radio and TV reception. Its revision was taken up to take cognizance of the latest information available with the International Special Committee on Radio Interference (CISPR), lay down limits of interference from fluorescent lamps and luminaires and modify or revise some of the limits specified. Opportunity was also taken to spell out the types of disturbance from household electrical appliances, portable tools and similar electrical apparatus as also normal load conditions for the same. In these cases, a clear distinction has to be made between continuous and discontinuous interference as effects of such interferences are different. This revised standard is expected to form the basis of legislative measures contemplated for controlling radio interference in the country.
- c) *IS : 8507 (Part I)-1977 Fixed tantalum capacitors with solid electrolyte: Part I General requirements and methods of test* — The fixed tantalum electrolyte capacitor has an edge over the conventional aluminium electrolytic capacitor in characteristics like stability, leakage current, size and tolerance. For professional applications, these capacitors are widely used in preference to aluminium electrolytic capacitors. With the indigenous technology and knowhow having been developed in this field, manufacture of these capacitors has been taken up and this standard is expected to give suitable guidelines for ensuring their quality, especially for export of which there is very good potential.
- d) *IS : 9000 Basic environmental testing procedures for electronic and electrical items: Part II Cold test, Part III Dry heat test* — With the fast disappearance of distinction between component and equipment type items and due to technological development, it has become necessary to (a) harmonize the test procedures applicable to these items, (b) update the test procedures for environmental tests in the light of developments taking place at IEC level, and (c) specify distinctly different test procedures for heat dissipating and non-heat dissipating items. These considerations have led to the revision of environmental testing procedures describing them in one

harmonized series (IS : 9000) for both equipment and component type items. Part II deals with cold tests for non-heat dissipating items with sudden and gradual change of temperature and cold tests for heat dissipating items with gradual change of temperature. Part III deals with dry heat tests for non-heat dissipating items with sudden and gradual change of temperature and dry heat tests for heat dissipating items with sudden and gradual change of temperature. Standards dealing with environmental (both mechanical and climatic) as well as combined tests are also being developed in this series.

- e) *IS : 9001 (Part II)—1977 Guidance for environmental testing: Part II Cold and dry heat tests* — Environmental testing procedures are dealt with in IS : 9000 series but it will not always be possible to specify either the physics of the test or the guidelines to choose the severities and the type of test for different applications. To fill this gap, a series of standards on guidance for environmental testing procedures (IS : 9001) has been brought out which forms a necessary adjunct to the series of standards on environmental testing procedures. This part, the first to be brought out in the series, provides guidance on cold and dry heat tests.
- f) *IS : 9002 Equipment for environmental tests for electronic and electrical items: Part I Chamber for cold test, Part II Chamber for dry heat test* — With increasing awareness of the importance of environmental tests for electronic and electrical items, testing facilities are being augmented in the country almost in every State. The need has, therefore, arisen for preparing a series of standards relating to environmental equipment (IS : 9002) used for carrying out such environmental tests. The primary object of this series is to guide the manufacturers with respect to broad specifications for their equipment and to assist the users of such equipment to properly define the requirements in the indent. Part I lays down guiding requirements for the design of cold chamber required for carrying out cold tests in accordance with IS : 9000 (Part II). Part II lays down guiding requirements for the design of dry heat chamber required for carrying out dry heat tests in accordance with IS : 9000 (Part III).

The second meeting of the Electronics and Telecommunication Division Council (LTDC) was held on 10 February 1978 at New Delhi under the chairmanship of Mag-Gen K. K. Mehta (Retd), Adviser, Standardization, Testing and Quality Control, Department of Electronics, New Delhi. The Council approved the title and scope of Power Line Carrier Systems and Telecontrol Equipment Sectional Committee (LTDC 25) so as to limit its work to associated telecontrol equipment only. The Council also discussed ways and means for implementing Indian Standards on electronic components and equipment with particular reference to the ISI Certification Mark.

The need for dimensional standardization of components in addition to their functional and performance requirements was also emphasized. To achieve this and to effect coordination and provide guidance to various component committees, a coordinating committee consisting of Chairmen of all component committees was proposed to be set up.

ELECTROTECHNICAL DIVISION

Among the 68 standards printed/prepared during the period under report, the following are considered to be of special importance:

- a) *IS : 2516 (Parts I and II)-1977 Circuit-breakers for voltages not exceeding 1 000 V ac or 1 200 V dc: Parts I and II Requirements and tests* (first revision) — This revision is aligned with the latest international developments and clearly specifies the characteristics of circuit-breakers with regard to their operation and the tests designed to prove conformity to these requirements. This standard covers both the conventional type and moulded case circuit-breakers.
- b) *IS : 7098 (Part I)-1977 Crosslinked polyethylene insulated PVC sheathed cables: Part I For working voltages up to and including 1 100 volts* — Crosslinked polyethylene (XLPE) has superior physical and thermal properties and equivalent electrical properties when compared to plain polyethylene. This standard covers requirements for XLPE-insulated and PVC-sheathed cables with copper and aluminium conductors. Also covered are heavy duty armoured cables suitable for use in mines.
- c) *IS : 8447-1977 Manually-operated voltage regulators for domestic use* — This standard covers the safety and performance requirements for manually-operated voltage regulators of auto-transformer type for use with domestic equipment like refrigerators, airconditioners and television sets. The input voltage range has been specified keeping in view the most prevailing conditions of voltage fluctuation in the country.
- d) *IS : 8448-1977 Automatic line voltage correctors (step type) for domestic use* — This standard covers the safety and performance requirements for step type automatic line voltage correctors for use with domestic equipment like airconditioners, television sets and refrigerators. It covers correctors up to a rating of 5 kVA for single-phase operation and would ensure that output voltages are maintained within specified tolerance limits.
- e) *IS : 8588 (Part I)-1977 Thermostatic bimetals : Part I General requirements and methods of test* — Covers general requirements and methods of test for thermostatic bimetals used in electrical equipment. Specific requirements of thermostatic bimetals used in switchgear are covered in a separate part under preparation.
- f) *IS : 8607 (Part I)-1977 General and safety requirements for electrical*

- equipment used in medical practice: Part I General* — This standard covers general and safety requirements for diagnostic, therapeutic and other kinds of electromedical equipment designed for use in human and veterinary medicine. It provides guidance on means of obtaining adequate protection of the patient, the operator and the environment. It also covers basic environmental and test conditions, classification and details to be specified for electro-medical equipment.
- g) *IS : 8686-1977 Static relays for power system protection* — This standard covers the requirements for electrical protective relays in which the desired response is developed by electronic, magnetic or other components without mechanical motion. It has been prepared to cover the additional requirements for static relays besides those specified in IS: 3231-1965 'Electrical relays for power system protection'.
- h) *IS : 8714-1978 Electrical protective relays for use in seismic areas* — This standard lays down additional requirements and tests to which an electrical protective relay must conform before it can be accepted for use in seismic areas. The relay in addition shall also conform to IS: 3231-1965 'Electrical relays for power system protection' which is necessary adjunct to this standard.
- j) *IS : 8724-1978 Dimensions for rewirable fuses up to 650 V* — This standard has been prepared to assist manufacturers in controlling those dimensions of fuse carriers and bases which are vital for interchangeability. The industry has been given a period of three years for a complete changeover to the recommended dimensions.

Household Electrical Appliances (Quality Control) Order — Fortyone specifications relating to electrical appliances and wiring accessories covered in the order were reviewed on a priority basis to facilitate implementation of the standards by the industry. The Order has been made effective from 1 January 1978.

The Electrotechnical Division Council (ETDC) met on 10 October 1977 at New Delhi under the chairmanship of Shri J. S. Zaveri, Managing Director Bharat Bijlee Ltd, Bombay. The Council felicitated Dr H. V. K. Udupa, Member, ETDC, for receiving the Invention Promotion Board Award for developing 'Titanium Substrate Insoluble Anode' for use in caustic soda-chlorine cells in place of graphite anodes. The Council approved the recommendations of the Advisory Committee on Standardization of Instruments (ACSI) for the merger of ETDC 53 Electrical Instruments for Industrial Processes Sectional Committee and EDC 60 Industrial Instrument Sectional Committee, and agreed that the combined committee could work directly under ACSI. It also emphasized the need for studies initiated in the field of reliability and conservation of materials, and desired that the work in these two fields should be carried out through individual Sectional Committees.

MARINE, CARGO MOVEMENT AND PACKAGING DIVISION

In all, 34 new and revised Indian Standards were sent for printing, of which special mention may be made of the following.

- a) *IS : 2771 (Part 1)-1977 Fibreboard boxes: Part 1 Corrugated fibreboard boxes* (first revision) — Fibreboard boxes, especially corrugated ones, are generally replacing wooden boxes. But from the point of view of transportation hazards these boxes should have a certain minimum strength to give complete protection to the contents inside. This standard is the first step in providing guidelines to the converter industry on the basis of indigenous raw material.
- b) *IS : 3575-1977 Bitumen drums* (first revision) — The revised version of this standard is aimed at making a greater use of indigenous raw material (drum sheet) with minimum wastage.
- c) *IS : 8354-1977 Code of practice for packaging of electric fans*, and *IS : 8355-1977 Code of practice for packaging of sewing machine for household purposes* — These standards are foremost among the group of standards related to packaging of engineering goods, especially for export. Fans and sewing machines are two important items exported from India and these standards provide the necessary guidelines for their packaging.
- d) *IS : 8449-1977 Non-returnable metal aerosol dispensers* — Aerosol containers offer several advantages for certain types of products, such as insecticides, perfumes, deodorants and shaving cream. Since filled dispensers are likely to be subjected to varying temperature conditions during transit and storage they require to be tested at room as well as suitable elevated temperature. Besides, there is need for caution in handling and storage of filled dispensers. This standard takes into account the material, construction, testing, and cautionary labelling and marking for safe filling and handling of these containers.
- e) *IS : 8470-1977 Dimensions of rigid rectangular transport packages* — Due to continuous growth in the unitization of load there is need for better coordination of dimensions of packages, pallets, containers and other unit loads. Though a long-term solution in this field has to be based on a comprehensive study of possible implications including harmonization of regulations on dimensions of rail and road vehicles, a short-term solution can be based on standardized dimensions of packages which would not create any obstacle to a long-term solution. This standard prescribes a series of dimensions for rigid rectangular transport packages based on a standard based area (module) of 600×400 mm as part of the inter-modal overall system.
- f) *IS : 8509 (Part 1)-1977 Code of practice for tests and trials of*

dredgers: Part I Self-propelled trailing hopper suction dredgers — Dredgers are mainly port and harbour craft of various types depending upon their function. This standard is the first of the series intended to outline the performance requirements of dredgers.

Transportation of hazardous chemicals in bulk is one of the complex operations for the chemical industry. A study was undertaken in regard to packaging and transportation of chemicals with reference to various requirements under national and international provisions and a Sectional Committee on chemical packaging was set up to formulate the necessary standards in this regard.

The sixth meeting of Marine, Cargo Movement and Packaging Division Council (MCPDC) was held on 25 October 1977. Consequent upon the retirement of Shri A. Krishnan, Chief Surveyor with the Government of India, Directorate General of Shipping, and his relinquishing the Chairmanship of the Division Council, Shri S. Parmanandhan, Director General of Naval Designs, Indian Navy, was elected as the new Chairman. Capt N. A. Tamhane of the Scindia Steam Navigation Co Ltd, Calcutta was elected as Vice-Chairman to look after the work concerning marine and cargo movement.

Shri N. Chakraborty, Deputy Chief Surveyor with the Government of India, Directorate General of Shipping, and Shri V. Anand, Deputy Director (Standardization), RDSO, Lucknow, were appointed chairmen for Marine Engineering Sectional Committee (MCPD 3) and Non-powered Materials Handling Equipment Sectional Committee (MCPD 20), respectively.

