



Prof V. V. Boitsov (centre), Minister of Standardization and Chairman of the State Committee for Standards of the Council of Ministers of USSR (GOSSTANDART) watching a demonstration of the tensile strength test on printing paper in the ISI Central Laboratory at New Delhi. Professor Boitsov visited India during November 1976 at the invitation of the Government of India.

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DIRECTOR GENERAL'S STATEMENT

The end of 1976-77 marked the completion of the thirtieth year of service by the Indian Standards Institution (ISI) to the cause of national development. During this period, the Institution made significant contribution to the growth of industrial potential, promotion of internal and international trade, and strengthening of overall economy.

A noteworthy feature of the year under report was the intensification of the drive to bring more consumer products under quality certification and gear up efforts for consumer protection. A number of management studies were conducted on the time schedule for preparation of standards, operation of ISI certification marks scheme, financial inputs, laboratory facilities, etc, with the object of streamlining existing procedures and improving overall efficiency and productivity. The results of the steps taken on the findings of these studies would be reflected in the coming years.

By 31 March 1977, the Institution had more than 9 051 Indian Standards in force covering a wide range of materials, industrial and agricultural products, test methods and codes for design and construction practices. This achievement reflects the cooperative efforts of some 31 000 technical experts constituting the membership of over 2 000 Councils and Committees of ISI, drawn from Central and State Governments, industrial establishments, commercial organizations, universities and research and other technical 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 rendering all support in a system of standardization which is primarily voluntary.

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

As a result of several measures taken by the Institution during the year for improving product quality and pronouncements made by the Union Government, there was a spurt in the certification marking activity of ISI. Goods worth about Rs 14 000 million were produced with ISI Certification Mark during the year. Some new products of consumer interest which were brought within the scope of the Scheme included baking powder, raw natural rubber, multipurpose dry batteries, dental chair, syringes, piston rings for IC engines and methyl bromide cylinders, steel and volute springs, etc.

The tempo of work for creating the much needed testing facilities for the rapidly expanding certification activity was raised considerably. Preliminary work regarding the building site and ancillary works for the Central Laboratory at Ghaziabad was completed. Plans for the building have also been worked out. The Planning Commission has agreed in principle to release for the project Rs 10 million during the next two years. Orders for sophisticated test equipment, both imported and indigenous, have been placed. The construction of structures at Ghaziabad Laboratory site and arrival of test equipment, will enable ISI to be in readiness for taking up the testing work on the promulgation of Domestic Electrical Appliances Quality Control Order.

During the year, the Institution organized eight industry-wise conferences on freight container standardization, builder's hardware, agriculture tractors and

farm machinery, utilization of cotton linters, adoption of modular bricks, sports goods, water meters, sanitaryware and water supply fittings and surgical instruments and medical equipment. These conferences provided a forum for sharing of experiences among the participants and discussing problems in respect of adoption of Indian Standards. Such conferences can be very helpful in sorting out problems in implementing Indian Standards in different fields as also in providing ISI with feed-back information from user agencies in the country.

During the year the Southern Regional Office-cum-Laboratory Building of the Institution was opened at Madras. The Regional Office which is the first to have a building of its own, is expected to serve as a focal point for the expanding standardization and quality control activities in the States of Tamil Nadu, Kerala, Karnataka and Andhra Pradesh and the Union Territory of Pondicherry.

A new Branch Office of the Institution was opened at Bhubaneswar at the request of the Government of Orissa.

With a view to promoting inter-plant standardization in steel industry, ten inter-plant standards were published. This activity is expected to bring about rationalization with reduction in cost of indigenous equipment. This is indeed worthy of emulation by other important sectors of industry including those concerned with the production of process equipment for various industries, electronics and telecommunication equipment and automobile ancillaries and components.

During the year under report, special emphasis was laid on the training of personnel. A 10-week Refresher Course was organized for the officers of the Institution. This is going to be a continuing feature at the Headquarters as also in the Regional and Branch Offices. A two-year training course in standardization for newly-recruited Assistant Directors (Trainees) was started in January 1977. The first training course in Computerized Information

Processing for ISI Officers was held during May-June 1976. The Course was organized, as a part of a collaboration programme between National Informatics Centre (NIC) of the Electronics Commission and ISI. A number of group training programmes in various fields of testing were organized in the Central Laboratory of ISI at the Headquarters. Five training programmes in statistical quality control were organized in various parts of the country.

Under the Electronics Commission's Programme of Computer Informatics net-work under which the Commission will make available computer facilities for some important Government departments and public sector establishments to create data banks for information management and retrieval, ISI will be one of the first organizations to receive a computer terminal. The National Information Centre of the Commission carried out a feasibility study of information needs in the context of the key role of the Institution in the economic development of the country. Plans for laying data communication lines between ISI and the NSIC's host computer are being finalized. Meanwhile, steps have been initiated for preparing the room for location and operation of the Computer. Data capturing work has also been started in the Institution. When its automated system becomes operative, the institution would be in a position to meet the heavy demand for speedy information within and outside, which will help to streamline and put speed into ISI's operations.

In the international sphere, the Institution actively participated in the work of International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC). In recognition of its active and fruitful role, India was elected as a Member of ISO Council for a term of three years commencing January 1977. Besides, the Director General, ISI was appointed a member of the Planning Committee which deals with all the matters concerning organization, coordination and planning of technical work of ISO. In November 1976, ISI hosted the second meeting of the Technical Committee of ISO dealing with mechanical contraception in New Delhi, in which 37 delegates from different

countries and from International Planned Parenthood Federation (IPPF) took part.

The Director General, ISI, also attended Conference on Standardization in Developing Countries held in Algiers in September 1976. At the Conference, matters of mutual interest were discussed with representatives of various developing countries many of whom expressed a keen desire to receive India's assistance in organizing national standardization activities in various ways.

A significant event of the year was a ten-day visit to India, in November 1976, of Prof V. V. Boitsov, Minister of Standardization and President of the State Committee for Standards of the Council of Ministers of USSR, at the invitation of the Government of India. For about three years, the national standards bodies of USSR and India, namely, GOSSTANDART and ISI have been collaborating in the field of standardization and metrology under the Inter-governmental Agreement for Cooperation in the field of applied science and technology. Prof Boitsov's visit to India was of special significance and value for furtherance of Indo-Soviet collaboration in the field of standardization and metrology. In recognition of his outstanding contributions and his inspiring leadership in the fields of standardization, the Lal C. Verman Award for 1975 was presented to him on that occasion.

In pursuance of the decisions taken at the third meeting of the Indo-Soviet Working Group on Standardization and Metrology held in Moscow in October 1975, there was mutual exchange of experts between India and USSR, with a view to promoting mutual collaboration in various fields of standardization and metrology.

The Fourth Meeting of the Indo-Soviet Working Group on Standardization and Metrology was held in New Delhi during 22-29 December 1976 in which five Soviet delegates participated under the leadership of Mr I. H. Sologian, Deputy Chief, Metrology Department, GOSSTANDART, Moscow. The Indian delegation was led by Director General, ISI. In this meeting, working programme for 1977 was

chalked out in detail and two new themes were included at the suggestion of the Soviet delegation.

A three-week Workshop on Standardization for Developing Countries was organized in New Delhi in which Heads and Senior Officers of national standards bodies from nine developing countries participated. The programme discussed themes of specific interest to the participants. The discussions and recommendations of the Workshop identified several areas in which India could usefully share her experience and know-how in organizing national standardization programmes and developing technical and supporting services for their implementation. The Workshop aimed at encouraging collaboration and generating mutuality of interest among developing nations in order to accelerate the pace of economic development and for raising the standards of living of the people in the third world.

A two-member Hungarian delegation led by Dr J. Olajos, President of the Hungarian Standards Organization (MSZH) visited India in February 1977 with the object of promoting further development of techno-economic relations between the Hungarian People's Republic and the Republic of India with respect to standardization and ensuring closer cooperation between MSZH and ISI. Dr V. I. Popkov, President of International Electrotechnical Commission (IEC) visited India in February-March 1977. During his stay in the country, Dr Popkov met distinguished scientists and engineers in the field of electrotechnology and made on-the-spot study of the number of electrical and electronic industries. Mr Olle Sturen, Secretary General, International Organization for Standardization (ISO) also paid a visit to New Delhi in March 1977.

Under the International Training Programme of the Institution, eight trainees from developing countries of Asia, Africa and Latin America received training in methodology and techniques of standardization. Besides, 10 trainees from Kenya, Tanzania and Zambia received special training in standardization and quality certification at the Institution.

THE YEAR IN RETROSPECT

Standards Preparation — During the year under review (1976-77), 771 Indian Standards were issued compared to 717 in the preceding year. The number of Indian Standards in force, including those under print but excluding those withdrawn, increased from 8 578 as on 31 March 1976 to 9 051 as on 31 March 1977. Full information regarding total number of Indian Standards published, standards in force, standards revised and standards withdrawn is as given below :

a) New standards issued during the year	503
b) Indian Standards revised during the year	268
c) Total number of standards (new and revised) issued during the year	771
d) Standards withdrawn during the year	30
e) Cumulative total of standards issued up to 31 March 1977	9 415
f) Cumulative total of standards withdrawn up to 31 March 1977	364
g) Indian Standards in force as on 31 March 1977	9 051
h) Cumulative total of Indian Standards revised up to 31 March 1977	2 651
j) Cumulative total of Indian Standards (new and revised) published up to 31 March 1977	12 066

Detailed report on standards formulation activities during the year under report is contained 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

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Central Government, various State Governments and public sector undertakings were carried out. As a result, 92 percent of Indian Standards were adopted by various government departments.

Recommendations on Specific Items

<i>Organization</i>	<i>Product</i>	<i>Directives</i>
a) Director of Standardization, Ministry of Defence, New Delhi	All products	Have recommended to the heads of all units/formations doing local purchases to purchase only those items which bear ISI Mark.
b) Director of Agriculture, Government of Karnataka, Bangalore	Hand operated and power operated sprayers, dusters and pest control equipment	Have requested all firms within the state to manufacture hand-operated and power-operated sprayers and dusters according to ISI standards and to get plant protection equipment certified by ISI.
c) Headquarters Canteen Stores Department (India)	<i>BIDIS</i>	Have advised the suppliers of <i>BIDIS</i> to obtain ISI Certification Mark on their products by 31 December 1976 failing which their names will be removed from the list of approved suppliers.
d) (Political-A) Department, Government of Andhra Pradesh, Hyderabad	National flags	Have directed all the heads of Departments and collectors that as per Section I Flag Code of India, on all occasions for official display, only the flag conforming to specifications laid down* by the Indian Standards Institution and bearing their Standards Mark should be used. On other occasions also, it is desirable that only such flags of appropriate size should be flown.

<i>Organization</i>	<i>Product</i>	<i>Directives</i>
e) Department of Agriculture and Animal Husbandry, Bihar, Patna	Farm implements	Have decided to make all their purchases of farm implements like disc harrows and cultivators according to ISI standards.
f) Stores Purchase (A) Department, Government of Kerala, Trivandrum	All products	Have ordered that, other things being equal, preference may be given to products having ISI Mark and to products conforming to ISI specifications.
g) City Police Commissioner, Hyderabad	Helmets	Have advised local dealers to ensure that they sold only such helmets which had been certified by ISI.
h) Bharat Heavy Plate and Vessels Ltd, Visakhapatnam	Method for writing calendar dates in all-numeric form	Have adopted the method of writing calendar dates in all numeric form as per IS : 7900-1976 Method for writing calendar dates in all-numeric form, in their organization.

Adoption by Manufacturers/Consumers — To enable the Institution to provide information about manufacturers/consumers operating to Indian Standards, 51 enquiries were issued on various subjects covering 1 804 Indian Standards, codes of practice and methods of test.

The information so far received from the manufacturers, consumers, etc, is summarized below:

<i>Nature of Adoption</i>	<i>No. of Organizations</i>	<i>No. of Standards Adopted</i>
a) For manufacture	83	195
b) For purchase	159	322
c) For testing and inspection	172	349
d) General adoption	2	10

Identifying Sources of Supply of Products According to Indian Standards — A sizable number of industries and consuming organizations approach ISI quite frequently for information on manufacturers who can supply products conforming to relevant Indian Standards. Such information pertaining to products covered under ISI Certification Marks Scheme, is available in "Buyers' Guide" being published by ISI periodically; for

products not yet covered under ISI Certification Marks Scheme, the available information is being furnished on requests. From 1 April 1976 to 31 March 1977 such information has been furnished to 67 parties relating to products covered by 172 Indian Standards.

Company Standardization

Extension Services — Complementary standardization work undertaken at company and industry levels would be of great help in ensuring implementation of Indian Standards. Keeping this in view, ISI provides technical expertise for promoting company standardization activities through training programmes, extension services, etc. Technical guidance and assistance through extension services were provided to two industrial units, namely, (a) Bharat Heavy Plates and Vessels Ltd, Visakhapatnam; and (b) Larsen & Toubro Limited, Bombay.

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

- a) Five standards pertaining to crane hooks, crane brakes, greases and electrical contactors were printed.
- b) A Workshop on Interplant Standardization in Steel Industry was organized in Bhilai on 28 January 1977 wherein the problems and prospects of the implementation of standards published in the field were discussed.
- c) A plan of implementing Indian Standards relating to steel in all steel plants was chalked out, which would be put to trial during 1977-78.

ISI Certification Marks Scheme—During the year, 905 licences were granted under the ISI Certification Marks Scheme, bringing the total number of licences issued since the inception of the Scheme to 6 019. The certification revenue reached the figure of Rs 11.268 million, registering a growth of 30.5 percent. The value of goods certified is estimated to be of the order of Rs 14 000 million.

Information regarding the applications received and licences granted since the inception of this scheme till 31 March 1977 is given below:

a) Applications received	11 948
b) Applications processed	9 446
c) Licences granted	6 019
d) Licences in operation	3 619

During the period under report, Central Laboratory at Headquarters and three Regional Laboratories at Bombay, Calcutta and Madras tested 17 540 samples, in different disciplines, namely, chemical, electrical and mechanical. Details of the testing work are given below:

a) Samples received	17 954
b) Samples tested	17 540
c) Samples withdrawn	355
d) Testing charges estimated for the work done	Rs 2 367 889·00

Detailed report on the operation of ISI Certification Marks Scheme is contained in Part III.

Meetings of General Council and Executive and Finance Committees — The thirty-second meeting of the General Council of the Institution was held on 28 December 1976 under the chairmanship of Syed Mir Qasim the then Union Minister of Civil Supplies and Cooperation and President, ISI. Shri D.C. Kothari and Shri Harish Mahindra were elected Vice-Presidents of ISI for a period of one year ending 31 December 1977. The Executive and Finance Committees held five 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 the year 1976-77 amounted to Rs 26 273 310 as against an expenditure of Rs 25 451 884. A statement of accounts for the year 1976-77 is given in Appendix A. The audit report from the Accountant General will be tabled at the meeting of the General Council.

Invisible Contribution — Besides the income and expenditure during the year under review mentioned above, the Institution also received some invisible contributions. Expenses were incurred by committee 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 3·61 million.

MANAGEMENT STUDIES

During the year under report, the following management studies were conducted with the object of streamlining existing procedures and improving efficiency and productivity.

Average Number of Pages per Standard—A study was conducted on targets and achievements of standards-making departments and average

number of pages of the standards prepared by various departments. It was found that all the departments had achieved the target set during the five-year period ending 31 March 1976; but the average number of pages per standard differed from department to department. This information along with other pertinent aspects such as format, average number of drawings, figures, tables, etc. would come handy while fixing the targets in future on a more realistic basis.

Printing Time of Standards—A study was conducted on the time taken in printing and re-printing of Indian Standards. It was revealed that the printing time was about six months which was higher than the time shown in earlier studies. From the stagewise analysis, the stages responsible for the increase in time were identified so as to enable remedial measures to be taken for cutting down the time taken in printing.

Cost of Preparation of Standards—A study was undertaken to find out the cost of preparing a standard. It was revealed that for the years 1972-73 and 1973-74 the cost was of the order of Rs 10 000 whereas the corresponding cost for the years 1974-75 and 1975-76 was of the order of Rs 14 000. The rise was mainly due to factors like increase in the pay and allowances of staff and officers, contributions to ISO and IEC as also the cost of publication of standards.

Training Programmes

International Training Programme in Standardization — The 15-week International Training Programme in Standardization for Developing Countries, ninth in the series, commenced on 16 December 1976 and concluded on 30 March 1977. Eight participants from Bangladesh, Ethiopia, Ghana, Iraq, Kenya, Malawi, Mexico and Sudan attended the Programme.

Started in 1964, training has so far been imparted to 87 technical personnel from 24 countries, namely, Philippines, Singapore, Thailand, Sri Lanka, Arab Republic of Egypt, Burma, Iraq, South Yemen, Kenya, Malaysia, Zambia, Ghana, Afghanistan, Nigeria, Cyprus, Jordan, Sudan, Ethiopia, Panama, Trinidad and Tobago, Kuwait, Bangladesh, Malawi, and Mexico.

Special Trainees from Developing Countries — During the period under review, the Institution imparted training in standardization, certification and quality control to trainees from developing countries, as per details given below:

<i>Name of Trainee</i>	<i>Country</i>	<i>Deputed by</i>	<i>Period</i>
Mr J. M. Tithui	Kenya	Directorate of Weights & Measures, New Delhi	17-18 May 1976

<i>Name of Trainee</i>	<i>Country</i>	<i>Deputed by</i>	<i>Period</i>
Mrs L. S. Semiti	Tanzania	Central Food Technological Research Institute, Mysore	26 August 1976
Mr D. M. Nkwabi	Tanzania	National Small Industries Corporation, New Delhi	11-12 October 1976
Mr S. Banda Mr N. Ngoma Mr E. Kalikeka Mr H. Chisoko Mr L. Dindi	Zambia	Directorate of Weights & Measures, New Delhi	6 & 7 December 1976
Mr A. W. Kabuka	Tanzania	National Small Industries Corporation, New Delhi	14 February — 11 March 1977
Mr S. H. Maridadi	Tanzania	National Small Industries Corporation, New Delhi	8-14 March 1977

In addition, Mr T. M. Yarmand, General Director, Norms and Standards Department, Ministry of Mines and Industries, Kabul (Afghanistan) visited ISI during 10-27 January 1977 for familiarizing himself with standardization and quality control.

Refresher Course in Standardization for Technical Officers of ISI— The first Refresher Course on Standardization for Technical Officers of ISI was conducted in New Delhi from 6 May to 23 June 1976. After the lecture programme concluded on 23 June 1976, the participants visited various technical units of their choice in and around Delhi from 25 June to 7 July 1976. The Course was attended by 30 officers from ISI and 2 officers from the Directorate of Standardization, Ministry of Defence, New Delhi. The Programme was intended to impart on-the-job training to directly recruited technical officers currently working in ISI.

Training Course in Standardization for Newly Recruited Assistant Directors (Trainees)— The two-year Training Programme meant for newly recruited Assistant Directors (Trainees) was started on 17 January 1977. The Programme, which is seventh in the series, is being attended by 18 technical officers. It will be conducted in three phases, namely, Acclimatization and Study Phase, Practical Phase and Responsibility Phase.

Training Course in Computerized Information Processing— The first Training Course in Computerized Information Processing for ISI Officers was held in New Delhi during 24 May to 7 June 1976. The Course covered historical and general introduction to computers; binary arithmetic; hard-

ware, computer software and storage devices; planning tools for programming; and computer languages.

The Course was organized as part of the collaboration programme between National Informatics Centre (NIC) of the Electronics Commission and ISI. Among the important proposals for collaboration between ISI and NIC was the development of computer-based standards information system.

Attended by 14 officers, the Course was conducted by Major R. Thiagarajan, Project Manager, Technology Information Systems, National Informatics Centre, New Delhi.

Training Programme in Testing of Products — During the year under review, a number of group training programmes in various fields of testing were organized in the Central Laboratory of ISI at the Headquarters. The programmes which were specially meant for the testing personnel of the licensees operating under the ISI Certification Marks Scheme, were also open to the testing personnel of applicants for licences under the Scheme and personnel from State Government Laboratories. Details of the training programmes organized during the year are given below:

<i>Programme</i>	<i>Period</i>	<i>No. of Participants</i>
Testing of Pesticides	6-16 July 1976	26
Physical Testing of Metals	2-6 August 1976	17
Tasting of Conductors and Power Cables	6-17 September 1976	12
Testing of Water Meters	11-15 October 1976	7
Testing of Food Colours	8-12 November 1976	8
Testing of Domestic Electrical Appliances	6-17 December 1976	9
Domestic Electrical Appliances	31 Jan to 5 Feb 1977	11
Domestic Electrical Appliances	14-18 February 1977	10
Domestic Electrical Appliances	14-21 March 1977	10
Recertification of LPG Cylinders	14-18 February 1977	8

Training Programmes in Statistical Quality Control — Four training programmes were conducted at different places during the year. Two of

these programmes were organized for the paper industry — one at Calcutta for the benefit of the ISI licensees of the Eastern Region and the other at Sirpur Kaghaz Nagar for the benefit of the technical personnel employed in the Sirpur Paper Mills. In these programmes emphasis was laid mainly on quality control needs for effecting improvement in product quality, enhancement of productivity, reduction in costs through minimization of rejections and reprocessing as also on promotion of better human relations. In addition, one programme on Quality Management was organized at Kanpur and another on Total Quality Control was conducted at New Delhi in collaboration with the local productivity councils.

A review session of the earlier training programmes in Statistical Quality Control for Pesticides Industry was conducted at Hyderabad in which the project reports of the participants were discussed. Remedial actions, wherever necessary, were also suggested to the participants for more effective application of SQC techniques in their production processes. In all, 84 participants from 43 organizations took part in the above five programmes.

Progress of Plan Schemes

Science and Technology Project — On the recommendations of the National Committee on Science and Technology, the then Ministry of Industry and Civil Supplies allotted the following two projects to the Indian Standards Institution for the Fifth Five-Year Plan;

- a) Development Programme on Code Implementation for Buildings and Civil Engineering Construction, and
- b) Typification Organization for Industrial Structures.

A brief review of progress during the period under report is given below:

National Building Code — For promoting implementation of National Building Code, Implementation Conferences are being held in various States of India. So far, such Conferences have been organized in Tamil Nadu, Karnataka, Maharashtra, Delhi, Kerala, West Bengal, Orissa, Gujarat, Meghalaya, Assam, Uttar Pradesh, Tripura, Manipur (also covering Nagaland, Mizoram and Arunachal Pradesh), Rajasthan, Punjab, Haryana, Himachal Pradesh and Union Territories of Chandigarh and Pondicherry. The results of these Conferences have been quite satisfactory in terms of the action initiated by different States regarding modification in Building Bye-laws and PWD specifications to bring them in line with the National Building Code.