MECHANICAL ENGINEERING DIVISION

A total of 122 standards were sent for printing of which the following are considered to be of special importance:

- a) *IS : 5791-1977 Technical supply conditions for piston rings for IC engines* (first revision) — This standard, which was originally published in 1970, aims at helping the IC engines industry in procuring piston rings for the engines in a systematic manner and covers piston ring nomenclature, type of gaps, recommendations for material with physical properties and desirable micro-structure, manufacturing processes, surface finish desirable for a varied range of applications, surface plating and coatings, and surface treatment for running in properties. It has been revised with a view to aligning the current national practices with those prevalent in the international field.
- b) *IS : 8330-1977 Telescopic tripod for surveying instruments* — Surveying tripod, commonly known as stand, is an essential accessory for surveying instruments, such as theodolites, levels and tellurometers on which the instrument is mounted while taking

- observations. Although tripods for different surveying instruments differ in some way or the other in shape, size and height, the Committee had considered it important to have a tripod which could be used with almost every type of theodolite and level. This standard covers the essential dimensions and requirements for such a tripod.
- c) *IS : 8339-1976 Reflex reflectors for automobiles* — Recognizing the need for safety involved in the use of reflex reflectors to be fitted on the back of passenger cars, commercial vehicles and tractor-trailer combinations, this standard covers the basic definitions and outlines the geometrical shapes, and colorimetric and photometric requirements for the reflex reflectors. It also lays down the tests for resistance to water, corrosion, fuels, lubricating oils and heat. The procedure for testing adhesion of the accessible reverse side of the mirror-backed reflex reflectors has also been laid down.
- d) *IS : 8351-1977 Spiral pins (HDT)* — Due to special characteristics of heavy duty type spiral pins, namely, their ability to take dynamic loading, such as impact and shock, there is a regular demand for them in the industry. This standard now covers the requirements of spiral pins of heavy duty type, made of carbon spring steel, in sizes 1.5 to 6 mm.
- e) *IS : 8451-1977 Code of practice for visual inspection of high pressure gas cylinders* — Gas cylinders are subjected to wear and tear during handling. To ensure that these are safe to use they are inspected and tested at regular intervals. This standard covers the procedure for measurement of various external and internal defects by visual inspection and limiting criteria for the acceptance of high pressure gas cylinders in use, marked with a working pressure of 35 kgf/cm² or more. Besides definitions, the maximum permissible limits for various types of external damages, such as dents, cuts, digs, gouges, bulges, laminations and corrosion are also specified.

While preparing this revision, export of piston rings has been considered and accordingly, the symbols used in the standard have been so chosen that they do not conflict with those used in well-known European standards. This has been done to ensure proper identification of the rings when orders for exports are processed.

The Standing Working Committee of the Mechanical Engineering Division Council (SWCE) met on 12 January 1978 under the chairmanship of Maj-Gen R. Janardhanam (Retired). SWCE appointed new Chairmen for six Sectional Committees besides reviewing the composition of nine Sectional Committees.

Inaugural meeting of the Horology Sectional Committee (EDC 82), Plain Bearings Sectional Committee, (EDC 60), and Industrial Valves Sectional Committee (EDC 81) held on 18 August 1977, 6 October 1977 and 5 December 1977 respectively discussed the scope of work and set broad

guidelines for formulating standards for various items coming within their purview.

PETROLEUM, COAL AND RELATED PRODUCTS DIVISION

On the recommendation of the Chemical Division Council, the General Council, in its meeting held in December 1976, agreed to the creation of a new Division Council with the following scope:

'Standardization and other related activities in the field of solid mineral fuels, petroleum and its products, rubber, plastics, lubricants, organic chemicals, coal carbonization products, dye intermediates, perfumery materials, cosmetics, fuel gases, biogas, natural gas, drug intermediates and fertilizers.'

The new Division Council started functioning from 1 July 1977.

In all, 33 standards were sent for printing of which special mention may be made of the following:

- a) *IS : 3400 (Part XX)-1977 Methods of test for vulcanized rubber: Part XX Resistance to ozone* — Presence of ozone in atmosphere is one of the factors for deterioration in quality of rubber products with the passage of time. Estimation of resistance to ozone of different rubber compounds will help in estimating their ageing properties which in turn would lead to production of better quality rubber products.
- b) *IS: 8481-1977 Oxidation hair dyes, liquid, and IS: 8482-1977 Cologne* — These are among the series of Indian Standards on cosmetic goods. Enforcement of quality of cosmetics falls under the purview of *Drugs and Cosmetics Act* but the Ministry of Health has not laid down any standard on cosmetics. The two Indian Standards will help control and supervise the quality of these cosmetics in the country.
- c) *IS : 8502-1977 Petroleum coke* — Petroleum coke, which is produced by coking of residues obtained from crude oil distillation units of petroleum refineries, has a wide industrial application. In the preparation of this standard, due weightage has been given to consumer requirements and the current pattern of production in the country.
- d) *IS : 8558-1977 NEEM cake for manuring* — Non-edible oil cakes, which are not suitable as cattle feed due to presence of toxic substances, can be used for manuring with advantage. A large quantity of *NEEM* cake is available in the country, which is finding favour with agriculturists due to its pesticidal properties. *NEEM* cake also acts as a nitrification inhibitor.
- e) *IS : 8559-1977 MAHUA cake for manuring* — *MAHUA* cakes are fairly quick acting manures but they should be applied well before the crop is sown. Besides supplying nitrogen and organic matter

to the soil, they possess the additional quality of killing worms which is attributed to the presence of saponine.

- f) IS : 8654-1977 *Automotive hydraulic brake fluid, heavy duty* — So far, moderate duty hydraulic brake fluid (covered under IS : 317-1970) based upon diacetone alcohol and castor oil formulations is produced in the country. In view of the low boiling point of diacetone alcohol, this formulation is considered unsuitable, specially where road traffic is high and use of brakes of the vehicles is more severe. In this standard, a heavy duty brake fluid based on higher boiling solvents, such as glycol has been recommended. The publication of this standard will go a long way in ensuring human safety as well as safety of the vehicles.

Lubricants and Related Products Sectional Committee (PCDC 4), has set up a Panel for Engine and Gear Oil Qualification Approval (PCDC 4: P2). This Panel will act in an advisory capacity and will make recommendations about the approval of engine oil for lubrication according to IS: 496-1973 'Internal combustion engine lubricating oil, heavy duty (*second revision*)' and gear oil in accordance with IS : 1118-1957 'Gear lubricant, multipurpose (extreme pressure gear oil)'. Other functions of the Panel will be to recommend to ISI: (a) approval of laboratories for engine testing, (b) approval of blending and quality control facilities of manufacturers, and (c) scrutiny of laboratory engine test data including evaluation of test components.

The first meeting of the Petroleum, Coal and Related Products Division Council was held on 14 July 1977 and that of its Standing Working Committee (SWCPC) on 9 February 1978. M. G. Krishna presided over both the meetings. Composition of two Sectional Committees was reviewed which were reconstituted. Thirteen new proposals were accepted for formulation of Indian Standards.

STRUCTURAL AND METALS DIVISION

A total of 82 Indian Standards, including revision of 40 existing Indian Standards, were sent for publication. Of these, special mention may be made of the following:

- a) IS : 803-1976 *Code of practice for design, fabrication and erection of vertical mild steel cylindrical welded oil storage tanks* (first revision) — This standard, which was first published in 1962, has been thoroughly revised keeping in view the latest practices being followed in the country and abroad in the design, manufacture and erection of these tanks. Provisions of the Code, subject to certain considerations, are also applicable for designing and fabricating tanks for storage of water, acids and chemicals. The revised version of the Code permits the use of steel conforming to IS : 226-1975 'Structural steel (standard quality) (*fifth revision*)',

IS : 2002-1962 'Steel plates for boilers' and IS : 2041-1962 'Steel plates for pressure vessels' besides IS : 2062-1969 'Structural steel (fusion welding quality) (*first revision*)' and also includes provision relating to alternate design of shell of the tanks, radiographic inspection of shell plates, normal and emergency venting requirements, and design and construction of floating roof tanks. It is hoped that this standard would prove useful to consultants and fabricators in the field.

- b) *IS : 3018-1977 Standard silica sand for raw material testing in foundries* — This standard covers the quality requirements of standard sand and will be found useful in differentiating the quality of various binders used as additives in foundries. This sand can be conveniently prepared from raw silica sand available in the country. In the preparation of this standard, considerable assistance was rendered by the National Metallurgical Laboratory, Jamshedpur.
- c) *IS : 8362-1977 Copper and copper alloy rolled plates for condensers and heat exchangers* — Copper and copper alloys are used extensively for the manufacture of rolled copper and copper alloy plates for condensers and heat exchangers. A suitable selection, however, has to be made of the material keeping in view the end applications. This standard specifies the most suitable copper and copper alloys and takes into account latest production and inspection techniques in the manufacture of rolled copper and copper alloy tube plates for condenser and heat exchanger equipment.
- d) *IS : 8365-1977 Cadmium-copper and chromium-copper electrodes* — Cadmium-copper and chromium-copper are used for spot welding electrodes, seam welding wheels and structural parts in welding machines. Chromium-copper in wrought and cast shapes is employed in numerous applications where high strength high conductivity material is required. Cadmium-copper is recommended specifically for spot and seam welding of aluminium and its alloys, tin plates, galvanized iron, etc. This standard is based on the experience available in the country and stipulates composition and physical properties.
- e) *IS : 8376-1977 Electroplated coatings of nickel and chromium on plastics for decorative purposes* — Plastics are electroplated with nickel and chromium as this combines the advantages of plastics with the pleasing appearance of nickel and chromium. With plastics, such as acrylonitrile-butadiene-styrene and polypropylene, it is also possible to achieve satisfactory adhesion of the electroplated coating and plastic components. This is used in radio cabinets and for decorative components in electrical applications. The standard lays down the thickness of coating and specific tests, such as thermal cycling tests for determining the quality of plating on plastics.

- f) *IS : 8484-1977 Metal powder for welding electrodes* — A variety of metal powders are used by the welding electrode industry. This standard has been prepared after rationalizing the requirements of metal powders.
- g) *IS : 8500-1977 Weldable structural steel (medium and high strength qualities)* — The main feature of this standard is that it covers semi-killed steels in weldable qualities. Carbon equivalent values have also been specified for the various grades.
- h) *IS : 8629 (Parts I to III)-1977 Code of practice for protection of iron and steel structures from atmospheric corrosion: Part I General principles of corrosion and its prevention, Part II Pre-treatment, Part III Protective schemes and their maintenance* — The country suffers a substantial loss in terms of money and utilization of some of the essential equipment, appliances, fixtures, rolling stock, shipping, etc, due to damage caused by corrosion. Annual corrosion loss is estimated at Rs 4 000 million. This standard will help take the necessary preventive measures for combating corrosion.
- j) *SP : 14-1976 Index to steel designations* — The index to steel designations has been brought out to help the users and manufacturers adopt the new system of steel designation given in *IS : 1762 (Part I)-1974 'Code for designation of steels: Part I Based on letter symbols (first revision)'*. It provides a ready and useful cross-reference for changing over to the new system.

The second meeting of the Standing Working Committee on Metallurgical Engineering (SWCME) was held on 28 October 1977 at Jamshedpur under the chairmanship of Prof V. A. Altekar, Vice-Chairman, SMDC. Besides reviewing its activities, SWCME reconstituted 15 Sectional Committees for another term of three years, approved 16 new subjects for formulation of Indian Standards and appointed Chairmen for 3 Sectional Committees.

The twentieth meeting of the Structural and Metals Division Council (SMDC) was held in New Delhi on 21 February 1978 under the chairmanship of Shri J. G. Keswani, Director and General Manager, Indian Tube Co Ltd, Jamshedpur. The Council unanimously re-elected Shri Keswani as Chairman of SMDC for another term of three years. Besides reviewing the composition of its two Standing Working Committees, the Council reviewed the progress on research and investigational work being carried out.

TEXTILE DIVISION

In all, 57 new and revised Indian Standards were sent for printing of which the following deserve a special mention:

- a) *IS : 5910-1977 Fineness grades of wool* (first revision), and *IS : 5911-1977 Fineness grades of wool tops* (first revision) — These

standards were first published in 1970 and were based on the corresponding ASTM specifications. A project was undertaken to analyze the fibre distribution of wool tops and average fibre diameter of wool for indigenous raw wool at different research and testing laboratories including the Wool Research Association; the Chief Inspectorate of Textiles and Clothing, Ministry of Defence; and of the Quality Marking Centre of Textiles, Government of Punjab. On the basis of their findings in respect of indigenous wool both the standards have been revised.

- b) *IS : 8430-1977 Nylon fabrics for inflatable equipment* — This standard has been prepared to meet the long-felt need of light weight waterproof fabric used for making inflatable life rafts and other similar equipment. This standard has been developed with the help of manufacturers and users of the material. Its publication is expected to help in the development of indigenous industry and improve availability of this material within the country, replacing imported material.