The Action Committee set up at the Implementation Conferences have been active and as a result the National Building Code has been

implemented in different States to varying degrees. The Institution assists the respective organizations in the preparation of revised version of Building Bye-laws of local bodies of various States in the country. So far, 12 Bye-laws have been finalized. These, besides others, include Bye-laws of major corporations of Delhi, Calcutta, Bangalore, Cochin, Ahmadabad and Kanpur. Permanent Cells have been set up in Public Works Departments of different States to rewrite the PWD specifications with the assistance of the Institution. Work in this regard is in different stages of progress in various States. Tamil Nadu and Kerala have revised their PWD Specifications. Training Programmes were organized to explain the contents of the modified Bye-laws to concerned architects, engineers, town planners, administrators and other officials of local bodies. Two such programmes were held in the States of Bihar and Karnataka. Programmes are also proposed to be held in Kerala, UP and Delhi.

Work on preparation of a series of explanatory Handbooks and Design Aids for various design and functional codes relating to the National Building Code has been undertaken. So far, subjects for 30 Handbooks have been identified and work has been initiated on 26 Handbooks. During the year, preliminary draft Handbooks on: (a) Reinforcement, and (b) Functional Requirements of Buildings, were prepared. Besides, considerable progress has been made in the preparation of Handbook of Building Construction Practices.

Typification Organization for Industrial Structures — Data on various structural parameters of industrial structures have been collected from a number of public sector undertakings which are being analyzed.

Technical Information Services

ISI Library — During the period under review, the library at the Headquarters processed 20 415 publications including standard specifications. The libraries at the Regional Offices were suitably strengthened to give information service to the members located in their respective region. During the period under review, 121 bibliographies and 281 documentation lists were prepared on the specific request of the technical staff and members. Library kept close liaison with ISO information services at ISC Central Secretariat, Geneva and sent them copies of all bibliographies compiled by the ISI Library. On an average 30 to 35 reference questions were received in the library daily, which were duly answered.

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

- 1) List of overseas standards received in ISI Library,
- 2) List of books and pamphlets received in ISI Library, and
- 3) List of current published information on standardization.

The following table would show the work done by the Library during 1976-77:

1) Number of standards and specifications, technical publications available in the library as on 31 March 1977	329 006
2) New publications accessioned and processed	20 415
3) Technical journals received	564
4) Bibliographies prepared	121
5) Number of technical enquiries received and documentation lists made	281
6) Number of publications loaned out and consulted in the library by subscribing members and visitors	67 500
7) Number of translations made of overseas standards	93

Technical Information — During the year under review, three programmes for Utilization of Indian Standards in Education were organized in the States of Gujarat and Haryana in which 185 teachers from 9 institutions took part.

A model curriculum designed for introducing the study of standardization in technological fields was circulated to all technical institutions. This study was endorsed in an international conference on educational training of engineers and technicians held in New Delhi under the auspices of UNESCO.

Following documents were compiled and circulated:

- Reviews of standardization in the fields of civil engineering, electrical engineering, electronics, metallurgy, mechanical engineering in relation to educational programmes.
- Selected lists of standards for educational utilization in all fields of engineering, keeping in view the latest developments.
- Document in respect of standards of general engineering interest, such as, units of measurement, drawing and surveying, testing, sampling and quality control, etc, for use in the programmes for improved propagation of standards information in the educational fields.
- List of 700 Indian Standards relating to common consumer goods.
- Classified lists of Indian Standards for automobile industry, mineral industry, cable and conductor industry, foundry and mines safety.

A streamlined procedure was introduced to expedite handling of special technical enquiries received from parties regarding the availability of Indian Standards, equivalent standards and other related issues of consultancy for the developing industries. For systematic follow-up of technical inquiries, preparation of data in respect of feed-back information on the use of overseas standards and also subjects for which standards need to be developed was initiated.

Computer Project — Under its programme of computer communication network, the Electronics Commission will provide computer facilities to some important Government Departments and public sector establishments to create data banks for information management and retrieval. ISI will be one of the first organizations to receive a computer terminal. The National Informatics Centre of the Commission has carried out a Feasibility Study of the Institution's needs in the context of its key role in the economic development of the country. A United Nations Inter-regional Adviser, Mr Leo Jusseume who visited the Institution in this connection strongly urged the induction of automated information systems in ISI's operations.

The data preparation devices — punching, sorting, verifying, printing and key-to-tape equipment — have been received by the National Informatics Centre (NIC) and are undergoing inspection and check-up. Plans for laying data communication lines between ISI and the NIC's Host Computer are being finalized. This will cost the Commission about Rs 600 000 in equipment and services.

Meanwhile, on the advice of the Commission, steps have been initiated for preparing a room for location and operation of the computer. Data capturing work in respect of Indian Standards, certification marks and sectional lists has been taken up.

When the automated system becomes operative, it will be possible to meet the demands for speedy information within and outside the Institution which will help to streamline and put speed into our operations. It would then be possible through computer media with other national standards bodies under bilateral and other agreements for the development of integrated standards information system. Steps are already afoot to coordinate the Institution's efforts in this direction with ISO Information Network and ISO Documentation Centre.

Reprography Unit — Set up in early 1974, the Reprography Unit provided facilities for quick reproduction of technical documents, diagrams, charts, date sheets, etc Besides, reprinting of Indian Standards and amendments required on priority basis is also undertaken. The facilities include preparation of Xerox copies, electrostencils, cyclostyled prints, offset prints, ammonia/diazo prints, and photostats.

During the year under review, new equipment comprising three electrostatic copiers (Korestat A3, 101 and Vertical Camera), one electronic scanner (BPL) and one duplicating machine (Shourie) were purchased under the Science and Technology Project of the Government of India and from ISI's own funds.

Public Relations

Membership — The Institution revised its membership fees in 1973 for the categories of Sustaining Members and Associate Members. This resulted in a number of organizations dropping out of the subscribing membership during 1973-74. Since then a number of steps have been taken to develop further the membership activity of the Institution. Efforts have been made to enrol more organizations as subscribing members, to convert important organizations to higher categories of membership and to collect more revenue. As a result the number of subscribing members and their subscription continued to rise from 1974-75. The rising trend has been maintained during the year under review.

During the year 1976-77, State Governments and public sector undertakings were approached to upgrade their categories of membership. The results of the sustained efforts made were encouraging, so that as on 31 March 1977 there were 17 Patrons and 55 Donor Members as against the corresponding figure of 4 and 40 respectively on 31 March 1976. Steps were also taken to increase the number of members in other categories, particularly for enrolling small-scale industrial units as Ordinary Members with the object of furthering standards movement in that area.

The number of subscribing members of the Institution increased from 4 229 as on 31 March 1976 to 4 967 as on 31 March 1977 — an increase of 738 members representing 17 percent. The revenue obtained from the subscribing members during 1976-77 amounted to Rs 3·686 million as against the corresponding figure of Rs 3 111 million during the year 1975-76 — an increase of 18 percent.

Detailed information with reference to different categories of membership is given in Table I.

The position of Subscribing Membership since 1968 is graphically represented in Fig. 1

Distribution Service — The Institution continued to distribute Standards and Publications to its members extensively. Details are given below:

	<i>No. of Copies</i>
Indian Standards and Amendment Slips	861 200
ISI Bulletin	143 000

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	<i>No. of Copies</i>
Standards : Monthly Additions	85 500
Miscellaneous Publications, such as Annual Report, Handbook, etc	4 500
Sectional Lists	25 000

In addition, publications were also supplied to ISO Member Bodies.

TABLE 1 MEMBERSHIP ANALYSIS
(As on 31 March 1977)

CLASS OF MEMBERSHIP	NUMBER OF MEMBERS ON		LOSSES DUE TO				ADDITIONS BY			NET Gain/Loss
	1 April 1976	1 April 1977	Resig-nations	Laps-ing	Con-versions	Total	Admis-sion	Rein-statement	Total	
Patrons	4	17	1	—	—	1	14	—	14	+13
Donor Members	40	55	—	2	14	16	30	1	31	+15
Sustaining Members	1 710	1 767	25	55	19	99	148	8	156	+57
Associate Members	1 486	1 803	57	113	17	187	498	6	504	+317
Ordinary Members	716	1 046	46	97	4	147	476	1	477	+330
Individual Members	273	279	12	43	—	55	61	—	61	+6
Total	4 229	4 967	141	310	54	505	1 227	16	1 243	+738

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 :

	1974-75	1975-76	1976-77
	Rs	Rs	Rs
a) Indian Standards	1 765 102	2 665 975	3 288 169
b) Overseas Standards	1 134 801	1 425 522	1 601 950
c) Commission earned on the sale of overseas standards	416 088	454 329	560 000

A graphical representation of sale of Indian and overseas standards is given in Fig. 2.

Fig. 1 ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS

- TOTAL SUBSCRIBING MEMBERS
- PATRONS, DONORS, SUSTAINING, ASSOCIATES AND ORDINARY MEMBERS
- INDIVIDUAL MEMBERS

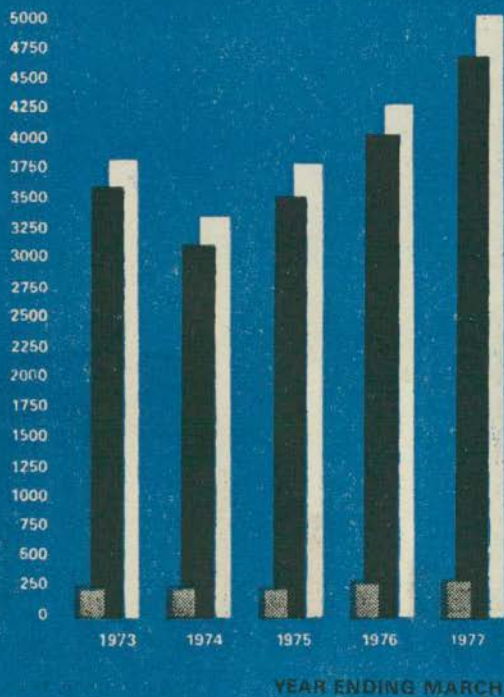
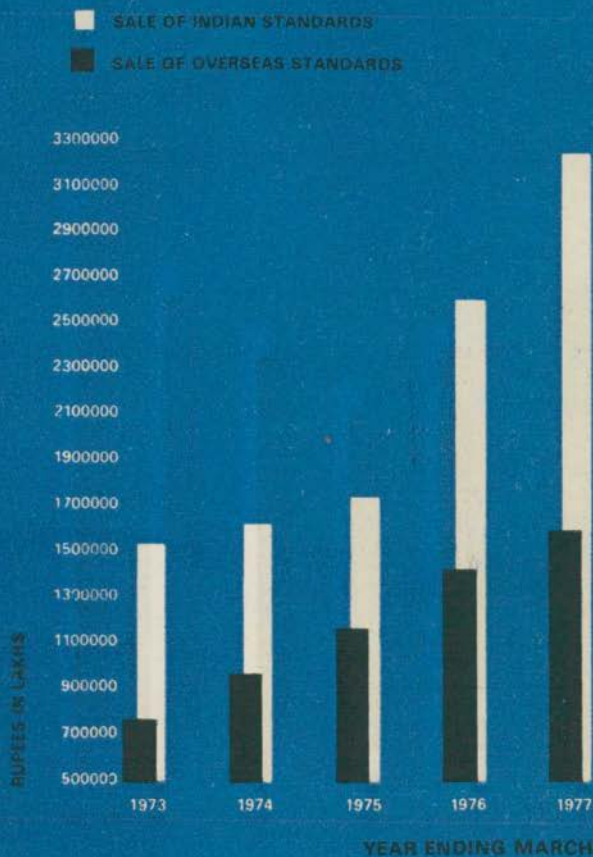


Fig. 2 SALE OF INDIAN AND OVERSEAS STANDARDS



During the year under report, Indian Standards were also sold to a number of overseas standards organizations including the following:

- a) British Standards Institution, London
- b) Standards Association of Australia, Sydney
- c) Deutscher Normenausschuss, DNA, 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, Legos

Publicity and Conferences

Press Notes — A total of 242 press notes on Indian Standards published and draft Indian Standards issued for wide circulation as also relating to other important activities of ISI were issued to technical and daily press.

Exhibitions — During the year, 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.	Trichurpooram Exhibition	—	Trichur	4 April 1976
2.	Summer Festival Exhibition	Department of Industries, Himachal Pradesh	Simla	21 May 1976
3.	AFST Exhibition	Association of Food Scientists & Technologists (India)	Mysore	3-5 June 1976
4.	Exhibition at National Seminar on Productivity in Marketing of Sports Goods	—	New Delhi	15 June 1976
5.	Exhibition	Directorate of Industries, Jammu & Kashmir Government	Srinagar	1 September - 31 October 1976
6.	Algiers International Fair	Indian Council of Trade Fairs and Exhibitions, Bombay	Algiers (Algeria)	1-17 October 1976

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Sl No.	Name of Exhibition	Organized by	Place	Period
7.	Seminar and Exhibition	ISI	Bhavnagar	21 January - 10 February 1977
8.	Tourist Trade Fair	Tamil Nadu Tourist Development Corporation, Madras	Madras	1 January - 27 February 1977
9.	Exhibition	ISI	Madras	6 January 1977
10.	South Gujarat Industrial Exhibition	Southern Gujarat Chamber of Commerce Association of Trade & Industry and Industries Department, Government of Gujarat	Surat	26 February - 13 March 1977

Advertising Campaign — A Radio Spot projecting ISI Mark was broadcast in the Commercial Broadcasting Service of All India Radio on all-India basis during March 1977.

Radio Broadcasts

- 1) A radio discussion on 'Protecting the Consumer' was broadcast from All India Radio, New Delhi on 25 July 1976. Apart from the Director General, ISI, the discussion received participation from Shri S. S. Puri, Additional Secretary, Union Ministry of Industry and Civil Supplies, and Smt Rami Chhabra, who acted as Moderator.
- 2) A Group Discussion on the subject 'Need for Standardization' was broadcast from All India Radio, Calcutta on 4 August 1976. The participants were: Shri A. P. Banerji, Deputy Director General, ISI; Dr A. S. Bhaduri, Director, National Test House, Calcutta; and Shri B. Banerji of Geological Survey of India, who acted as Moderator.
- 3) A feature programme in Telugu entitled 'This Symbol is a Mark of Quality' was broadcast from Hyderabad, Cuddapah and Visakhapatnam Stations of All India Radio on 7 August 1976.
- 4) A Group Discussion on 'Quality of Indian Products' was broadcast by Delhi 'B' Station of All India Radio on 24 October 1976. The participants were Shri B. S. Krishnamachar, Director General,

ISI; Shri P. R. Lathe of Directorate General of Technical Development (DGTD) and Shri I. Z. Bhatti of National Council of Applied Economic Research, who acted as Moderator.

- 5) An interview with the Director General, ISI, was broadcast from Delhi 'B' Station of All India Radio on 20 January 1977 at 2130 h. The Interview was repeated on 21 January 1977 at 070.7 h from the same station.

Press Interviews

Director General, ISI, gave a number of press interviews on different occasions covering the themes: (a) the working of ISI Certification Marks Scheme and Sharing of technical know-how by ISI with developing countries of the world; (b) ISO Conference in London which culminated in acceptance of Indian proposal on Sloping Flange Column Sections of Steel for further processing and publication as an International Standard; and (c) the Conference on Standardization in Developing Countries held from 28 September to 1 October 1976, in Algiers (Algeria). The interview, which were conducted by Shri V. Ganapati of Samachar, received wide coverage.

Presentation of Indian Standards — Complete sets of Indian Standards were presented, as gifts, to Ecuador, Afghanistan and Nepal. The Standards were formally presented to Charge d'Affaires of Ecuador in India, Mr Eng T. M. Yarmand, General Director, Norms and Standards Department, Ministry of Mines and Industries, Kabul, Afghanistan, and Charge d'Affaires of Nepal in India. The Institution has been presenting complete sets of Indian Standards to different developing countries of Asia, Africa and Latin America, with the object of helping them in developing their standardization activity.

Visitors to ISI — During the period under report, a number of dignitaries from India and abroad visited the Institution, including the following:

- a) Mr A. H. Khan, Director, Bangladesh Standards Institution, Dacca.
- b) Mr Leo Jussosume, Inter-region Adviser in Public Administration, United Nations, New York.
- c) Shri Balgovind Verma, Union Deputy Minister for Labour, New Delhi.
- d) Shri M. Satya Pal, Adviser (Industry & Minerals), Planning Commission, New Delhi.
- e) Shri M. G. Balasubramanian, Secretary, Union Ministry of Civil Supplies and Cooperation, New Delhi.

- f) Shri M. N. G. A. Khan, Assistant Secretary, Commonwealth Science Council, London.
- g) Mr C. D. Msuya, Ministry of Industry, Tanzania.
- h) Mr M. V. Handa, P. Eng., Standards Council of Canada, Ontario.
- j) Mr Wadanyu Nathalang, Governor, Applied Scientific Corporation of Thailand, Bangkok, Thailand.
- k) Mr Smith Kampempool, Deputy Governor, Applied Scientific Corporation of Thailand, Bangkok, Thailand.
- m) Mr S. P. Voennshkin, First Deputy Minister of the USSR Building Material Industry.
- n) Mr D. D. Katanov, Chief Specialist of the State Committee of the USSR Council of Ministers of Science and Technology.
- p) Mr V. S. Borodkin, Head of Wall Building and Insulating Material Industry.
- q) Mr V. A. Golukhov, Deputy Head of Foreign Relations Department of USSR Building Material Industry.
- r) Mr Eng T. M. Yarmand, General Director, Norms & Standards Department, Ministry of Mines & Industries, Republic of Afghanistan, Kabul.
- s) Prof Dr V. I. Popkov, President, International Electrotechnical Commission (IEC).
- t) Mr Faridudin Ahmed, Plant Protection Adviser and Director, Government of Pakistan.

Industry-wise Conferences — As a part of its promotional activities, the Institution organizes conferences on standards relating to different industries. The objectives of these conferences include discussion of problems affecting special fields in relation to standards and quality control, implementation of Indian Standards, promotion of ISI Certification Marks Scheme and feed-back to ISI with problems and needs of industry in standards and standardization.

During the year under report, the following Industry-wise Conferences were organized:

<i>Sl No.</i>	<i>Name of Conference</i>	<i>Organized by</i>	<i>Place</i>	<i>Period</i>
1.	Production and Utilization of Cotton Linters in India	Indian Standards Institution in collaboration with All-India Cotton Seed Crushers, Association	Bombay	29 Apr 1976

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SI No.	Name of Conference	Organized by	Place	Period
2.	Sports Good	Indian Standards Institution in collaboration with National Productivity Council	New Delhi	15-16 Jun 1976
3.	Adoption of Modular Bricks for Buildings in Pondicherry	Indian Standards Institution in collaboration with Government of Pondicherry	Pondicherry	3 Jul 1976
4.	Freight Container Standardization	Indian Standards Institution	Bombay	24 Sep 1976
5.	Standards for Builder's Hardware	Indian Standards Institution	New Delhi	27 Sep 1976
6.	Standardization and Quality Control of Agricultural Tractors and Farm Machinery	Indian Standards Institution	New Delhi	28 Oct 1976
7.	Water Meters, Sanitary-ware and Water Supply Fittings	Indian Standards Institution	Cochin	15-16 Nov 1976
8.	Standardization of Surgical Instruments and Medical Equipment	Indian Standards Institution	New Delhi	31 Dec 1976

World Standards Day — The Institution celebrated the World Standards Day at Headquarters and Regional/Branch Offices on 14 October 1976, with the objectives of creating standards-consciousness among different sectors of economy and promoting standardization and quality control. The Day was celebrated by observing 'Open Day' in Headquarters, franking all outgoing dak with slogan, organizing exhibitions and seminar, publication of special supplements in newspapers; and arranging special programmes on All India Radio and Television.

ISI Foundation Day — The ISI Foundation Day, marking the completion of 30 years of the Institution's service to the Nation through formulation of national standards, quality control and quality certification was celebrated on 6 January 1977 in the Headquarters and Regional/Branch Offices.

An 'Open Day' was observed in the Headquarters and public was invited to visit ISI Standards Exposition Hall and Laboratories. About 200 persons representing manufacturers, technical institutions, Government Departments, students etc, visited the Institution and evinced keen interest in its various activities. The Day was similarly celebrated in

other places by organizing exhibitions, seminars and publication of special supplements in newspapers.

Use of Hindi in ISI Work — During the year under report, steps were taken for implementing various provisions of the Official Languages Act in day-to-day working of ISI and for arranging training of ISI employees under the Hindi Teaching Scheme. Hindi version of some 154 Notifications pertaining to ISI Certification Marks Scheme were prepared and sent for publication in Gazette of India. Hindi was also used for a number of press notes relating to Indian Standards on common consumer items, press communiques on various activities, general orders and office notes for circulation in ISI, letters to and from Hindi-speaking States, etc. In all, 14 pro formae were translated and issued bilingually, for use in ISI.

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

- a) Workshops for ISI employees in Hindi noting and drafting be organized.
- b) Publicity literature disseminating information about latest activities of ISI may be prepared in Hindi also.
- c) *The Official Languages Rules, 1976* (for use for official purposes of the Union) framed under *Official Languages Act, 1963* (as amended in 1967) by the Ministry of Home Affairs be implemented.
- d) ISI Certification Marks Licences be issued in Hindi as well.
- e) Indian Standards be translated and published in diglot form. To begin with Indian Standards relating to common consumer items and small-scale industries be taken up.
- f) Those who know Hindi should start writing standard letters, circulars, etc. in Hindi.

REGIONAL AND BRANCH OFFICES

For meeting the ever-increasing demand on the services of the Institution consequent on the development of industrial economy on a planned basis, Regional Offices in East, West and South India have been established in Calcutta, Bombay and Madras, respectively. Besides, Branch Offices have been set up in most of the State capitals and Inspection Offices at other important industrial centres.

The Regional Offices coordinate, on a regional basis, various functions performed by the Branch Offices, namely, liaison with industrial establishments; consumer and purchase organizations; scientific, research

and technical bodies and Government Departments for implementation of Indian Standards, certification marking work, training of personnel, technical information services, subscribing membership, sale of publications and publicity to ISI activities.

A brief resume of the important activities of Regional and Branch Offices is given in the following paragraphs:

Eastern Region

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

Calcutta — Pursuant to the efforts made to promote implementation of National Building Code, the Government of West Bengal promulgated an ordinance called 'Calcutta Municipal (Amendment) Ordinance, 1977' incorporating the recommendations made by the Experts Committee set up in accordance with the provisions of the National Building Code. Construction work will henceforth be regulated by this Ordinance to ensure statutory implementation of the Code.

For promoting implementation of Indian Standards, the Regional Office participated in the following seminars and conferences:

<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>In Association with</i>
4 May 1976	Durgapur	Utilization of Indian Standards in Technical Education	Regional Engineering College, Durgapur
22 May 1976	Gauhati	Utilization of Indian Standards in Technical Education	Gauhati Engineering College, Gauhati
22-26 Nov 1976	Calcutta	Company Standardization Programme	Calcutta Productivity Council
12 Jan 1977	Raipur	Utilization of Indian Standards in Technical Education	Engineering College, Raipur and local industries
28-29 Jan 1977	Calcutta	Role of Standards in Hand Tool Industry	Small Industries Service Institute, Calcutta and Rural Industries Project, Government of West Bengal



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<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>In Association with</i>
8-10 Mar 1977	Calcutta	Seventh All-India Conference on Engineering Materials and Equipment	Association of Engineers India

The Regional Office participated in a number of training programmes relating to standardization and quality control organized by different organizations, at which senior officers delivered talks/lectures.