With a view to incorporating certain quality characteristics, such as hardness and resilience in the revision of *IS : 4892-1968 'Synthetic rubber aprons (reinforced) for drafting system'* a study is being conducted. The project has been assigned to the Ahmadabad Textile Industry Research Association.

Existing card cloths of the carding machine used in the jute industry have not undergone any change in the specification as stipulated by overseas manufacturers of these machines. In the light of the modern carding machines that are being manufactured indigenously, it has been felt that the varieties of card clothing could be reduced considerably and simplified specification adhered to, which would reflect considerably on the cost of card staves. A project to change the conventional card clothing on a scientific basis to suit the present graded jute fibres has been taken up by the Indian Jute Industries Research Association, Calcutta, for the purpose of formulating a specification by the concerned Committee.

A number of Indian Standards have been formulated for handloom fabrics — cotton, wool, silk and rayon. The Directors of Handlooms of the various States, apex handloom cooperative societies, handloom development corporation set up under the intensive development and export-oriented projects, etc, were approached to ensure implementation of Indian Standards. This step would help ensure production of quality fabrics for the consumers.

IS : 2427-1968 'Grading of continuous filament viscose rayon yarn and acetate yarn, bright and dull (first revision)' was prepared with a view to making available quality yarn to art silk industry which is in the small scale sector. Of late the art silk industry has been complaining about the poor quality of yarn being produced and made available by viscose yarn

manufacturers in the country. A special drive was, therefore, launched to persuade the manufacturers to adopt IS : 2427-1968 through their associations, Textile Commissioner, Textiles Committee and others concerned with this industry. Adoption of this standard will make quality yarn available to the art silk industry which in turn will help improve the quality of fabrics.

SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

Documentation Sectional Committee (EC 2) — IS : 8310-1977 'Guide for standard book numbering' was printed. Draft Indian Standard recommendations for bibliographical references: essential and supplementary elements (*first revision of IS : 2381*) was circulated for technical comments. Preliminary draft Indian Standards relating to guide for preparation of bibliographic description sheet for technical reports and guidelines for placement of images in role microfilm were prepared.

Publications and Graphic Technology Sectional Committee (EC 10) — IS : 7160 (Part V)-1977 'Guide for print area, margins and type sizes for textbooks: Part V Textbooks in Kannada, was printed. Three standards in this series, namely, Part III Textbooks in Malayalam, Part IV Textbooks in Telugu, and Part VI Textbooks in Tamil are under print. Three preliminary draft Indian Standards relating to guidelines for preparation of technical reports (Part II Techno-economic feasibility reports); guidelines for presentation of technical manuals, and guide for paper spoilage and wastage in printing industry were prepared.

STATISTICS DEPARTMENT

Important among the Indian Standards sent for printing was IS: 6200 (Parts I and II)-1977 Statistical tests of significance: Part I *t*-, normal and *F*-tests (*first revision*), and Part II χ^2 -test. Statistical tests of significance are important tools in industrial experimentation and decision-making. In the application of quality control, it is often necessary to find out whether, in the case of one lot, the mean value differs significantly from certain specified value or whether, in case of two lots, the mean values differ significantly from each other. There may also be cases where it may be worthwhile to find out whether a new source of raw material has resulted in a significant change in the variability of the product, and it may be necessary to determine whether the variance exhibited in the products made from different raw materials is the same or significantly different.

Part I of this standard deals with questions like these and lays down the required statistical tests of significance, namely, *t*-test, normal test and *F*-test.

Part II lays down another very widely applicable and important statistical test of significance, namely, chi square test, for testing of contingency tables in addition to the testing for goodness of fit of statistical models for solving management and quality control problems.

The use of the tests given in the above mentioned standards is illustrated by means of examples taken from the industrial field. The standards also give all the necessary statistical tables of critical values. They can, therefore, serve as complete handbooks in respect of these tests for the technical people engaged in quality control and management functions.

Extensive investigations and statistical analysis of resulting data were carried out by the department on diverse aspects of standardization work, such as:

- a) Precision of test method for recommending a suitable method for determining total alkaloids (as theobromine) on dry fat-free basis for drinking chocolate (*first revision of IS : 6762-1972*);
- b) Adequacy of the existing specification limits for carbon, manganese, sulphur, etc, in structural steels conforming to IS : 226-1975 'Structural steel (standard quality) (*fifth revision*)' and IS : 2062-1969 'Structural steel (fusion welding quality) (*first revision*)';
- c) Appropriate frequency of testing of stray ingots of steel for incorporation in the scheme of testing and inspection under the ISI Certification Marks Scheme;
- d) Inter-laboratory investigations and analysis of data on standard reference sample of bauxite;
- e) Preparation of tables giving safe working load in axial compression of steel tubes for the draft handbook for structural engineers;
- f) Evolution of suitable specification limits for acid-insoluble ash in mineral mixtures for animal feed; and
- g) Evolution of specification limits for gum base content for chewing gum and bubble gum.

RESEARCH AND INVESTIGATIONS

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

Agricultural and Food Products Division — During the year, testing and research investigations were in progress in the following areas:

- a) *Method for determination of dye intermediate in brilliant blue, FCF, food grade (IS : 6406-1977)* — Quick and simple paper chromatographic method has been developed after trials and incorporated in the standard.
- b) *Packing materials used for Rhizobium inoculants* — *Rhizobium* inoculants being a live material, survival of rhizobia, gas exchange and strength of the packing material assume special importance. After formulation of the Indian Standard for *Rhizobium* inoculants, requests have been pouring in for use of alternative materials in place of polyethylene pouches recommended in the Standard. In

order to decide the right type of packing materials for *Rhizobium*, investigations are in progress on all the packing materials being used in India and in a number of overseas countries.

- c) *Crop protection equipment* — A panel had been set up to investigate the achievability of performance requirements stipulated in various Indian Standards pertaining to crop protection equipment. Based on the detailed investigation, the Panel has submitted its report indicating the modifications to be made in various standards. The report of the Panel is currently under consideration by the relevant technical committee.
- d) *Mineral oil content in confectionery* — Mineral oil is a contaminant in confectionery and may prove to be hazardous to the vulnerable section of the population, that is, children. It was, therefore, considered essential to specify the maximum limit for mineral oil which generally came from the confectionery processing machinery. Investigations were, therefore, carried out at various collaborating laboratories to ascertain the dimensions of the problem and the micro quantities of the contaminant usually present. Based on the results of the investigations, the relevant Indian Standards are being amended and a suitable limit incorporated.
- e) *Determination of gum base content of chewing gum and bubble gum* — Considering that chewing gum and bubble gum base forms an important raw material for the final product and the stipulation of its minimum content is essential, chemical analysis of chewing and bubble gum for the gum base content was organized at a number of laboratories. On the basis of the results obtained, minimum limit of this raw material has been specified.
- f) *Detection of neutralizers in milk powders* — It was desired by the dairy industry that a simpler method for detection of neutralizers in milk powders should be evolved as different methods, namely, acidity, pH, ash content, alkalinity of ash, sodium, phosphorus and calcium content and colour test had failed to detect precisely all the neutralizers added to the milk powders. It was, therefore, considered desirable that a method based on estimation of lactic acid and lactates in milk powders should be standardized and requirements for these characteristics prescribed in the Indian Standard for rapid detection of neutralizers. The work in this respect is in progress at the National Dairy Research Institute, Karnal.

Chemical Division — Testing and research investigations were carried out in the following areas:

- a) Development of accelerated laboratory test for assessing durability of road marking traffic paints;
- b) Evaluation of anti-corrosive properties of aluminium-zinc oxide composite primer for paints;

- c) Collaborative testing for opacity values of synthetic enamels conforming to the relevant Indian Standards;
- d) Collaborative investigations for studying the effect of glycerol content on physical properties of laundry soaps on storage;
- e) Collaborative investigations on assessing the decolourizing power of bleaching earths of Indian origin;
- f) Determination of strength of detonators using sand bomb method;
- g) Comparison of TAPPI method for determination of chlorides in pulp with the Indian standard method; and
- h) Comparison of values of relative density of different brands of duplicating inks for single-drum rotary machines.

Consumer Products and Medical Instruments Division

- a) At the instance of Oil Burning Appliances (Pressure Type) Sectional Committee (CPDC 3), investigations were conducted on the design, safety and performance of offset burner, and safety and oil pressure stoves to evaluate its suitability for the formulation of an Indian Standard. On the basis of tests and investigations, suitable improvements were recommended to the manufacturer to rectify the defects and shortcomings in the stove before it could be covered by an Indian Standard.
- b) On the recommendation of Oil Burning Appliances (Non-Pressure Type) Sectional Committee (CPDC 2), fuel spillage on overturning of non-pressure stoves was investigated in the ISI Laboratory. It was found that the common non-pressure stoves allowed a lot of fuel to be spilt on overturning, which was much more than the safe limits and was hence a safety hazard. On the basis of this test, fuel spillage limit is intended to be covered in the revised version of IS : 2980-1964 'Non-pressure stoves'.
- c) At the instance of Khadi & Village Industries Commission, Bombay, Domestic and Commercial Gas Burning Appliances (Pressure-Type) Sectional Committee (CPDC 23) has formulated a specification for *GOBAR* gas stoves (IS : 8749-1978). This standard specifies construction, operation, safety requirements and tests for stoves, intended for use with *GOBAR* gas. It is expected that publication of this standard will be helpful in achieving safe, efficient and economic utilization of *GOBAR* gas. The requirements given in this standard are based on the research work done at Gobar Gas Research and Development Centre (Khadi & Village Industries Commission, Bombay). A *ROTI*-making test was specially evolved by the above Centre for this standard to simulate actual conditions for cooking thick *BAJRA* and *JOWAR ROTI* in villages. Various safety requirements have been adequately covered in this standard.

Structural and Metals Division — Research and investigation were continued on graphite for foundries, spalling resistance of fireclay refractories and graphite crucibles. Besides, the following projects were taken up:

Production of Reference Radiographs for Steel Welds and Castings — Fiftynine radiographs on steel welds which were finalized for reproduction adequately represent all the categories of radiographs appearing in the set prepared by the International Institute of Welding (IIW). Efforts are now being made to get them suitably reproduced through the Indian Registry of Pathology of the Indian Council of Medical Research (ICMR) at Safdarjung Hospital, New Delhi. A set of master radiographs illustrating the casting defects has also been finalized by the Central Mechanical Engineering Research Institute (CMERI). Work on the production of these radiographs will be taken up after progress is achieved in the case of reference radiographs for welds.

Production of Indian Standard Reference Materials of Metals and Ores — Investigational work was carried out in connection with preparation of standard samples of leaded brass and bauxite. About 14 laboratories participated in these investigations and the results are being evaluated. Work is also in progress regarding preparation of standard samples of plain carbon steel and ferromanganese.

PART III

**OPERATION OF ISI
CERTIFICATION
MARKS SCHEME**

ISI CERTIFICATION MARKS SCHEME

Grant of New Licences — During the year, 946 new licences were granted for use of ISI Mark on 347 products; of these, 61 products were covered by the ISI Certification Marks Scheme for the first time. Industry-wise break-up of the licences is given in Table 3.

TABLE 3 NEW LICENCES GRANTED (DURING 1977-78)

Sl. No.	INDUSTRY	No. OF LICENCES	No. OF PRODUCTS
1)	Agricultural and food products	71	34
2)	Chemicals	101	53
3)	Civil engineering and safety items	180	53
4)	Consumer products and medical instruments	16	10
5)	Electrotechnical	68	53
6)	Mechanical engineering items	59	28
7)	Metal products	56	23
8)	Packaging materials	8	2
9)	Pesticides and their formulations	201	41
10)	Steel and steel products	139	31
11)	Textiles	47	19
	TOTAL	946	347

The total number of licences granted and the number of Indian Standards against which products were certified since the inception of the Scheme rose to 6 965 and 901, respectively, on 31 March 1978 as against 6 019 and 840, respectively, on 31 March 1977.