A total of 291 applications were received and 236 new licences were issued under the ISI Certification Marks Scheme, which included many new items such as bloom bitumen and dry cell batteries.

Owing to lack of space, the laboratory at Calcutta could not be expanded. However, to meet a part of its requirements the following essential equipment were installed at the laboratory:

- a) DC recording polarograph,
- b) Ageing oven, and
- c) Electro-analyzer.

During the year, a total of 6 584 samples comprising 166 electrical items, 6 377 mechanical items and 41 chemical items were tested.

The sale of Indian Standards amounted to Rs 519 060 while revenue from membership subscription stood at Rs 721 000.

Efforts were made to publicize the various activities of the Institution through seminars organized in collaboration with other technical and techno-commercial bodies, exhibitions, publication of articles, Radio and TV programmes and screening of films.

Bhubaneshwar — A new Branch Office of the Institution was opened at Bhubaneshwar at the request of the Government of Orissa.

Patna — Department of Animal Husbandry of the Government of Bihar decided to procure agricultural implements like tractor trailers, cultivators, disc harrows on the basis of Indian Standards instead of the prevailing departmental specifications, for which the Head of the Branch Office was appointed a member of the Purchase Committee.

The Department of Science and Technology elected Head, Patna Branch Office as a permanent member of the State Level R & D Committee for Small-Scale Industries.

Discussions were held with the Managing Director, Bokaro Steel Ltd (BSL) to assess the extent of adoption of Indian Standards in their purchase programme. As a result, the Bokaro Steel Ltd undertook to examine critically the store purchase policy for adoption of Indian Standards wherever available, and give preference to ISI-certified goods. The authorities of BSL have also shown considerable interest in adoption of modular bricks and other Indian Standards for economizing on the construction cost of the township.

At a get-together on Refractories, Glass and Ceramic Industries held on 12 February 1977 at the National Metallurgical Laboratory, Jamshedpur attended by Shri A. P. Banerji, Deputy Director General, Eastern Region, ISI, important decisions were taken to review Indian Standards on refractories and also to prepare standards on minerals required for these industries.

A training programme on Building Bye-laws and Planning Standards for the local bodies of Bihar was organized at Patna during 5-7 January 1977, at which about 40 participants drawn from different parts of the State participated.

Department of Agriculture, Government of Bihar issued an order on 5 August 1976 permitting financing of only diesel engine pump-sets bearing ISI Certification Mark. The small scale diesel engine manufacturers were given intensive assistance to set up inspection and testing facilities resulting in grant of licences to five more units. In view of the difficulties faced by the manufacturers, a workshop on quality control of IC diesel engine was organized with the co-operation of Bihar Industries Association on 9 November 1976. About 20 participants actively discussed the various issues and a number of decisions were taken for better operation of the quality control system by the ISI licensee units.

Assistance was rendered to a number of small scale units manufacturing paraffin wax to set up testing facilities to comply with the Ministry of Petroleum and Chemicals order for compulsory ISI Certification Marking of the product. As a result, 11 units were granted licences during the year under review.

The Bihar State Financial Corporation decided to give financial incentives for improving quality and for joining ISI Certification Scheme as per the policy announced by Industrial Development Bank of India in July 1976.

The Department of Industries agreed that it will actively promote Indian Standards and ISI Certification Marks Scheme through its Quality Marking Wing. The Branch Office helped the Government of Bihar in the purchase of apparatus for the Central Testing Laboratory being built at Patna. The laboratory would start functioning next year and would

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provide facilities for testing diesel engines, paraffin wax, pesticides, leather, etc.

The membership subscription amounted to Rs 148 000, and sale of standards stood at Rs 69 000.

The Regional Advisory Subcommittee for the Branch Office held four meetings during the year under report and took a number of important decisions.

Western Region

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

Bombay — During the year under report, the Industrial Development Bank of India (IDBI) decided to: (a) allow 0.5 percent rebate in the interest on loans taken by ISI Certification Marks Licensees of small-scale sector from State Financial Corporation, and (b) refinance fully the loans taken by ISI Licensees and applicants for purchase of quality control and testing equipment.

The Tariff Advisory Committee of the General Insurance Corporation of India decided to give rebate on insurance premium to Industries which installed electrical equipment and fire fighting appliances bearing ISI Mark.

As a result of the efforts made for implementation of National Building Code, a meeting of the State Level Committee for revision of building bye-laws of local bodies in the State of Maharashtra was held on 24 February 1977, when two subcommittees were set up — one to review the development control rules and building bye-laws of the corporations, and the other to review the town planning rules and building bye-laws of municipal councils.

The Regional Office participated in various programmes organized by ISI and other Institutions and arranged for delivering of lectures and presentation of papers by its officers on different aspects of standardization. Some of the more important of these programmes are mentioned below:

<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>Organized by</i>
20 Apr 1976	Bombay	All India Seminar on Cotton Linters	Indian Standards Institution in collaboration with All India Cottonseed Crushers' Association

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<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>Organized by</i>
5 Sep 1976	Pune	Seminar on Limits Gauges and Standardization of Gauges	Institution of Standards Engineers
14 Oct 1976	Bombay	Seminar on Consumer and Standards	Indian Standards Institution
20-23 Dec 1976	Bombay	Symposium on Nuclear Reactor Instruments	Bhabha Atomic Research Centre, Bombay
6-8 Jan 1977	Bombay	Seminar on Standardization for Machine Tool Industry	Indian Institute of Plant Engineers
18 Jan 1977	Bombay	Seminar on Exports of Iron & Steel Strategy and Perspectives 1980-81	Iron, Steel & Hardware Merchants & Manufacturers Chamber of India

During the year, 304 applications for grant of licences were received and 140 new licences were granted. At the end of the period there were 771 operative licences and 362 applications at various stages of processing. Licences were issued for the first time for several new products including saccharin food grade, rubber mats, hypodermic syringes for insulin and TB injection, water coolers, cotton belting ducks, continuous sprayer knapsack type, sphygmomanometer aneroid type, safety razor blades, etc. Applications for licences for several new items were registered including different types of capacitors, cylinder liners, HDPE and plastic containers, ferrules for water services, fire fighting equipment, domestic electrical appliances (such as cooking ovens, mixer-cum-grinders, switches, wiring accessories), overhead projector, air receivers, surgical implants, rubber transmission belting, fenitrothion DP, benazyl chloride, *kattha*, etc.

The Government of Maharashtra offered about 180 square metres of accommodation at their Industrial Research Laboratory, Chunnabatti, Bombay to the Institution for housing its Regional Office Laboratory. The Laboratory was shifted to these premises in December 1976.

The Regional Office Laboratory tested 515 samples which included pesticides, biscuits, inks, cables, etc.

ISI participated in the Exhibition organized by Consumer Guidance Society from 11 June to 13 June 1976. World Standards Day was celebrated on 14 October 1976 by holding a seminar on 'Consumer and Standards'

inaugurated by the Sheriff of Bombay followed by a three-day exhibition of ISI-marked products.

During the period, a number of dignitaries visited the Regional Office, including the following:

- a) His Excellency Prof V. V. Boitsov, Minister of Standardization and President of the State Committee for Standards, USSR, on 24 November 1976. He was taken to Bhabha Atomic Research Centre (BARC) and Cable Corporation of India.
- b) Dr Jozsef Olajos, President, Hungarian Office for Standardization (MSZH) and Dr Laszlo Csery, Technical Director, MSZH on 21 February 1977. They were taken to Asian Cable Corporation for a visit.
- c) Dr V. I. Popkov, President, International Electrotechnical Commission (IEC) on 27-28 February 1977. He paid a visit to M/s Larsen & Toubro Limited and had discussions with members of the Indian Electrical Manufacturers Association.
- d) Directors and other senior officers of eight national standards bodies of developing countries, who were on a visit to India to participate in the Workshop on Standardization for Developing Countries at Delhi on 5-6 December 1976 when visits to industries of their interest were arranged. They also met the Chairman of the Export Inspection Council of India.
- e) Nine technical personnel, receiving training at New Delhi under the International Training Programme for Developing Countries. Their visits to industrial units were arranged as a part of the Training Programme.

The total sale of Indian Standards, conversion slides and binders during the year stood at Rs 0.56 million. The membership collection during the year amounted to Rs 0.82 million.

Ahmadabad — The Second Meeting of the Ahmadabad Advisory Committee was held in Ahmadabad on 21 February 1977 under the chairmanship of Dr P. C. Mehta, Director, Ahmadabad Textile Industry's Research Association (ATIRA). The Committee suggested a number of measures to promote standardization and spread standards consciousness in the Region.

The third meeting of the Action Committee for Guiding Implementation Work of National Building Code for the State of Gujarat was held in Ahmadabad on 30 April 1976 under the chairmanship of Shri M. D. Patel, Secretary and Chief Engineer, Public Works Department, Government of Gujarat. The Committee decided completely to modernise and re-write the existing PWD specifications and other codes in conformity with the

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National Building Code and other related Indian Standards by 1 January 1978 and also recommended the establishment of a permanent cell in the State Public Works Department for re-drafting the specifications.

The Branch Office organized the following seminars during the year under report:

<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>In Association with</i>
27-28 Aug 1976	Vadodara	Workshop on Low Cost Housing	M/s Jyoti Ltd, Vadodara and Institution of Engineers (Vadodara Chapter)
14 Oct 1976	Ahmadabad	Seminar on Standards for Social Development	Jyoti Sangh and All-India Manufacturers' Organization, Gujarat
6 Jan 1976	Vadodara	Seminar on Standards for Industry	Federation of Mills & Industries, Vadodara
29-30 Jan 1977	Bhavnagar	Seminar on Indian Standards	Engineers Association, Bhavnagar

A number of talks/lectures on various subjects relating to standardization and quality control were delivered by the officers of the Branch Office at different forums.

Two programmes on educational utilization of Indian Standards among faculty members of engineering college and polytechnics were held in Morvi and Vallabh Vidhyanagar in September 1976 and March 1977, respectively.

During the year, 143 applications for grant of ISI Mark were received; 69 licences covering a variety of products were granted.

The National Dairy Development Board, Anand, advised all the manufacturers that the milk testing and handling equipment manufactured/ marketed by them should conform to IS specifications.

The Directorate of Agriculture, Government of Gujarat issued directives to the manufacturing units of Agricultural Implements and Plant Protection Equipment to manufacture their products according to Indian Standards Specifications by 30 September 1977 to qualify themselves to be on the approved list of the Directorate.

As per the directives issued by the Industrial Development Bank of India (IDBI), Gujarat State Financial Corporation (GSFC) decided to extend financial benefits to small scale units who availed of the ISI Certification Marks Scheme.

The Branch Office participated in a number of exhibitions during the period under report. Different media of publicity were utilized to publicize various activities of the Institution.

The subscription of membership collected registered a total of Rs 0.228 million. The sale of Indian Standards amounted to Rs 163 326.

Southern Region

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

Madras — Though the Southern Regional Office and Laboratory moved to the CIT Campus, Adyar, towards the end of February 1976, the Southern Regional Office-cum-Laboratory building was formally inaugurated on 12 July 1976.

During the year under report, over 240 tender enquiries were dealt with and information was furnished to the purchasing departments about the Indian Standards for the stores purchased by them.

The Regional Office rendered assistance in initiating and improving quality control system through statistical quality control techniques to selected units engaged in the manufacture of PVC conduits and grey cotton yarn.

A Conference on adoption of modular bricks as recommended by the National Building Code, was held at Madras on 26 and 28 April 1976 in which representatives of construction departments and brick manufacturers participated. The Conference made a number of recommendations to encourage and popularize the use of modular bricks, including preparation of a pamphlet in Tamil on modular bricks as well as a documentary film. Accordingly, a pamphlet in Tamil on modular bricks was brought out and issued for circulation to the brick manufacturers in the State. A Conference for implementation of National Building Code of India in the State of Pondicherry was held in July 1976.

A number of meetings of the State-level implementation committee for Class E insulation of meters were held at Coimbatore. A meeting of the ISI technical committee for rotating machinery (ETDC 15) was held in Coimbatore towards the end of the year where the technical issues involved in the changeover in the class of insulation were discussed.

THE YEAR IN RETROSPECT

To promote implementation of Indian Standards and for general propagation of Standardization, the Regional Office participated in a number of conferences and seminars of which the following deserve mention:

<i>Date</i>	<i>Place</i>	<i>Subject</i>	<i>Organized by</i>
27 May 1976	Trivandrum	Seminar on Electronic Industry	Keltrons
24 Jul 1976	Trivandrum	Technical Co-ordination Cell on Fish and Fishery Products	Export Inspection Council
13-14 Aug 1976	Madras	Workshop on Developing Facilities for Electronics	Government of Tamil Nadu
16 Sep 1976	Ernakulam	Seminar on Science and Technology Policy for Tamil Nadu	Indian Standards Institution
15 Nov 1976	Cochin	Conference on Water Meters and Sanitaryware	Indian Standards Institution
10 Dec 1976	Madras	Seminar on Planned Maintenance and Reconditioning for Full Capacity Utilization	Small Industries Service Institute

During the year, 92 licences were granted under the ISI Certification Marks Scheme. Practically all the co-operative spinning mills in the State had either been granted licences or had applied for ISI certification marking of grey cotton yarn being produced by them. Most of the hosiery units in the State were brought under the ISI Certification Marks Scheme. Among the new products covered under ISI Certification Marks Scheme mention may be made of cycle tyres, a common consumer item.

As many as, 202 new applications for licences were received which included items like domestic electrical appliances, fire fighting equipments, agricultural sprayers, lubricants, cinema projectors, copper bottom stainless steel utensils, rubber gaskets for pressure cookers, etc.

The Tamil Nadu Investment Corporation agreed to allow a rebate of 0.5 percent in the interest on loans granted by them to small scale industries covering their products under the ISI Certification Marks Scheme.

Laboratory at the Regional Office tested 1923 samples. Facilities were provided for testing a number of new products including CTD bars, carbon paper for typewriting, handloom cotton bedsheets, aluminium conductors for insulated cables, structural steel (standard and ordinary quality), steel butt hinges, structural steel (high tensile), carbon steel billets, blooms, slabs and bars for forgings, etc.

Four training programmes were conducted for testing of pesticides and cotton vests.

The Regional Office participated in the following exhibitions where a display of ISI-certified products was arranged:

- i) Feel India Tourist Trade Fair, 1977, organized by the Tamil Nadu Tourism Development Corporation, Island Grounds, Madras, from 1 January-7 March 1977;
- ii) Twenty-seventh Calicut Health Education & Industrial Exhibition, organized by the Corporation of Calicut at Stadium Grounds, Calicut.

During the year under report, sale of Indian Standards amounting to Rs 0.357 million were effected. The total income from membership subscription stood at Rs 0.445 million.

Bangalore — The Branch Office made concerted efforts to promote implementation of Indian Standards. Some of the achievements are given below:

- a) Indian Telephone Industries Ltd, Bangalore, Dairy, Axil and Wheel Projects of the Indian Railways, Bangalore and Kudremukh Iron Ore Co Ltd, Bangalore intimated that they would implement Indian Standards from time to time in their organizations.
- b) The Registrar of Co-operative Societies in Karnataka State advised the six spinning mills in the co-operative sector to take up ISI Certification Marks for cotton yarn manufactured by them. In view of this the Bijapur Spinning and Weaving Mill put in their application and licence has been granted to this mill.
- c) In view of the Government Order for manufacture and sale of domestic electrical appliances conforming to Indian Standards, 9 applications were received processing of which for grant of licences is in progress. In order to facilitate operation of the Certification Marks Scheme for domestic electrical appliances, the Branch Office contacted the Central Power Research Institute, Bangalore and Controllerate of Inspection Electronics, Bangalore, about provision of complete testing facilities for testing of the

samples of domestic electrical appliances. These organizations have agreed and are setting up necessary testing equipment to strengthen the hands of ISI in certifying domestic electrical appliances.

During the year, 144 applications for grant of ISI Certification Marks Licence were received and 66 licences were issued. These cover a variety of products, such as condensed milk, biscuits, glass milk bottles, liquors, copper sulphate, various types of pesticides, stoneware pipes, monoblock pumps, conductors for overhead power transmission, cast iron fittings, alloy steel and rolled steel products.

In order to promote implementation of Indian Standards at various forums, the Branch Office participated in a number of seminars and symposia organized by different organizations during the period under report.

The Town and City Municipality Building Bye-laws of the Karnataka Government were revised in line with the National Building Code of India. ISI provided substantially technical help in the work. The finalized version of the Building Bye-laws was presented to the Chief Minister on 7 September 1976 for adoption by the Karnataka Government.

A 3-day Training Programme on Building Bye-laws and Planning Standards for local bodies of Karnataka State was organized at Bangalore in March 1977 by ISI in collaboration with the Government of Karnataka. About 50 delegates from the various corporations and municipal bodies, Housing Board, Bangalore Development Authority, Town Planning Department and Fire Service Department participated.

Director General, ISI, held a press conference in Bangalore to explain the various activities of ISI Bangalore Branch Office for the benefit of industries in Karnataka State. He also addressed the members of the Karnataka Small Scale Industries Association.

The District Magistrates of Bangalore, Belgaum and Mangalore issued directives to the various cinema halls in these cities to exhibit, free of cost, slides pertaining to ISI Certification Marking for quality to educate the consumers. The slides are being exhibited in these three cities.

The Film 'Third Party Guarantee' is being screened regularly in Visvesvaraya Industrial and Technological Museum for the information of the visitors.

Prof V. V. Boitsov, Minister for Standardization, USSR and President ISO and Dr V. I. Popkov, President, International Electrotechnical Commission visited Bangalore during November 1976 and February 1977, respectively. They went round various industrial units in Bangalore and

appreciated the standards and quality consciousness in industry in Bangalore.

In order to meet the increasing demands of the industry, the Sales and Membership Departments of Bangalore Branch Office were shifted to the adjoining building in October 1976.

The membership subscription collected during the year stood at Rs 260 755. The sale of Indian Standards amounted to Rs 163 326 as on 31 March 1977.

Hyderabad—To promote the use of statistical techniques in quality control, a review session of SQC for pesticides industry was organized. A special programme on statistical quality control for paper industry was also organized at the Sirpur Paper Mills — a licensee for white printing paper. In order to promote implementation of Indian Standards in various fields, the Branch Office participated in a number of conferences, seminars, discussions etc, organized by different organizations.

As a result of special drive for promoting the implementation of the international system of writing calendar dates, the Federation of Andhra Pradesh Chambers of Commerce and Industries, Electronics Corporation of India Ltd (ECIL) and Bharat Heavy Plate and Vessels Ltd (BHPV) informed that they have adopted the new system.

Operation of ISI Certification Marks Scheme in the region continued to progress satisfactorily. Licences granted during the year numbered 68. New products covering under the certification marking included safety razor blades, tamarind concentrate, rigid non-metallic conduits for electrical installations, 3-phase induction motors for agricultural purposes, copper sulphate, steel ingots and billets for the production of wire rod for the manufacture of machine screws.

The Regional Iron and Steel Controller and the Chairman of the Action Committee organized a meeting with the representatives of steel re-rollers and other producers of steel products in Andhra Pradesh to impress upon them the need for strengthening standardization and quality control, based on ISI Certification Marks Scheme.

The ISI Hyderabad Advisory Committee met on 1976-12-21 and its Action Committee met twice on 1976-07-19 and 1977-01-21. The Action Committee also submitted a Memorandum to Shri J. Vengal Rao, Chief Minister of Andhra Pradesh requesting the State Government to allot a suitable site and grant-in-aid for establishing ISI's own Laboratory-cum-Office Complex in Hyderabad.

At the instance of the Directorate of Industries, a meeting was organized with the representatives of the diesel engines manufacturers in

Andhra Pradesh to apprise them about operational details of the ISI Certification Marks Scheme.

As requested by the Andhra Pradesh State Financial Corporation (APSFC), the Branch Office continued to provide information on testing equipment required for quality control of various products in response to requests received from the prospective clients seeking loans from APSFC.

In a press release issued by the Commissioner of Police, all two-wheelers auto-drivers were advised to equip themselves with helmets preferably with ISI mark. Likewise the dealers were also required to procure and offer for sale ISI certified helmets. Government of Andhra Pradesh issued a Memorandum instructing all Heads of Departments and Collectors to ensure the use of only ISI-certified National Flags for official display.

Officers of the Branch Office delivered lectures on standardization at various forums. Efforts were made to publicise the activities of the Institution through different media.

During the year under report, the sale of standards amounted to Rs 142 810 while membership subscription collection stood at Rs 116 750.

Trivandrum — The Branch Office at Trivandrum, which started functioning from 15 March 1976, caters to the needs of Kerala State. During the year under report, the Branch Office concentrated on promotional activities and a drive was launched to make known to the industry in Kerala the work of the Indian Standards Institution. Special emphasis was laid on the small scale sector to keep pace with the ambitious plan of the State Government which aims at setting up 10 000 small scale units in a period of five years.

In order to enlarge the activity in the field of certification marking, particularly in the small scale units, assistance was provided to the commissionerate towards drawing plans for establishment of seven testing centres in the State. As a further incentive for small Scale units, follow-up with the Kerala Financial Corporation, resulted in the Corporation providing relief in the rate of interest on refinance, and also advancing money for establishing/improving testing facilities to such of the small scale units which joined ISI Certification Marks Scheme.

The Stores Purchase Department of the State Government issued directives to all state purchasing agencies to give preference to ISI-certified goods. Coupled with this directive, the State Government also directed to accord a special price preference to goods produced by the small scale units within the State.

The Branch Office participated in the following seminars/workshops:

- a) First All India Seminar on Clay.
- b) Annual Convention of the Indian Society for Technical Education.
- c) Workshop on Domestic Electrical Appliances, organized by the Small Industries Service Institute, Trichur & Kerala State Small Industries Association jointly.

Northern Region

In the Northern Region, there are two Branch Offices set up in Chandigarh and Kanpur functioning directly under the Headquarters in New Delhi.

Chandigarh — The Branch Office made special efforts during the year to maintain close liaison with the Government Departments, industrial units, associations, etc, for promoting wider implementation of Indian Standards and greater acceptance of goods bearing ISI Certification Mark. Some of the achievements are given below:

- a) A circular was issued by the Department of Industries, Government of Punjab to all its field officers for popularising ISI Mark and other activities of the Institution in their areas.
- b) An order was issued by the Chief Engineer (Irrigation), PWD, Punjab to all concerned for adoption of modular bricks with effect from 1 January 1978.
- c) A circular was issued by the Directorate of Industries, Government of Haryana, to various manufacturers in the State to cover agricultural discs under the ISI Certification Marks Scheme.