New Products Covered — The new items brought under the ISI Certification Marks Scheme during the year could be broadly classified under the

following categories:

- a) *Foods* — Common salt (cattle licks) for animal consumption; caramel; malted milk food; and hard cheese, processed cheese and processed cheese spread.
- b) *Pesticides and Equipment for Pesticides* — Quinalphos, emulsifiable concentrates; phenthoate emulsifiable concentrates; phosalone dusting powders; phosalone emulsifiable concentrates; hydraulic spray nozzles for pest control equipment; and cut-off device for manually-operated sprayer.
- c) *Chemicals and Allied Materials* — Urea-formaldehyde moulding materials; scouring powders; cutting oil (neat); zinc sulphate, agricultural grade; anti-corrosive paint for ships' bottoms and hulls; leather and cotton gloves; surgical rubber gloves; fire-resistant brattice cloth; musk ketone; and barium nitrate for explosive and pyrotechnic compositions.
- d) *Construction Materials and Fire-Fighting Equipment* — Autoclaved reinforced cellular concrete floor and roof slabs; autoclaved cellular concrete blocks; portable fire extinguishers, carbon-dioxide type; portable chemical fire extinguishers, water type (gas pressure); portable fire extinguishers, dry powder type; carbon dioxide cartridge for fire extinguishers; single barrel stirrup pump for fire fighting; and controlled percolating hose for fire fighting.
- e) *Electrical Items* — Domestic electric food mixers (liquidizers, blenders and grinders); heavy duty air-break switches and composite units of air-break switches and fuses; ignition coils; centrifugal fans; electric portable lamp stands and brackets; mineral-filled sheathed heating elements; lead-acid storage batteries for motor vehicles; tapes with PVC substrates; three-pin plugs and socket-outlets; loom motors; ceiling roses; and electrical controls for household appliances.
- f) *Engineering Products* — Inlet and exhaust valves for internal combustion engines; cylinder liners for internal combustion engines; friction props for mines; seamless manganese steel cylinders for permanent and high pressure liquefiable gases; air compressors and exhausters; wire ropes used in oil wells and oil well drilling; and valve connections for medical gas cylinders and acetylene gas cylinders.
- g) *Medical Instruments and Consumer Products* — Surgical rubber gloves, all sizes; and razors, safety.
- h) *Packing Material* — Bitumen drums.
- j) *Steel and Steel Products* — Bright bars (standard quality); bright bars (ordinary quality); steel tubes for furniture purposes; steel wire for cold formed springs, Grade II; hot-rolled steel plates and flats for cold-forming and flanging operations; tools and die steels

for hot work; carbon steel castings for surface hardening; welded aluminium alloy tube for irrigation purposes; and manganese steel castings.

k) *Textile Machinery* — Pitch-bound wire reeds for use in jute looms.

Lapsed and Operative Licences — During the year, 334 licences were either lapsed or cancelled on account of reasons, such as unsatisfactory performance, closure of factory and manufacturer not being interested in continuing the licence. The corresponding figure since the inception of the Scheme is 2 463. Therefore, the total number of operative licences on 31 March 1978 stood at 4 502 as compared to 3 890 on 31 March 1977. Of these, operation of 402 licences was deferred to enable the licensees to take suitable corrective actions. Thus, on 31 March 1978, the number of licences in actual operation was 4 100; their industry-wise and region-wise break-up is given in Tables 4 and 5, respectively.

TABLE 4 INDUSTRY-WISE DISTRIBUTION OF LICENCES IN OPERATION

(As on 31 March 1978)

Sl No.	INDUSTRY	No. of LICENCES
1)	Cables and conductors	310
2)	Chemicals	360
3)	Construction materials and other civil engineering items	371
4)	Containers and other packaging materials	45
5)	Diesel engines	74
6)	Electric motors	85
7)	Flameproof electrical equipment	32
8)	Food products and food colours	304
9)	Jute	144
10)	LPG cylinders/valves	17
11)	Medical instruments	22
12)	Metal products	168
13)	Other electrical items	155
14)	Other mechanical engineering items	94
15)	Other textiles and textile machinery	78
16)	Paper	19
17)	Pesticides	892
18)	Plywood panels, battens and metal fittings	196
19)	Pumps	40
20)	Sports goods, utensils, pressure cookers, domestic gas stove and allied products	60
21)	Steel	634
	TOTAL	4 100

TABLE 5 REGION-WISE DISTRIBUTION OF LICENCES IN OPERATION

(As on 31 March 1978)

SL No.	REGION	BRANCH OFFICE (STATES COVERED)	No. OF LICENCES
1)	Eastern	Calcutta (West Bengal, Bihar, Orissa, Eastern Madhya Pradesh, Assam, Arunachal, Meghalaya, Nagaland and Andamans)	1 091
2)	Northern	a) Delhi (Delhi, Southern Haryana, Rajasthan and Western Madhya Pradesh)	627
		b) Chandigarh (Punjab, Himachal Pradesh, Jammu and Kashmir, Northern Haryana and Chandigarh)	264
		c) Kanpur (Uttar Pradesh and Central Madhya Pradesh)	169
3)	Southern	a) Madras (Tamil Nadu, Kerala and Pondicherry)	372
		b) Bangalore (Karnataka)	256
		c) Hyderabad (Andhra Pradesh)	182
		d) Trivandrum (Kerala)	98
4)	Western	a) Bombay (Maharashtra and Goa)	748
		b) Ahmadabad (Gujarat, Daman and Diu)	293
TOTAL			4 100

The progress of the Scheme during the past five years is graphically represented in Fig. 5.

Supervision of Operative Licences — The number of preliminary inspections carried out for grant of licences and the number of periodic inspections carried out by various Branch Offices including lot inspections and pre-shipment inspections are given in Table 6.

Applications for Grant of Licences to Use ISI Mark — The position with regard to the applications for grant of licences to use ISI Mark during the year under report is given below:

Applications pending as on 1 April 1977	2 502
New applications received during the year	1 332

OPERATION OF ISI CERTIFICATION MARKS SCHEME

Applications which matured into licences	946
Applications closed	546
Applications pending as on 31 March 1978	2 342

Of the 2 342 applications pending at the close of the year, action with the Institution rested only in respect of 339 applications; for the remaining, the applicants were required to improve or develop their quality control facilities to make themselves eligible for the ISI Certification Mark.

Certification Revenue — The certification revenue touched the figure of Rs 14.50 million registering a growth of 28.7 percent. The value of the goods certified is estimated to be of the order of Rs 16 000 million.

TABLE 6 INSPECTIONS CARRIED OUT

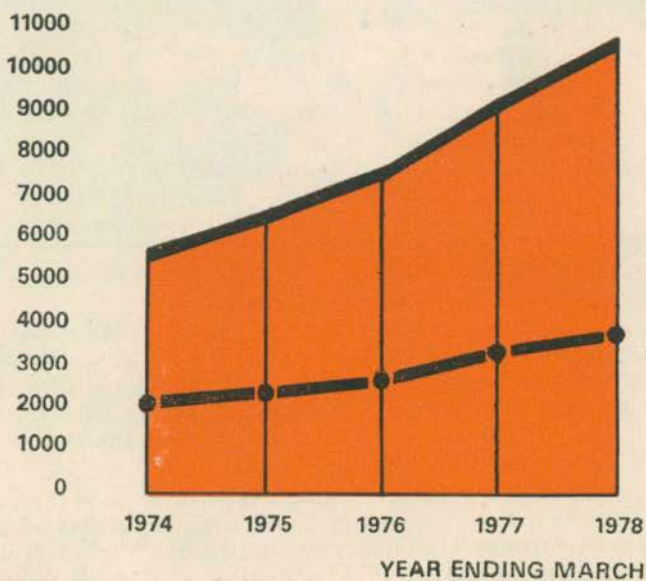
SL. NO.	REGION	BRANCH OFFICE	PRELIMINARY INSPECTIONS	PERIODIC INSPECTIONS	PRESHIPMENT INSPECTIONS
1)	Eastern	a) Calcutta	221	3 022	1 381
		b) Patna	17	107	14
2)	Northern	a) Delhi	249	1 317	185
		b) Chandigarh	78	918	122
		c) Kanpur	64	570	21
3)	Southern	a) Madras	99	1 638	32
		b) Bangalore	68	946	312
		c) Hyderabad	63	959	66
		d) Trivandrum	16	482	87
4)	Western	a) Bombay	215	2 801	960
		b) Ahmadabad	117	944	202
TOTAL			1 207	13 704	3 382

Other Significant Developments — During the year under review, the following significant developments took place:

- The Union Government had issued the '*Household Electrical Appliances (Quality Control) Order*' on 31 May 1976. After the necessary amendment, the Order came into force with effect from 1 January 1978 covering 41 electrical items. Till March 1978, a total of 102 licences had been issued to 98 manufacturers covering 16 items under the Order.
- The Government of India had issued *Mild Steel Tubes (Quality Control) Order, 1976* mainly to improve the quality of pipes used for water works. The Order came into force with effect from 1 March 1978. Till 31 March 1978, a total of 35 licences were issued to 25 manufacturers.

**Fig. 5 PROGRESS OF
ISI CERTIFICATION
MARKS SCHEME**

— APPLICATIONS PROCESSED
● LICENCES IN OPERATION



- c) *Protective Helmets* — The 27th Amendment issued on 3 August 1977 to the *Motor Vehicles Act, 1939* provides a new Section 85-A as under:

'Section 85-A Wearing of protective headgear — Every person driving or riding (otherwise than in a side car) on a motorcycle of any class shall, while in a public place, wear a protective headgear of such description as may be specified by the Central Government by rules made by it in this behalf, and different descriptions of headgears may be specified in such rules in relation to different circumstances or different classes of motorcycles:

Provided that the provisions of this section shall not apply to a person who is a Sikh, if he is, while driving or riding on the motorcycle, in a public place, wearing a turban:

Provided further that the Central Government may, by such rules provide for such exceptions as it may think fit.'

Although the Government of India has not yet issued a notification regarding the date of enforcement, various State Governments/Union Territories like Andhra Pradesh, Karnataka, Maharashtra, Chandigarh and Delhi have already made wearing of helmets compulsory, and the Government of Karnataka and the Delhi Administration have announced that the helmets worn by motorcycle and scooter riders should conform to IS: 4151-1976.

Till 31 March 1978, ISI had granted 26 licences for protective helmets and a number of applications from manufacturers are under active consideration.

Financial Incentives for ISI Licensees — The Industrial Development Bank of India, Bombay, agreed to allow (with effect from 1 July 1976) 0.5 percent rebate on interest to State corporations and other banking institutions on refinancing of loans to ISI licensees in the small scale sector. This matter has been pursued further with other banks and, during the year under review the Union Bank of India, Bombay; Canara Bank, Bangalore; Syndicate Bank, Manipal; State Bank of India, Bombay; Indian Bank, Madras; and United Commercial Bank, Calcutta have extended incentives on similar lines.

Users' Preference for ISI-Certified Products — Some State Governments took policy decisions during the year to purchase only ISI-marked products as under:

- a) The Controller of Stores, Punjab, has directed that all manufacturers of RCC pipes and collars, NP-2 and NP-3 class, should get their products ISI-marked.
- b) The Government of West Bengal (stationery office), Calcutta, has decided that they would purchase only stationery articles bearing ISI Mark, wherever available.

- c) The Director of Agriculture, Andhra Pradesh, has decided that preference will be given for the supply of plant protection equipment bearing ISI Mark.
- d) The Madhya Pradesh Electricity Board has decided that small scale industrial units manufacturing ACSR/AAC conductors and regularly supplying them to the Board should obtain ISI Mark till a particular period whereafter the Board may not consider their tenders.

ISI LABORATORIES

Apart from the Central Laboratory in New Delhi, the Institution has three Regional Laboratories at Bombay, Calcutta and Madras. These laboratories are primarily intended to meet the needs of ISI Certification Marks Scheme by testing the samples of the applicants and the licensees. The Central Laboratory also takes up investigational work at the instance of the committees engaged in the formulation of Indian Standards and other developmental work relating to the methods of tests and equipment required for testing.

The total number of samples tested during the year was 18 996. Progress of testing work at ISI Laboratories in different disciplines, namely, Chemical, Electrical and Mechanical, is given in Table 7. Graphical representation of the testing work carried out since 1973-74 is given in Fig. 6.

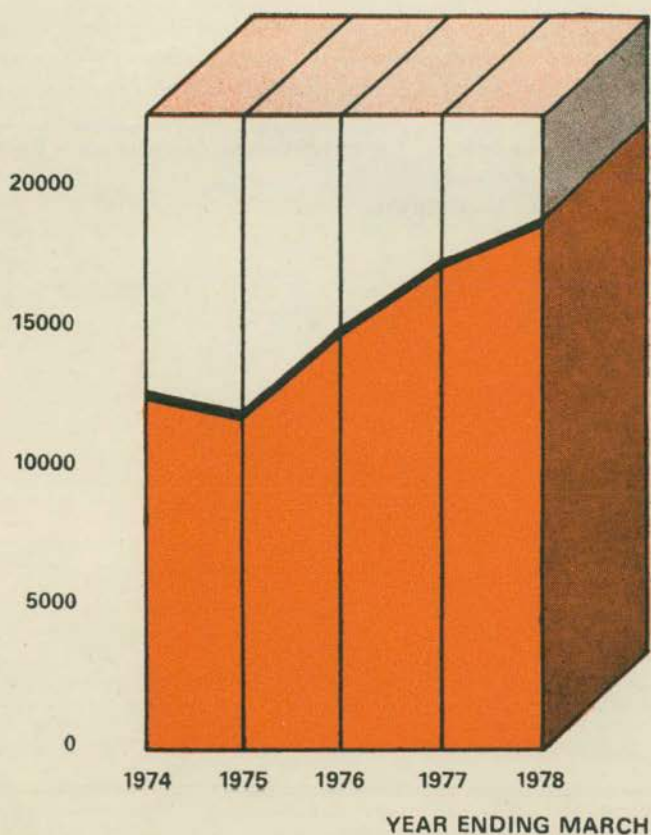
TABLE 7 PROGRESS OF TESTING UNDERTAKEN

Sl No.	DETAIL OF TESTING	PROGRESS OF TESTING		
		During 1977-78	During 1976-77	Since Setting of the Laboratory
1)	Samples			
	a) Pending at the beginning of the year (1 April)	1 560	1 361	—
	b) Received	19 961	17 954	135 503
	c) Tested	18 996	17 420	130 325
	d) Withdrawn	733	335	—
	e) Pending at the close of the year (31 March)	1 792	1 560	—
2)	New specifications covered	43	67	773
3)	Testing charges estimated (Rs) for the work done	2 640 220	2 367 889	13 513 765

Investigations — The Central Laboratory undertook 81 investigational

**Fig. 6 PROGRESS OF TESTING IN
ISI LABORATORY**

— SAMPLES TESTED



problems during the period under report, a few of which are mentioned below.

Chemical Laboratory

- a) Test method for estimation of the gum content in chewing and bubble gums;
- b) Determination of percentage of cotton seed oil and iodine value in cotton feeds;
- c) Determination of pH, soluble sulphite in soil samples and sulphite and sulphates in water according to IS: 2702; and
- d) Method of test for determination of crude fibre, protein, moisture and lactose content in toffees.

Mechanical Laboratory

- a) Testing of pressure stoves for spillage test according to IS : 1342,
- b) Testing of under-size and over-size blades for performance according to IS : 7371,
- c) Testing of helmets for effectiveness of ventilation holes according to IS : 4151, and
- d) Testing of tooth brushes according to IS : 3387.

PART IV

INTERNATIONAL ACTIVITIES

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

Out of 153 Technical Committees of the International Organization for Standardization (ISO) as on 31 March 1978, ISI was a Participating Member of 111 Technical Committees and an Observer Member of 32 others. Of these, the Institution held the Secretariats of the following 4 Technical Committees, 12 Subcommittees and 4 Working Groups dealing with subjects of interest to India:

1. ISO/TC 8/SC 9/WG 3 Ship Building — Solid Lifesaving Apparatus
2. ISO/TC 8/SC 11 Ship Building — Terminology, Symbols, Drawings, etc
3. ISO/TC 17/SC 2 Terminology, Classification and Designation of Steel
4. ISO/TC 17/SC 8 Dimensions and Tolerances of Structural Steel Sections and Bars
5. ISO/TC 17/SC 8/WG 1 Hot Rolled Sloping Flange, I-Beam Column and Channel Sections
6. ISO/TC 17/SC 8/WG 3 Structural Angles (Equal and Unequal)
7. ISO/TC 34/SC 7 Spices and Condiments
8. ISO/TC 38/SC 8 Physical Testing of Fabrics and Fabric Terminology
9. ISO/TC 45/WG 4 Rubber and Rubber Products — Physical Properties
10. ISO/TC 50 Lac
11. ISO/TC 56 Mica
12. ISO/TC 113 Measurement of Liquid Flow in Open Channels
13. ISO/TC 113/SC 1 Measurement of Liquid Flow in Open Channels — Velocity Area Methods
14. ISO/TC 113/SC 2 Measurement of Liquid Flow in Open Channels — Notches, Weirs and Flumes
15. ISO/TC 113/SC 3 Measurement of Liquid Flow in Open Channels — Glossary of Terms

16. ISO/TC 113/SC 4 Measurement of Liquid Flow in Open Channels — Dilution Methods
17. ISO/TC 113/SC 5 Measurement of Liquid Flow in Open Channels — Flow Measuring Instruments and Equipment
18. ISO/TC 113/SC 6 Measurement of Liquid Flow in Open Channels — Sediment Transport
19. ISO/TC 113/SC 7 Measurement of Liquid Flow in Open Channels — Methods for Measurement Under Difficult Conditions
20. ISO/TC 149 Cycles

ISO Council — Thirtyfirst meeting of the ISO Council was held in Geneva during 21-23 September 1977 under the chairmanship of ISO President Dr V. V. Boitsov. Fortythree delegates from 18 member-countries attended the meeting. On regaining membership after a lapse of three years, India attended the meeting represented by Shri D. C. Kothari and Director General, ISI. The subjects discussed by the Council related mainly to policy and organizational matters, financial issues, consumer programme, assistance to developing countries, cooperation with other international bodies dealing with standards, technical work of ISO, etc. During the deliberations, the Indian delegation made effective contribution in focussing attention on the needs of developing countries. Among others, the Council took two important decisions, namely, appointment of Regional Liaison Officers in honorary capacity to act as intermediaries between ISO and different regions throughout the world and establishment of an Advisory Committee on Consumer Policy.

ISO Planning Committee (PLACO) — The Planning Committee (PLACO) is responsible for all matters concerning organization, coordination and planning of the technical work of ISO. During the period under report, India attended two of its meetings held during 19-20 September 1977 and 22-24 February 1978 in Geneva. Among the important matters discussed at the meetings were guidelines for the coordination of questions of terminology; proposals for product-oriented standards; review of the working of four technical divisions; planning and coordination in relation to metrological aspects of ISO work; and organization, coordination and planning of ISO technical work.

ISO Committee on Certification (CERTICO) — Though a member of CERTICO since its inception, India attended its meeting for the first time during 14-16 September 1977 in Geneva under the chairmanship of Mr J. E. Kean (Canada). The meeting was attended by 26 delegates from 16 member-countries besides observers from IEC, European Economic Community and OMEA. India was represented by Director General, ISI. The highlights of the meeting were finalization of the 'Report on Certification — Principles and Practice' and recommendation to the Council for adoption

of the revised version of the 'ISO/IEC Code of principles on third party certification systems and related standards'.

Technical Division I — Mechanical Engineering — A meeting of the Technical Division I was held in Geneva on 16 September 1977 to discuss arrangements for planning and coordination of ISO connected with metrology and the future of the Division. From India the meeting was attended by Director General, ISI. The Division decided to recommend establishment of a permanent body of ISO to start with in the form of a Working Group, to deal with assessment of needs, planning, coordination, etc, of metrology aspects of ISO work. The membership of the Working Group is open to all interested member-bodies of ISO. About its own future, the Division could not come to any firm conclusion. There was, however, substantial agreement to the effect that it should not continue in its present form unless real needs were identified for its existence.

ISO Metrology Group — A meeting of the ISO Group on Metrology set up in 1977, among others, to deal with the assessment of needs, planning and coordination of metrology aspect of ISO work and study of questions relating to collaboration between ISO and the International Organization for Legal Metrology (OIML) in the field of metrology was held in Geneva during 20-21 February 1978. From India, the meeting was attended by Director General, ISI, and Shri K. Venkateswaran, Director of Weights and Measures, Ministry of Civil Supplies and Cooperation. To ensure coordination and collaboration between ISO and OIML, the Committee decided to appoint a seven-man Working Group. Referring to the obligation of the signatories to the OIML Convention to follow OIML recommendations for adoption at the national level, the Indian delegation suggested that the Working Group should try to ensure avoidance of conflict in the documents prepared by ISO and OIML. There was general agreement on this suggestion.

International Information Network on Standards (ISONET) — India participated in the meeting of the Standing Committee for the Study of Scientific and Technical Information on Standardization (INFCO) held in Geneva during 3-4 October 1977 and the Symposium and Seminar on International Information Network for Standards and Documentation Tools and Information Services of ISONET held in Paris during 5-18 October 1977. More than 100 participants from 40 countries who attended the Paris meeting discussed launching of ISO Information Network (ISONET) and organizational, procedural and operational problems connected with it. The Seminar included practical demonstrations of computerized and manual information retrieval systems and workshops using ISONET data formats and work sheets.

The ninth meeting of INFCO, which was attended by 25 member-countries, was mainly concerned with preparations for development of information exchange within ISONET and training for operating standards

information centres. For education and training of staff and users of these centres, INFCO will organize regional seminars from time to time. The Committee appointed an *ad hoc* Working Group to study proposals for classified numbering system of national and international standards and similar documents.

Seminar on Importance of Standardization in the Context of National Development — The Nepal Institute of Standards (NIS) organized a Seminar on the Importance of Standardization in the Context of National Development in Kathmandu during 26-28 December 1977. The Director General, ISI, attended the Seminar at which he also represented ISO. On a request from NIS, the Director General delivered a talk at the Seminar on the subject 'Standardization and developing countries' which was highly appreciated.

ISO Technical Committees — The Institution participated in the work of most of the Technical Committees, Subcommittees and Working Groups of ISO. A brief report of the work of the Committees which are of direct interest to India is given in Table 8.

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

As on 31 March 1978, there were 73 Technical Committees, 115 Subcommittees and 538 Working Groups of the International Electrotechnical Commission (IEC). India participated in the work of a large number of Technical Committees, Subcommittees and Working Groups. It also held the Secretariat of IEC/TC 43 Electric Fans for Domestic and Similar Uses.

The fortysecond Annual General Meeting of IEC was held in Moscow (USSR) during 6-18 June 1977. Thirty Technical Committees together with a number of Subcommittees, Working Groups and *ad hoc* Working Groups, the IEC Council and the Committee of Action met during this period. A five-member Indian delegation participated in these meetings. The IEC Council, which met under the chairmanship of Dr V. I. Popkov, held two sittings attended by representatives of 36 National Committees. The Council approved its budget for 1978, discussed the method of election of members of the Committee of Action and approved the basic rules for IEC Quality Assessment Systems for Electronic Components. The IEC Committee of Action considered reports of the Technical Committees and approved 75 documents for circulation under the Six Months' Rule.

A brief report of the meetings of the various IEC Committees which met during the period under report and in which India took active interest is given in Table 9.