A programme on Educational Utilization of Standards was organized on 26-27 March 1977 in the Regional Engineering College, Kurukshetra. The programme was inaugurated by Dr S. K. Dutta, Vice-Chancellor, Kurukshetra University and was attended by over 80 faculty members of the Regional Engineering College.

The Branch Office participated in the following exhibitions during the year:

- a) Summer Festival, Simla, from 21 May to 15 June 1976.
- b) J & K Industries Exhibition, Srinagar, 1 September to 30 October 1976.

In addition, exposition of goods carrying ISI Mark, was organized in the premises of the Branch Office on the following occasions:

- | | | |
|------------------------|-----|-----------------|
| a) World Standards Day | ... | 14 October 1976 |
| b) ISI Foundation Day | ... | 6 January 1977 |

The sale of Indian Standards during the year under review amounted to Rs 70 635.

Plans for the proposed ISI Regional Centre at Mohali drawn by the Chief Architect, Government of Punjab were approved by the Institution and returned to Director of Industries, Punjab for proceeding further in the matter. Thereafter, administrative approval of rough cost estimates of the Public Works Department from the Commissioner of Industries and Secretary to the Government of Punjab, Industries Department have been received and it is now expected that the construction of the building would be taken up shortly.

Kanpur — A 6-day Training Programme on Quality Management jointly sponsored by the Institution, National Productivity Council and Kanpur Productivity Council was organized at Kanpur from 12 to 17 July 1976.

The Branch Office continued to represent ISI on a number of panels of Export Inspection Council constituted for evaluating export-worthiness of various units in the operational zone of the Branch.

During the period under review, 45 new licences were issued under the ISI Certification Marks Scheme raising the total valid licences to 158.

The UP Financial Corporation, Kanpur decided to provide soft loans up to Rs 30 000 without any margin to ISI licensees and applicants for the purchase of laboratory equipment and also allow 0.5 percent rebate on interest. The Deputy Director (Plant Protection), Government of UP, Lucknow decided to purchase only ISI-marked pest control equipment. Besides, the UP Government accorded 5 percent price preference to ISI-marked steel products.

A spot survey of about 70 diesel engines in actual use in various parts of Uttar Pradesh was conducted and a report compiled to assess the impact of ISI Certification on farmers.

The total membership collection amounted to Rs 184 150 and the sale of Indian Standards stood at Rs 143 526.

COORDINATION AT INTERNATIONAL LEVEL

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

During the year under report, the Institution actively participated in 111 Committees of ISO and almost all Committees of IEC. India continued to hold the Secretariats of the following 21 technical committees, subcommittees and working groups dealing with subjects of interest to the country:

1. ISO/TC 50 Lac
2. ISO/TC 56 Mica
3. ISO/TC 113 Measurement of Liquid Flow in Open Channels
4. ISO/TC 149 Cycles
5. ISO/TC 8/SC 9/WG 3 Solid Lifesaving Apparatus
6. ISO/TC 8/SC 11 Ship Building — Terminology, Symbols, Drawings, etc
7. ISO/TC 12/SC 1 Procedures for Inter-conversion of Value
8. ISO/TC 17/SC 2 Terminology, Classification and Designation of Steel
9. ISO/TC 17/SC 8 Dimensions and Tolerances of Structural Steel Sections and Bars
10. ISO/TC 17/SC 8/WG 1 Hot Rolled Sloping Flange I-Beam Column and Channel Sections
11. ISO/TC 34/SC 7 Spices and Condiments
12. ISO/TC 38/SC 8 Physical Testing of Fabrics and Fabric Terminology
13. ISO/TC 45/WG 4 Rubber and Rubber Products — Physical Properties
14. ISO/TC 54/WG 7 Oil of Vetiver
15. ISO/TC 113/WG 1 Measurement of Liquid Flow in Open Channels — Velocity Area Methods
16. ISO/TC 113/WG 2 Measurement of Liquid Flow in Open Channels — Notches, Weirs and Flumes
17. ISO/TC 113/WG 3 Measurement of Liquid Flow in Open Channels — Glossary of Terms
18. ISO/TC 113/WG 4 Measurement of Liquid Flow in Open Channels — Dilution Methods
19. ISO/TC 113/WG 5 Measurement of Liquid Flow in Open Channels — Flow Measuring Instruments and Equipment
20. ISO/TC 113/WG 6 Measurement of Liquid Flow in Open Channels — Sediment Transport
21. IEC/TC 43 Electric Fans for Domestic and Similar Uses

Shri D. C. Kothari, Vice-President of ISI and Shri Y. S. Venkateswaran, Deputy Director General, ISI, attended the ISO General Assembly which met in Geneva on 20-24 September 1976. Shri Venkateswaran also attended the Seminar for ISO Technical Secretaries held on 15-17 September 1976 and the meeting of the ISO Development Committee (DEVCO) on 21-22 September 1976.

During the year under review, India regained its seat in the ISO Council after a keenly contested election. India's election to the Council was in recognition of its good work done in the field of standardization.

Shri B. S. Krishnamachar, Director General, ISI, attended the meeting of ISO Planning Committee (PLACO) held in Geneva on 22-24 February 1977. He also visited the national standards bodies of France, UK and Germany during 13-21 February 1977.

Prof V. V. Boitsov, Minister of Standardization and President of the State Committee for standards of the Council of Ministers of USSR visited India from 16 November to 26 November 1976 at the invitation of the Government of India. During his stay, Prof Boitsov received 'Lal C. Verman Award' instituted by Lal C. Verman Research and Education Trust for the advancement of standardization. He had important discussions in connection with Indo-Soviet Collaboration in Standardization and Metrology with the Union Minister of Civil Supplies and Cooperation and the Deputy Chairman of the Planning Commission. Prof Boitsov also addressed Members of the ISI Executive Committee and Heads of Departments of the Institution. Apart from his programme in New Delhi, Prof Boitsov also visited Bangalore, Madras and Bombay.

The Indo-Soviet Cooperation in the field of standardization and Metrology made considerable progress during the year. In pursuance of the decision taken at the third meeting of the Working Group on Standardization and Metrology held in Moscow during 7-14 October 1975, the following important events took place during the year under report:

- a) The Fourth Meeting of the Working Group was held in New Delhi during 22-29 December 1976, in which a five-member Soviet Delegation participated under the Chairmanship of Mr I. H. Sologian, Deputy Chief of Metrology Department, GOSSTANDARD, Moscow. The Indian side led by the Director General, ISI, included senior functionaries from ISI, the National Physical Laboratory and the Directorate of Weights & Measures. In this meeting, a working programme for the year 1977 was chalked out and two new themes were included at the suggestion of the Soviet Delegation.
- b) A two-member Indian Delegation consisting of Shri Ram D. Taneja, Director (Publications), ISI, and Major R. Thiagarajan,

Project Manager, Technology Information Systems, Electronics Commission, visited Moscow during 23 June to 1 July 1976 to discuss and review with Soviet experts the progress made towards the establishment of automated information retrieval system (AIRS) relating to standardization. The discussions reviewed in general the areas so far covered in the preparation of indexing vocabulary including exchange of views for the development of information retrieval language. The experts also drew up a working programme for 1977.

- c) Director General, ISI, visited GOSSTANDART, Moscow for 6 days for discussion with Soviet experts on co-ordination of Standards for ferro alloy refractories and low-cost grades of stainless steel. During his visit, he also acquainted himself with the work of UNIDO courses on standardization in Moscow. A two-member Russian Delegation headed by Madame N. I. Kuznetsova, Chief Engineer, GOSSTANDART, held discussions in New Delhi during 8-13 December 1976 on refractories with the Indian Delegation headed by Shri J. C. Banerjee, Chairman, Refractories Sectional Committee (SMDC 18). During this meeting, India and USSR exchanged information on various Indian and USSR standards on refractories. A questionnaire prepared by India seeking information on the practices followed in USSR in regard to raw materials, manufacture and testing procedure for refractories was discussed. As a result of the deliberations at this meeting, Indian Standards will now be reviewed by the Refractories Sectional Committee.
- d) An Indian Expert from the National Physical Laboratory (NPL) visited Moscow for 37 days for discussion with Soviet experts regarding the methods and standard equipment used in VNIIM, Leningrad, in the field of standardization of volt using Josephson effect and comparison of the data obtained. Another Indian expert from the National Physical Laboratory (NPL) visited VNIIM, Leningrad, for 40 days for discussion with Soviet experts regarding the methods and equipment used for realizing of Farad in VNIIM using calculable capacitors. A two-member Russian Delegation visited India for 15 days for discussions with Indian experts on the methods and means of estimating the influence of tropical surroundings on parameters of electrical and electronic equipment and materials.

A three-week Workshop on Standardization for Developing Countries was organized in New Delhi during 22 November-11 December 1976. Directors and senior functionaries of nine National Standards Bodies of Algeria, Brazil, Burma, Iraq, Jamaica, Mauritius, Nigeria, Tanzania and Ecuador participated in the Workshop. The Workshop lent a new

dimension to the programmes of mutual cooperation in standardization among developing countries as it provided the much-needed forum for exchange of information and views at the highest level. The deliberations of the Workshop related to different activities of the national standards bodies including formulation of standards and their implementation, financial and administrative control, technical information services, etc. After the deliberations and visits to organizations and industries in and around Delhi, the delegates also visited Chandigarh and Bombay.

A two-member Hungarian delegation led by Dr J. Olajos, President of the Hungarian Standards Organization (MSZH) visited India from 14 to 21 February 1977 with the object of promoting further development of techno-economic relations between the Hungarian People's Republic and the Republic of India with respect to standardization and ensuring closer cooperation between MSZH and ISI.

Prof Dr V. I. Popkov, President of the International Electrotechnical Commission (IEC) visited India between 24 February to 5 March 1977. During his stay he met distinguished scientists and engineers in the field of electrotechnology and made on-the-spot study of a number of electrical and electronic industries. Mr Olle Sturen, Secretary General of ISO visited New Delhi from 15 to 17 March 1977.

FORMULATION OF INDIAN STANDARDS

0. INTRODUCTION

0.1 Part II of the Report gives, in brief, a record of the technical work done during 1976-77 by different divisions and departments of the Institution in respect of the formulation of Indian Standards.

0.2 Formulation of Standards — During 1976-77, 503 new Standards were adopted and sent to press, 268 standards were revised. 413 new proposals for formulation of Indian Standards were received and 469 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 1972-73 is given in Fig. 3.

0.3 Technical Committees of ISI — As on 31 March 1977, 2 121 technical committees with a total membership of 31 150 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 under report, 986 committee meetings were held.

The growth in the membership number and activities of the technical committees since 1972-73 is shown in Fig. 4 and 5.