TABLE 8 REPORT OF WORK OF ISO COMMITTEES OF DIRECT INTEREST TO INDIA

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
17-20 May 1977	Varna (Bulgaria)	ISO/TC 2 Fasteners	1	<p>a) Retaining rings and fasteners for farm equipment were included in the scope of the Technical Committee, and</p> <p>b) Widths across flats for hexagon were revised for certain sizes and consequently clearance holes were also revised.</p>
15-23 September 1977	Bonn (West Germany)	ISO/TC 11/SC 1 Materials for Boilers and Pressure Vessels, ISO/TC 11/SC 2 Strength of Pressure Parts, and ISO/TC 11/SC 3 Welded Construction of Boilers and Pressure Vessels	1	<p>The main agenda before the different Subcommittees was to reach an agreement on the following documents:</p> <p>a) ISO/TC 11/WG 7 N 38 Water tube boilers, and</p> <p>b) ISO/TC 11/WG 10 N 86 Shell boilers. The three Subcommittees discussed the relevant portion of documents in the light of Document ISO/TC 11 N 322. ISO/TC 11/SC 1 decided to prepare new draft proposals for the portion relating to material in these two documents incorporating the decisions taken at the meeting. As for ISO/TC 11/SC 2, it became evident that another meeting of the Subcommittee would be required to discuss and resolve all the outstanding questions listed in Document N 322. ISO/TC 11/SC 3 decided that a joint meeting of this Subcommittee together with Working Group 10 Shell Boilers of</p> <p style="text-align: right;"><i>(Continued)</i></p>

TABLE 8 REPORT OF WORK OF ISO COMMITTEES OF DIRECT INTEREST TO INDIA — *Contd*

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
26-28 April 1977	Sydney (Australia)	ISO/TC 17/SC 2 Terminology, Classification and Designa- tion of Steel	3	ISO/TC 11 would be required to resolve certain outstanding questions which could not be discussed at this meeting for want of time. It was agreed that the draft proposal relating to classification of steel based on characteristics or use may be submitted to TC 17 after final circulation to member-bodies. A proposal made by the Secretariat on code designation of steel based on letter symbols was discussed and it was decided to circulate it together with the Australian proposal on the same subject to member-bodies of SC 2 for their comparative study. Another important proposal discussed during the meeting related to definition of steel products on which considerable agreement was reached.
2-3 May 1977	Sydney (Australia)	ISO/TC 17 SC 8/WG 1 Hot Rolled Sloping Flange I- Beam, Column and Channel Sections	2	Draft proposal on tolerances for sloping flange I-beam, column and channel sections prepared by India was discussed. It was decided to combine the three documents into a single document.
3-4 May 1977	Sydney (Australia)	ISO/TC 17/SC 8/WG 2 Paral- lel Flange Sections (Metric Series)	2	This was the first meeting of the Working Group in which certain guidelines were given for formulation of a comprehensive proposal to be prepared by USA for further discussion at the next meeting.

9-11 May 1977	Sydney (Australia)	ISO/TC 17/SC 8 Dimensions and Tolerances of Hot Rolled Structural Steel Sections and Bars	2	Three draft proposals submitted by India relating to round, square and flat bars were approved for submission to ISO/TC 17. A new Working Group was constituted to deal with proposals of equal and unequal leg angles and its Secretariat was allotted to India. The various delegates attending the meeting appreciated the work done by India and the progress made in the work.
17-21 October 1977	Milan (Italy)	ISO/TC 41/SC 1 Vee Belts and Grooved Pulleys, and ISO/ TC 41/SC 3 Conveyor Belts	1	Subcommittee SC 1 considered, <i>inter alia</i> , the documents pertaining to belts for automobile industry and agricultural machines, pulleys for classical and narrow V-belts and power ratings. At the meeting of Subcommittee SC 3 proposals pertaining to resistance to heat and behaviour to flame of conveyor belts as also dynamic strength of belt fasteners came up for discussion.
13-22 September 1977	Gottwaldov (Czechoslovakia)	ISO/TC 45 Rubber and Rub- ber Products	3	In all, 22 documents were advanced to first draft proposal stage and 41 documents to first DIS stage. Another 16 documents were approved for submission to ISO Council for publication as International Standards. The following Draft International Standards were approved for submission to ISO Council for publication:
15, 16 & 20 September 1977	Gottwaldov (Czechoslovakia)	ISO/TC 45/WG 4 Physical Properties	1 (Convener)	<p>a) <i>ISO/DIS 34 Vulcanized rubber</i> — Determination of tear strength (Trouser, angle and crescent test pieces); and</p> <p>b) <i>ISO/DIS 5600 Rubber</i> — Determination of adhesion to conical ends of rigid materials.</p> <p style="text-align: right;">(Continued)</p>

TABLE 8 REPORT OF WORK OF ISO COMMITTEES OF DIRECT INTEREST TO INDIA — *Contd*

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
				<p>The following draft proposals were approved for circulation as Draft International Standards:</p> <p>a) <i>ISO/DP 6133 Rubber or plastics — Coated or adhered fabrics — Methods of calculation of adhesion strength and tear resistance; and</i></p> <p>b) <i>ISO/DP 6179 Rubber — Method of determination of vapour transmission rate of volatile liquids.</i></p> <p>It was also decided to circulate the third draft proposal for the following two documents:</p> <p>a) <i>ISO/DP 5603.2 Rubber — Determination of adhesion to wire cord (pull-out test); and</i></p> <p>b) <i>ISO/DP 5893.2 Rubber and plastics — Tensile flexural and compression testing machines (constant rate of traverse).</i></p>
27-28 September 1977	Winterthur (Switzerland)	ISO/TC 72/SC 1 Spinning, Preparatory Spinning and Doubling (Twisting) Machine	1	<p>The following subjects were considered:</p> <p>a) Packaging sliver cans with compression;</p> <p>b) Bead wires for cards;</p> <p>c) Flanged bobbins for doubling and twisting;</p> <p>d) Flyer bobbins;</p> <p>e) Open-end spinning machines — terminology;</p>

12-16 September 1977	Vitoria (Brazil)	ISO/TC 102/SC 1 Sampling of Iron Ores	2	f) Cylindrical tubes for open-end spinning machines; and g) Condenser rubbers for cards. Draft proposals on mechanical sampling of iron ores and sample preparation of physical tests, sampling for tumbler test and bulk density were discussed.
17-22 October 1977	Tokyo (Japan)	ISO/TC 111 Round Steel Link Chains, Chain Wheels, Lifting Hooks and Accessories; ISO/TC 111/SC 1 Chains; ISO/TC 111/SC 3 Accessories; and ISO/TC 111/SC 4 Materials	1	<i>Dimensional compatibility of components and designation of grades, and chains and components</i> — There was no agreement on a single system of grading. Hence it was unanimously agreed that in the International Standard the grade will be referred to by letters and numbers and national standards bodies will be free to use either system. It was envisaged that in marking components one or the other system, not both, will be used.

Surface hardened chains — Because of the diversities of opinion of manufacturers in various countries, difficulties had been experienced in standardization. India expressed the view that an International Standard giving basic guidelines for safety requirements would be useful. Hence it was generally agreed that some basic guidelines on surface hardened chains should be outlined in a specification.

Strength, toughness and flaw tolerances of alloy steel chain — India broadly agreed with the following recommendations for

(Continued)

TABLE 8 REPORT OF WORK OF ISO COMMITTEES OF DIRECT INTEREST TO INDIA — *Contd*

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
				incorporation into grade T (8) non-calibrated chain: a) Introduction of a minimum tempering temperature of 400°C, b) Introduction of a manufacturing test load of 60 percent of the minimum breaking load, c) Amendment of the materials clause to specify nickel as one of the alloying elements and at least one of chromium and molybdenum, and d) Impurities requirements to be retained as at present but the possibility of lower sulphur and phosphorus contents to be taken up with ISO/TC 17 Steel.
31 May- 12 June 1977	Washington (USA)	ISO/TC 113 Measurement of Liquid Flow in Open Channels, and six Working Groups	4	The following ISO/DIS were approved for printing: a) ISO 772 Vocabulary and symbols (<i>first revision</i>), b) ISO/DIS 4363 Methods for measurement of suspended sediment in open channels, and c) ISO/DIS 4364 Bed material sampling. The following draft proposals were approved for circulation as Draft International Standards: a) Slope area method, b) Dilution methods using radio isotopes,

- c) Acoustic velocity meters, and
- d) Analysis of sediment.

The following draft proposals were re-approved for circulation as Draft International Standards:

- a) Flumes,
- b) Round nose weirs, and
- c) Flat 'V' weirs.

The following draft proposals were approved for circulation as Draft International Standards subject to circulation to individual members of the Working Groups and then with the approval of the Chairmen of Working Groups:

- a) Revision of ISO 1100/Part I Establishment and operation of gauging station,
- b) Revision of ISO 1100/Part II Determination of the stage discharge relations,
- c) Revision of ISO 1088 Collection of data for determination of errors in the velocity area methods, and
- d) End depth method in non-rectangular channels.

ISO/TC 113 unanimously decided to elevate all its existing six Working Groups to Subcommittees with the existing Chairmen and Secretariat (India).

A new Subcommittee SC 7 Methods of Measurement Under Difficult Conditions was set up with the Chairman from USSR and India as the Secretariat.

TABLE 9 REPORT OF WORK OF IEC COMMITTEES OF DIRECT INTEREST TO INDIA

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
15-16 June 1977	Moscow (USSR)	IEC/TC 1 Terminology	1	The principle of preparing a special edition of current International Electrical Vocabulary in book form was accepted.
10-11 June 1977	Moscow (USSR)	IEC/TC 8 Standard Voltages, Current Ratings and Frequen- cies	1	Four alternative proposals were decided at the meeting to define the status of 220 and 240 volts in relation to 230 volts, which has been accepted as preferred voltage for circulation to the national committees.
16 September 1977	Stockholm (Sweden)	IEC/TC 15 Insulating Mater- ials	1	Recommended 10 documents for circula- tion under Six Months' Rule/accelerated procedure.
12-13 September 1977	Stockholm (Sweden)]	IEC/TC 15A Short-Time Tests		
14-15 September 1977	Stockholm (Sweden)	IEC/TC 15B Endurance Tests		
5-9 September 1977	Stockholm (Sweden)	IEC/TC 15C Specifications		
17 June 1977	Moscow (USSR)	IEC/TC 17 Switchgear and Controlgear	1	The activities of the Subcommittees were reviewed. Drafts on internal arcing and partial discharge tests were issued into circulation under the Six Months' Rule. A special Working Group has been set up for specification for enclosures for SF 6 gas-filled switchgear
15-17 June 1977	Moscow (USSR)	IEC/SC 17A High-Voltage Switchgear and Controlgear	1	Several important subjects, such as initial transient recovery voltage in the case of terminal faults and short line faults, mechanical tests and reliability of switchgear and

11-14 June 1977	Moscow (USSR)	IEC/SC 17B Low-Voltage Switchgear and Controlgear	2
13-14 June 1977	Moscow (USSR)	IEC/SC 17C High-Voltage En- closed Switchgear and Con- trolgear	1
6-7 June 1977	Moscow (USSR)	IEC/SC 23F Connecting Devices	1
9-11 June 1977	Moscow (USSR)	IEC/TC 28 Insulation Co- ordination, and IEC/TC 28A Insulation Coordination for Low-Voltage Equipment	2

maximum permissible over-voltages between phases were discussed. Work on high-voltage motor switches was initiated.

The following subjects were highlighted in the discussions:

- Modular system for low-voltage switchgear and controlgear,
- Dimensions of low-voltage switchgear and controlgear,
- Semi-conductor contactors, and
- Terminal blocks for copper conductors.

In this meeting the discussions were mainly on IEC Pub 298 High-voltage metal-enclosed switchgear and controlgear, which is being taken up for revision. Other subjects that came up for discussion are internal arcing test, ageing and humidity test, and measurement of partial discharges on high-voltage switchgear. Work was also initiated on high-voltage insulation-enclosed switchgear and controlgear.

The document on general requirement for connecting devices was considered under the two months procedure. The document on particular requirement for screwless terminals was considered under the Six Months' Rule.

Discussions covered the concept of impulse withstand voltage in low-voltage equipment and creepage distances and clearance in low-voltage equipment.

(Continued)

TABLE 9 REPORT OF WORK OF IEC COMMITTEES OF DIRECT INTEREST TO INDIA — *Contd*

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
10 June 1977	Moscow (USSR)	IEC/TC 32 Fuses	2	The activities of Subcommittees SC 32A, SC 32B and SC 32C were reviewed. The general procedure for the fuse definitions has been outlined and a publication containing the classified definitions is to be brought out.
8-10 June 1977	Moscow (USSR)	IEC/SC 32A High-Voltage Fuses	1	The draft specification for high-voltage transformer links was the highlight of the discussions. A new draft in the form of an application guide has been decided to be prepared. Documents on specification for high-voltage fuse-links for motor circuits applications, standardized time current characteristics of fuse-links, etc, were approved for circulation under the Six Months' Rule.
7 October 1977	Brussels (Belgium)	IEC/TC 34 Lamps and Related Equipment	1	Reports of all the four Subcommittees were accepted. Future programme of work was discussed and it was decided to set up a Working Group to study the subjects of creepage and clearances.
4-5 October 1977	Brussels (Belgium)	IEC/SC 34A Lamps	1	As many as 15 documents were approved for the Six Months' Rule. These documents were mainly amendments to IEC Publications on projector and floodlighting lamps, tubular fluorescent lamps and general lighting service starters for Class II fluorescent lamps luminaires.

27-30 October 1977	Brussels (Belgium)	IEC/SC 34B Lamp Caps and Holders	1	The following documents were approved for the Six Months' Rule: a) Bayonet lamp holder; and b) Standard for luminaires, screwless and screw terminals.
3 October 1977	Brussels (Belgium)	IEC/SC 34C Auxiliaries for Discharge Lamps	1	The following documents were approved for the Six Months' Rule: a) Ballasts for tubular fluorescent lamps — Particular requirements, b) Revision of transistorized ballasts for fluorescent lamps, and c) Metal halide lamps.
5-7 October 1977	Brussels (Belgium)	IEC/SC 34D Luminaires	1	The document on particular requirements for luminaires was approved for the Six Months' Rule.
29 March- 1 April 1977	Budapest (Hungary)	IEC/TC 35 Primary Cells and Batteries	1	It was decided to issue 16 documents under Six Months' Rule and 32 Secretariat docu- ments as a result of discussion on items like proposed amendments to 'Publication 86-1 (4th Edition) Primary cells and batteries: Part I General', standardization of dimen- sions of new batteries, new application tests, batteries for watches and clocks and minimum initial life of batteries for electric fence controllers. The question of reliability of batteries was also discussed and it was decided to issue a Secretariat document summarizing the points discussed.
13-17 June 1977	Moscow (USSR)	IEC/TC 61 Safety of House- hold Electrical Appliances	1	Two documents were approved for Six Months' Rule:

(Continued)

TABLE 9 REPORT OF WORK OF IEC COMMITTEES OF DIRECT INTEREST TO INDIA — *Contd*

DATE	PLACE	COMMITTEE	INDIAN DELEGATION (No.)	BUSINESS TRANSACTED
22-26 November 1977	Vienna (Austria)	IEC/TC 61 Safety of Household Electrical Appliances	1	<p>a) General requirements for hand-held motor-operated tools, and</p> <p>b) Particular requirements for instantaneous electric water heater.</p> <p>Recommended draft on electric blanket for circulation under Six Months' Rule. Secretariat drafts were decided to be prepared for:</p> <p>a) Revision of IEC Pub 335-11 Particular requirements for cloth dryers of the tumbler type, and</p> <p>b) Revision of IEC Pub 335-7 Particular requirements of washing machine.</p>
7-9 September 1977	Stockholm (Sweden)	IEC/TC 63 Insulation Systems	1	Decided future programme of work and priorities.
6-9 June 1977	Moscow (USSR)	IEC/TC 64 Electrical Installations of Buildings	2	<p>Of the large number of documents discussed at the meeting, the following were approved under Six Months' Rule:</p> <p>a) Estimation of maximum demand,</p> <p>b) dc voltage bands,</p> <p>c) Earthing and protection conductors, and</p> <p>d) Conventional voltage limit for dc and the maximum touch voltage duration for dc.</p> <p>Reports of 16 Working Groups and their future plan of work were also reviewed.</p>

PART V
APPENDICES

APPEN

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR Rs	SL No.	HEADS OF EXPENDITURE	AMOUNT Rs
	1.	<i>Pay</i>	
4 657 061	1.1	Officers	5 068 814
4 943 525	1.2	Staff	5 271 018
	2.	<i>Allowances</i>	
2 297 206	2.1	Officers	2 661 532
3 452 704	2.2	Staff	3 728 356
318 110	3.	CGHS and Other Medical Charges	427 985
299 676	4.	Provident Fund Contribution	311 793
708 252	5.	Pension Fund	722 078
30 000	6.	Gratuity Fund	30 000
51 781	7.	Staff Welfare	78 551
	8.	<i>TA</i>	
148 276	8.1	Overseas	168 356
618 708	8.2	Officers and Staff	685 236
22 158	8.3	Committee Members	17 225
56 524	8.4	Leave Travel Concession	88 246
	9.	<i>Subscription to International Organizations</i>	
724 797	9.1	ISO	952 339
366 011	9.2	IEC	499 548
	10.	<i>Production</i>	
1 143 829	10.1	Standards	983 249
379 932	10.2	Bulletin	477 121
161 448	10.3	Calculation Aids and Binders	76 453
79 106	10.4	Other Publications	198 623
13 852	11.	Research and Consultation	2 047
482 255	12.	Testing Fees	705 129
369 018	13.	Laboratory Apparatus and Stores	577 279
	14.	<i>Publicity</i>	
9 929	14.1	Exhibitions	69 410
96 436	14.2	Advertising	280 385
5 200	14.3	Short Films	—
25 989	14.4	Miscellaneous	27 545
106 101	15.	Conferences	87 885
29 938	16.	Training Programmes	46 929
—	17.	Electronic Data Processing	28 202
21 597 822		CARRIED OVER	24 271 334

DIX A

THE YEAR ENDED 31 MARCH 1978

INCOME

PREVIOUS YEAR Rs	Sl No.	HEADS OF INCOME	AMOUNT Rs
3 702 528	1.	Membership Subscription	3 984 720
	2.	<i>Sales</i>	
3 114 872		2.1 Indian Standards	2 957 340
173 298		2.2 Calculation Aids and Binders	150 810
661 476		2.3 Overseas Publications (Commission)	483 691
140 980	3.	Bulletin Advertisements	132 538
11 274 260	4.	*Certification	14 633 092
22 043	5.	CGHS and other Medical Charges	24 001
—	6.	Conferences (Delegates Fees)	23 055
63 441	7.	Training Fees	63 281
220 412	8.	Miscellaneous	276 970
—	9.	Transferred from Building Fund	10 697
			22 740 195
6 900 000	10.	Government Grant	7 000 000

26 273 310

CARRIED OVER

29 740 195

*Income under this Head has been taken on cash basis and not on accrued basis.

(Continued)

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR Rs	SL No.	HEADS OF EXPENDITURE	AMOUNT Rs
21 597 822		BROUGHT FORWARD	24 271 334
56 801	18.	Library	92 840
	19.	<i>Office Expenses</i>	
481 551	19.1	Stationery	550 920
332 728	19.2	Postage	340 837
418 315	19.3	Telephone and Telex	436 158
87 522	19.4	Recruitment	45 835
55 590	19.5	Refreshment and Entertainment	66 407
54 460	19.6	Liveries	57 826
128 631	19.7	Conveyance and Cartage	124 265
50 027	19.8	Insurance and Bank Charges	56 398
126 842	19.9	Miscellaneous	127 294
67 364	20.	Furniture and Equipment (Maintenance)	85 869
	21.	<i>Buildings</i>	
662 363	21.1	Rent and Taxes	597 309
322 199	21.2	Electricity and Water Charges	336 861
314 854	21.3	Maintenance	247 462
147 697	22.	Local Transport (Maintenance)	128 130
31 913	23.	Audit Fee and Legal Charges	26 432
12 676	24.	Staff Training	3 816
—	25.	Interest on House Building Loan	41 250
2 084	26.	Loss on Assets Written off/Disposed of	309
500 445	27.	Depreciation	697 368
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%; border-top: 1px solid black; border-bottom: 1px solid black;">25 451 884</div> <div style="width: 60%; border-top: 1px solid black; border-bottom: 1px solid black;">821 426</div> <div style="width: 20%; border-top: 1px solid black; border-bottom: 1px solid black;">28 334 920</div> </div>			1 405 275
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%; border-top: 1px solid black; border-bottom: 3px double black;">26 273 310</div> <div style="width: 60%; border-top: 1px solid black; border-bottom: 3px double black;"> <div style="text-align: center;">Excess of Income over Expenditure</div> </div> <div style="width: 20%; border-top: 1px solid black; border-bottom: 3px double black;"> <div style="text-align: center;">TOTAL</div> </div> </div>			29 740 195

THE YEAR ENDED 31 MARCH 1978 — Contd**INCOME**

PREVIOUS YEAR Rs	Sl No.	HEADS OF INCOME	AMOUNT Rs
26 273 310		BROUGHT FORWARD	29 740 195

26 273 310

TOTAL

29 740 195

BALANCE SHEET AS

		LIABILITIES			
PREVIOUS YEAR Rs	Sl No.		Rs	Rs	Rs
	1.	<i>Capital Fund</i>			
	1.1	As per last Balance Sheet		10 993 094	
	1.2	<i>Add cost of Assets capitalized</i>			
	a)	Lab Bldg at Ghaziabad	1 656 136		
	b)	Laboratory Equipment	699 848		
	c)	Compulsory Certification Equipment	892 321		
	d)	Madras Office Bldg	1 113 856		
	e)	Furniture & Equipment, etc, out of S & T Projects	9 760	4 371 921	
	1.3	<i>Add: Excess of Income dur- ing the year as per annexed statement of Income and Expenditure</i>		1 405 275	
				16 770 290	
10 993 094	1.4	<i>Less: Unutilized Govt Grant for 1976-77 refunded</i>		944 204	15 826 086
	2.	<i>Reserve and Funds</i>			
	2.1	K. L. Moudgill Prize Fund		13 257	
	2.2	Gratuity Fund		213 403	
	2.3	Benevolent Fund		22 952	
	2.4	<i>Building Fund</i>			
	a)	As per last Balance Sheet	76 011		
	b)	<i>Add: Transferred from Madras Bldg Project</i>	6 144		
			82 155		
	c)	<i>Less:</i>			
	i)	Repair of Manak Bhavan	71 458		
	ii)	Transferred to Income and Expenditure Account	10 697	82 155	
	2.5	<i>Lab Bldg at Ghaziabad, Labo- ratory Equipment, etc</i>			
	a)	Govt Grant Received	3 600 000		
	b)	<i>Less: Transferred to Capital Account</i>			
	i)	Lab Bldg at Ghaziabad	1 656 136		
	ii)	Lab Equip- ment	699 848		
10 993 094		CARRIED OVER	2 355 984	3 600 000	249 612
					15 826 086

AT 31 MARCH 1978

ASSETS

PREVIOUS YEAR Rs	SL No.		Rs	Rs	Rs
	1.	<i>Fixed Assets</i>			
	1.1	<i>Buildings (HQ)</i>			
		a) As per cost value		4 921 703	
		b) <i>Less: Depreciation w/o</i>			
		i) Up to 1977-03-31	1 649 872		
3 271 831		ii) During 1977-78	116 912	1 766 784	3 154 919
	1.2	<i>Lab Bldg at Ghaziabad (Under Construction)</i>			
		a) As per last Balance Sheet		1 020 305	
1 020 305		b) Addition during 1977-78		1 656 136	2 676 441
	1.3	<i>Madras Building</i>			
		a) As per last Balance Sheet		1 044 067	
1 044 067		b) Addition during 1977-78		89 489	1 133 556
	1.4	<i>Bombay Building</i>			
264 110		As per last Balance Sheet			264 110
	1.5	<i>Calcutta Building</i>			
		a) As per last Balance Sheet		116 941	
116 941		b) Addition during 1977-78		800 644	917 585
	1.6	<i>Xerox Copying Equipment</i>			
		a) As per cost value		292 000	
		b) <i>Less: Depreciation w/o</i>			
		i) Up to 1977-03-31	83 863		
208 137		ii) During 1977-78	40 201	124 064	167 936
	1.7	<i>Laboratory Equipment</i>			
		a) As per cost value up to 1977-03-31		4 071 305	
		b) Addition during 1977-78 (including Rs 892 321 for Compulsory Certification)		1 592 169	
		c) <i>Less: Depreciation w/o</i>		5 663 474	
		i) Up to 1977-03-31	1 446 041		
2 625 264		ii) During 1977-78	325 073	1 771 114	3 892 360
	1.8	<i>Furniture and Equipment</i>			
		a) As per cost value up to 1977-03-31		2 360 463	
8 550 655		CARRIED OVER		2 360 463	12 206 907

(Continued)

BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR Rs	SL NO.		Rs	Rs	Rs
10 993 094		BROUGHT FORWARD	2 355 984	3 600 000	15 826 086
		iii) Compulsory Certification Equipment	892 321	3 248 305	351 695
	2.6	<i>Madras Building Project</i>			
		a) As per last Balance Sheet		1 120 000	
		b) Less: Transferred to			
		i) Building Fund	6 144		
		ii) Capital Fund	1 113 856	1 120 000	
	2.7	<i>Bombay Building Project</i>			
		a) As per last Balance Sheet		35 890	
		b) Add: Receipt during 1977-78			
		i) Govt Grant	100 000		
		ii) Donations	213 653	313 653	349 543
	2.8	<i>Calcutta Building Project</i>			
		Receipt during 1977-78:			
		a) Govt Grant		800 000	
		b) Donations		67 103	867 103
	2.9	<i>S & T Projects</i>			
		a) Govt Grant Received		511 000	
		b) Less: Expenditure during 1977-78		467 782	43 218
	2.10	Pension Fund		4 961 183	
	2.11	CPF		12 258 141	
21 053 261	2.12	GPF		5 534 090	24 614 585
	3.	<i>Loans from Govt for:</i>			
		3.1 Conveyance Advances		225 000	
718 750		3.2 House Building Loans		1 009 791	1 234 791
	4.	<i>Current Liabilities</i>			
		4.1 Advance Subscription (1978)		2 527 466	
		4.2 <i>Sundry Creditors</i>			
		a) Inland		795 123	
		b) Abroad		208 227	
3 507 295		c) Earnest Money		54 438	3 585 254
36 272 400		CARRIED OVER			45 260 716

AT 31 MARCH 1978 — Contd

ASSETS

PREVIOUS YEAR Rs	SL No.		Rs	Rs	Rs
8 550 655		BROUGHT FORWARD		2 360 463	12 206 907
	b)	Addition during 1977-78 (including Rs 3 257 out of S & T Projects)		650 742	
				<u>3 011 205</u>	
1 255 217	c)	Less: Depreciation w/o			
	i)	Up to 1977-03-31	1 105 246		
	ii)	During 1977-78	<u>200 173</u>	1 305 419	1 705 786
	1.9	Vehicles			
	a)	As per cost value up to 1977-03-31		214 358	
	b)	Addition during 1977-78		<u>112 551</u>	
				326 909	
	c)	Deduct: Cost of Assets disposed of during 1977-78		<u>34 110</u>	
				292 799	
	d)	Less: Depreciation w/o			
	i)	Up to 1977-03-31	168 109		
	ii)	During 1977-78	<u>15 009</u>		
			183 118		
46 249	iii)	Deduct: Depreciation on vehicles disposed of during 1977-78	<u>31 507</u>	151 611	141 188
	1.10	Library Books			
	a)	As per last Balance Sheet		363 744	
	b)	Addition during 1977-78 (including Rs 6 503 out of S & T Projects)		<u>118 734</u>	
				482 478	
363 744	c)	Less: Cost of books w/o during 1977-78		<u>309</u>	482 169
	2.	Investments at cost			
	2.1	Deposit with Banks	208 000		
	2.2	Shares of ISI Employees' Consumer Co-operative Store	7 500		
	2.3	Shares of Jay Engg Works (A/c K. L. Moudgill Prize Fund)	<u>11 400</u>	226 900	
10 215 865		CARRIED OVER		<u>226 900</u>	<u>14 536 050</u>

(Continued)

BALANCE SHEET AS

		LIABILITIES		
PREVIOUS YEAR Rs	Sl No.		Rs	Rs
36 272 400		BROUGHT FORWARD		45 260 716

 36 272 400

TOTAL

 45 260 716

I have examined the accounts of the Indian Standards Institution, New Delhi, for the year 1977-78 and obtained all the information and explanations that I have required and I certify, as a result of my audit that in my opinion these accounts 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.

New Delhi
Dated 8 November 1978

Sd/-
(K. P. RANGASWAMI)
Accountant General
Commerce, Works and Miscellaneous
New Delhi

AT 31 MARCH 1978 — Contd

ASSETS

PREVIOUS YEAR Rs	SL NO.		Rs	Rs	Rs
10 215 865		BROUGHT FORWARD		226 900	14 536 050
	2.4	Pension Fund		4 961 183	
	2.5	CPF		12 258 141	
19 617 099	2.6	GPF		5 534 090	22 980 314
	3.	<i>Current Assets</i>			
	3.1	Stock of Printing Paper (at cost value)		437 301	
	3.2	<i>Sundry Debtors</i>			
	a)	Sale of Publications	504 685		
	b)	Bulletin Advertisements	93 152		
	c)	Licence, Inspection Charges, etc	118 105	715 942	1 153 243
1 091 340	4.	<i>Loans and Advances</i>			
	4.1	<i>Loans</i>			
	a)	Conveyance	199 071		
	b)	House Building	574 170	773 241	
	4.2	<i>Advances</i>			
	a)	Festival	12 720		
	b)	Flood	10 033		
	c)	Store Purchases, etc	242 900	265 653	
	4.3	Security Deposits		110 557	
	4.4	Pre-paid Expenses		76 434	
	4.5	Due from Ministry of External Affairs (A/c ITEC Trainees)		160 914	
	4.6	Due from Ministry of Finance (A/c SCAP Trainees)		63 648	
828 112	4.7	Due from Steel Authority of India (A/c IPSSI Scheme)		4 641	1 455 088
	5.	<i>Cash and Bank Balances</i>			
	5.1	With Bankers (including Rs 75 000 BO's A/c II)		5 034 721	
	5.2	In hand (including Imprest)		88 616	
4 519 984	5.3	Postage Stamps		12 684	5 136 021
36 272 400				TOTAL	45 260 716

(Figures have been rounded off to whole rupees)

Sd/-
(R. S. Krishnamachar)
Director General
Indian Standards Institution
New Delhi

Sd/-
(G. V. Ramasubban)
Director (Accounts)
Indian Standards Institution
New Delhi

APPENDIX B
Principal Officers of
INDIAN STANDARDS INSTITUTION
(As on 31 March 1978)

<i>General Council (GC)</i>	
President	SHRI MOHAN DHARIA Union Minister of Commerce, Civil Supplies and Cooperation, Government of India
Vice-Presidents	SHRI D. C. KOTHARI SHRI HARISH MAHINDRA
<i>Executive Committee (EC)</i>	
Chairman	SHRI D. C. KOTHARI
<i>Finance Committee (FC)</i>	
Chairman	SHRI HARISH MAHINDRA
<i>Agricultural & Food Products Division Council (AFDC)</i>	
Chairman	DR M. S. SWAMINATHAN
Vice-Chairman	DR B. L. AMLA
<i>Chemical Division Council (CDC)</i>	
Chairman	DR S. P. VARMA
Vice-Chairman	—
<i>Civil Engineering Division Council (CEDC)</i>	
Chairman	SHRI Y. K. MURTHY
Vice-Chairmen	SHRI V. R. VAISH SHRI I. P. KAPILA
<i>Consumer Products & Medical Instruments Division Council (CMIDC)</i>	
Chairman	COL R. D. AYYAR
Vice-Chairman	BRIG JOGINDER SINGH
<i>Electronics & Telecommunication Division Council (LTDC)</i>	
Chairman	MAJ-GEN K. K. MEHTA
Vice-Chairman	COL G. K. RAO
<i>Electrotechnical Division Council (ETDC)</i>	
Chairman	SHRI J. S. ZAVERI
Vice-Chairman	MAJ-GEN K. K. MEHTA
<i>Marine, Cargo Movement & Packaging Division Council (MCPDC)</i>	
Chairman	SHRI S. PARAMANANDHAN
Vice-Chairmen	SHRI A. RAY CAPT N. A. TAMHANE
<i>Mechanical Engineering Division Council (EDC)</i>	
Chairman	MAJ-GEN R. JANARDHANAM
Vice-Chairman	SHRI ABHJIT SEN

*Petroleum, Coal & Related Products Division**Council (PCDC)*

Chairman

DR M. G. KRISHNA

Vice-Chairman

DR D. BANERJEE

Structural & Metals Division Council (SMDC)

Chairman

SHRI J. G. KESWANI

Vice-Chairmen

PROF V. A. ALTEKAR

SHRI M. DHAR

Textile Division Council (TDC)

Chairman

SHRI G. K. DEVARAJULU

Vice-Chairman

SHRI D. N. SHROFF

*Certification Marks Advisory Committee**(CMAC)*

Chairman

DR LAL C. VERMAN

*Advisory Committee on Implementation of**Indian Standards (ACI)*

Chairman

DIRECTOR GENERAL, SUPPLIES AND
DISPOSALS, NEW DELHI*Industrial Safety Advisory Committee (ISAC)*

Chairman

—

*Consumer Advisory Committee for**Standardization (CACs)*

Chairman

—

*Environmental Protection Advisory Committee**(EPAC)*

Chairman

SHRI B. P. PAL

Ahmadabad Branch Office Advisory Committee

Chairman

SECRETARY, DEPARTMENT OF INDUSTRIES,
MINES & POWER, GOVERNMENT OF
GUJARAT*Bangalore Branch Office Advisory Committee*

Chairman

DR S. M. PATIL

Calcutta Branch Office Advisory Committee

Chairman

SHRI B. K. JHAWAR

Hyderabad Branch Office Advisory Committee

Chairman

DR R. K. VEPA

Kanpur Branch Office Advisory Committee

Chairman

SHRI INDER SINGH

Madras Branch Office Advisory Committee

Chairman

SHRI D. C. KOTHARI

Patna Branch Office Advisory Committee

Chairman

INDUSTRIAL DEVELOPMENT COMMISSIONER,
INDUSTRIES DEPARTMENT, BIHAR

STAFF

(As on 31 March 1978)

Director General	:	SHRI B. S. KRISHNAMACHAR	
Additional Directors General	:	DR A. K. GUPTA	
		SHRI Y. S. VENKATESWARAN	
Deputy Directors General	:	SHRI A. B. RAO	} HEADQUARTERS
		SHRI A. S. CHEEMA	
		SHRI A. P. BANERJI ...	
		SHRI S. SRINIVASAN ...	EASTERN REGION
		SHRI RAM D. TANEJA (Officiating)	WESTERN REGION

Agricultural & Food Products Department		
Deputy Director/Head		SHRI T. PURNANANDAM
Chemical Department		
Director		DR G. M. SAXENA
Civil Engineering Department		
Director		SHRI D. AJITHA SIMHA
Consumer Products & Medical Instruments Department		
Director		SHRI SOM PRAKASHA
Electronics & Telecommunication Department		
Director		SHRI N. SRINIVASAN
Electrotechnical Department		
Director		SHRI S. P. SACHDEV
Marine, Cargo Movement & Packaging Department		
Director		SHRI P. S. DAS
Mechanical Engineering Department		
Deputy Director/Head		SHRI S. CHANDRASEKHARAN
Petroleum, Coal & Related Products Department		
Deputy Director		SHRI S. K. MATHUR
Structural & Metals Department		
Director		SHRI C. R. RAMA RAO
Textile Department		
Director		SHRI S. M. CHAKRABORTY
Accounts Department		
Director		SHRI G. V. RAMASUBBAN
Personnel Management		
Secretary and Director (Legal)		SHRI GIRDHARI LAL
General Services		
Director		SHRI K. P. KHANNA
Central Marks Department		
Director		DR HARI BHAGWAN
Certification Marks Department (Delhi)		
Deputy Director/Head		SHRI E. N. SUNDER

Implementation Department	
Director	SHRI S. R. KUPPANNA
Laboratory	
Director	DR S. GHOSH
Library	
Deputy Director	SHRI V. P. VIJ
Public Relations Department	
Director	SHRI MANOHAR LAL
Publications Department	
Editor	SHRI GURCHARAN SINGH
Statistics Department	
Director	DR B. N. SINGH
Technical Information Service	
Director	SHRI S. P. RAMAN
Eastern Regional Office	
Director, Steel Cell	SHRI H. P. GHOSE
Director, Certification Marks	SHRI S. P. BATTOO
Southern Regional Office	
Director	SHRI S. SUBRAHMANYAN
Western Regional Office	
Director, Certification Marks	SHRI C. B. CHANDORKAR
Ahmadabad Branch Office	
Deputy Director/Head	KM H. N. MYTHILI
Bangalore Branch Office	
Deputy Director/Head	SHRI L. RAMACHANDRA RAO
Bhubaneshwar Branch Office	
Deputy Director/Head	SHRI N. K. RAMASWAMY
Chandigarh Branch Office	
Deputy Director/Head	SHRI R. I. MIDHA
Jaipur Branch Office	
Deputy Director/Head	SHRI T. S. SUBRAMANIAN
Hyderabad Branch Office	
Director	SHRI M. RAGHUPATHY
Jaipur Branch Office	
Director	SHRI M. S. SAXENA
Madras Branch Office	
Deputy Director/Head	SHRI S. K. KARMAKAR
Madras Branch Office	
Deputy Director/Head	SHRI G. S. VILKHI