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

1. AGRICULTURAL AND FOOD PRODUCTS DIVISION

1.1 During the year under report, the Agricultural and Food Products Division Council formulated 80 Indian Standards (including revision of 24 existing standards) on important subjects relating to farm power and machinery; food additives; food hygiene, sampling and analysis

Fig. 3 GROWTH OF INDIAN STANDARDS

- STANDARDS IN FORCE
- STANDARDS PUBLISHED
- ▨ STANDARDS REVISED

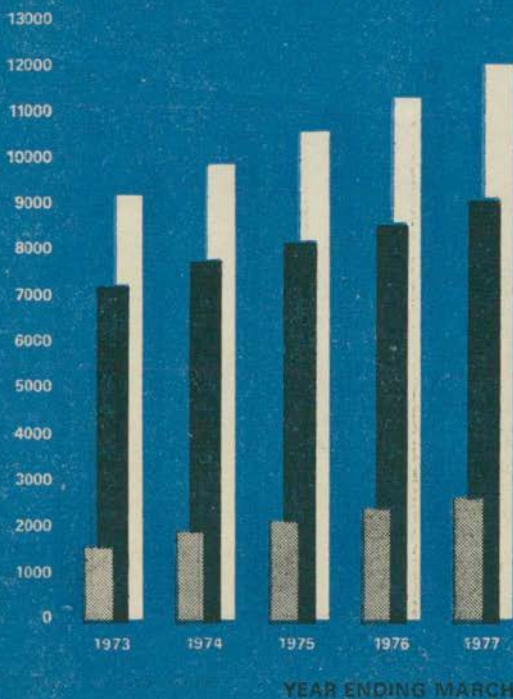


Fig. 4 GROWTH OF COMMITTEE MEMBERSHIP

■ NUMBER OF COMMITTEE MEMBERS

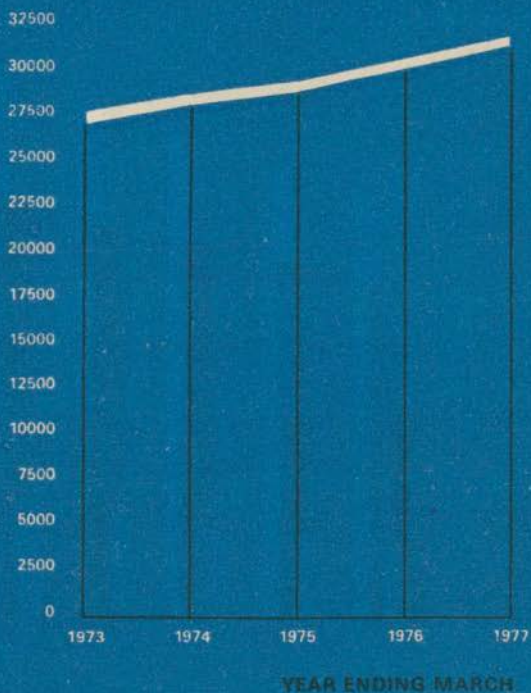


Fig. 5 GROWTH OF COMMITTEES AND THEIR ACTIVITIES

NUMBER OF COMMITTEES
 NUMBER OF MEETINGS HELD

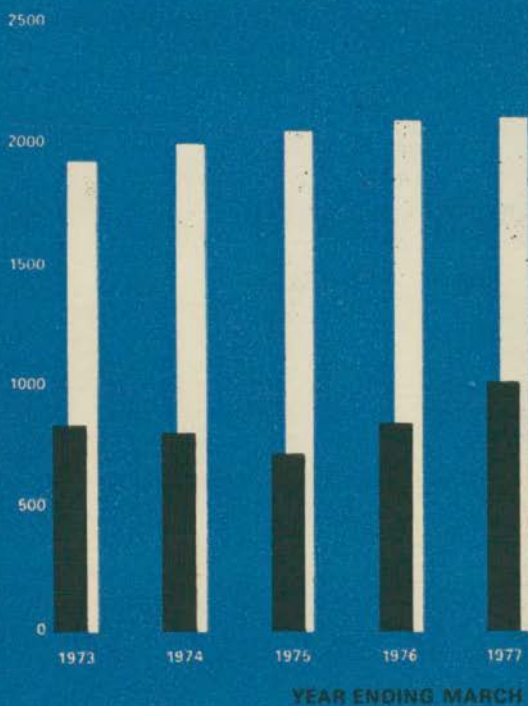


TABLE 2 RECORD OF WORK OF ISI TECHNICAL DIVISIONS AND DEPARTMENTS (FOR 1976-1977)

(Clause 0.4)						
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	150	71	80	55	93	164
Chemical	414	217	132	26	121	13
Civil Engineering	321	140	89	87	148	49
Consumer Products and Medical Instruments	105	84	73	10	58	4
Electronics and Telecommunication	61	44	41	5	63	56
Electrotechnical	172	54	72	71	93	23
Marine, Cargo Movement and Packaging	90	50	38	4	43	37
Mechanical Engineering	293	156	112	67	152	97
Structural Metals	339	95	88	27	111	10
Textiles	109	41	43	23	57	9
Miscellaneous	67	34	3	—	8	7
Total	2 121	986	771	375	947	469

(including sensory evaluation); fish and fish products; storage structures; nutrition; pesticides; animal housing and equipment; dairy equipment, etc, among which particular mention may be made of the following:

- a) *IS : 8190 (Part I)-1976 Requirements for packing pesticides: Part I Solid pesticides and IS : 8190 (Part II)-1976 Liquid pesticides* — These standards acquired statutory recognition as they were adopted in toto by the Central Insecticides Board.
- b) *IS : 8220-1976 Protein-rich concentrated nutrient supplementary foods, IS : 8222-1976 Edible leaf protein concentrates, IS : 8211-1976 Edible soya protein isolates and IS : 8212-1976 Groundnut protein isolates* — These standards cover protein rich concentrated nutrient supplementary foods which are helpful in fighting protein-calorie malnutrition.

FORMULATION OF INDIAN STANDARDS

- c) *IS : 8122 (Part I)-1976 Test code for combine harvester thresher : Part I Terminology* — Combine-harvester-thresher, commonly known as combine, is being increasingly used for a combination of operations, such as harvesting, threshing, separating and cleaning particularly for cereal crops in the country. As a result of its increasing use, need was felt for standardized test to help the testing authorities in the assessment of performance of combine on a uniform and rationalized basis. It was decided to issue this standard in two parts. This part covers the definitions of different terms most commonly used in relation to combine testing to help in proper and uniform understanding of various terms. Part II of the standard dealing with performance test is under preparation.

1.2 Besides formulating new Indian Standards, due steps were taken to revise standards already in existence for five years or more. These revisions included standards on icing sugar; comb foundation sheets; fast green FCF, food grade; green S, food grade; brilliant blue, FCF, food grade; canned okra (*BHINDI*); canned bitter gourd (*KARELA*); mango nectar; canned mango pulp; dried white beets (*stolephorus* sp), mackerel (*rastreiliger* sp) canned in brine; *TUNA* canned in oil; Macaroni, spaghetti and vermicelli; *BESAN*; edible maize starch (corn flour); glossary of terms relating to starch; stainless steel road milk tankers; methods for detection of bacteria responsible for food poisoning and foodborne diseases; as also agricultural machinery, such as rotary paddy weeder; dimensions for three-point linkage of agricultural wheeled tractors; power take-off shaft of agricultural tractors; and pesticides like copper oxychloride dusting powder; copper oxychloride water dispersible powder concentrates; and cuprous oxide water dispersible powder concentrates.

1.3 As a result of efforts for promoting implementation of Indian Standards on agricultural machinery, Directors of Agriculture of Karnataka, Tamil Nadu, Haryana, Uttar Pradesh, Kerala, Andhra Pradesh, and Central Stores Purchase Department, Government of Rajasthan took policy decisions to purchase/give preference to ISI-certified crop protection equipments.

Development Commissioner, Small Scale Industries issued a circular to the Directors of Industries and Directors of Small Industries Services Institutes requesting that the indigenous manufacturers of agricultural implements particularly of agricultural discs may be asked to up-grade their quality in keeping with the relevant Indian Standards.

Directorate General of Technical Development issued instructions to the discs manufacturers to obtain ISI Mark for their products.

2. CHEMICAL DIVISION

2.1 During the year, increased emphasis was laid on review of existing standards keeping in view the need to make use of the available natural resources, conservation of scarce raw materials and bye-products; and substitution of imports.

2.2 The year witnessed processing of 132 standards for publication out of which 100 were published. Special mention may be made of the following:

- a) *IS : 7524 (Part II) - 1976 Methods of test for eye protectors: Part II Special tests* — Use of eye protectors in industrial operations of hazardous nature is necessary for reasons of personal safety. This standard prescribes methods of special tests for these goggles to determine their capability to provide protection to the eyes against specific nature of hazards.
- b) *IS : 8100-1976 Specification for water colours for students* and *IS : 8101-1976 Specification for poster colours* — These are pioneering standards as no standards body of any other country has formulated national standards on these subjects.
- c) *IS : 8118-1976 Smoke emission levels from diesel vehicles* — This standard prescribes maximum levels of smoke emission from diesel vehicles along with methods for measurement of smoke by indigenously available equipment.
- d) *IS : 8170-1976 Guidelines for ready identification of finished leathers for export* — A request to prepare this Indian Standard was received from the Ministry of Commerce soon after the Government of India imposed restrictions on the export of raw and semifinished leathers. The standard has been prepared in consultation with manufacturers and traders, export houses, research institutions and Government authorities.
- e) *IS : 8180-1976 Specification for synthetic detergent tablets* — India is the only country which has published a national standard for this product and the document is considered to be a pioneering publication in this field.
- f) *IS : 8323-1977 Specification for palm oil* and *IS : 8361-1977 Specification for palmolein* — These standards were prepared urgently at the request of the Union Ministry of Civil Supplies in view of the import of palm oil and palmolein on a substantial scale, to overcome the serious shortages of edible oils and fats. These specifications which were formulated in the first instance following emergency procedures have since been converted into 'normal' Indian Standards.

FORMULATION OF INDIAN STANDARDS

- g) *IS: 8401-1977 Specification for acid slurry*— Acid slurry is the starting material for synthetic detergent powders and tablets for household laundry use. Chemically, the product is known as alkyl benzene sulphonic acid. This material is now being made in large quantities in the organized sector as well as small scale sector. The Development Commissioner, Small Scale Industries, Government of India, requested ISI to prepare urgently specification for acid slurry so that the small scale sector could be persuaded by them to make and use acid slurry only of standard quality. It is hoped that with the publication of this standard, the quality of synthetic detergent household powders and tablets in the market will improve substantially.

2.3 The Chemical Division Council (CDC) at its meeting held on 1 June 1976 recommended that it may be split-up into two Divisions, one dealing with the subjects of coal, petroleum and derived products, and the other dealing with the remaining field. The proposal was accepted by the General Council at its last meeting held on 28 December 1976. Steps are being taken to organize the new Division.

2.4 During the year meetings of the Standing Working Committees of the Chemical Division Council, SWCC and Standing Working Committee for Petroleum, Coal and Their Derived Products, SWCPC, were held on 20 October 1976 under the chairmanship of Dr S. P. Varma. The compositions of 23 Sectional Committees were reviewed and committees were reconstituted.

3. CIVIL ENGINEERING DIVISION

3.1 During the period under review, 100 Indian Standards were formulated by the Civil Engineering Division Council. Considerable progress was made in the work of relating to the preparation of Handbook on Building Construction Practices.

3.2 Of the important standards formulated during the year, mention may be made of the following:

- a) Dimensions and materials of cement rotary kilns, components and auxiliaries (dry process with suspension preheater) (IS : 8125-1976)
- b) Code of practice for earthquake resistant design and construction of buildings (*Revision of IS : 4326-1967*)
- c) Recommendations relating to primary elements in the design of school library buildings.
- d) Code of practice for protection of slope for reservoir embankment (IS : 8237-1976)

- e) Methods for evaluation of working qualities of timber under different operations (IS : 8292-1976)
- f) Guidelines for design of under seepage control measures for earth and rockfill dams

3.3 On the basis of a request from the Department of Industrial Development, Government of India for urgently laying down quality requirements of cements currently manufactured in the country, the following 4 specifications were published on an emergent basis:

- a) Specification for rapid hardening portland cement (IS : 8041 E-1976)
- b) Specification for white portland cement (IS : 8042 E-1976)
- c) Specification for hydrophobic portland cement (IS : 8043 E-1976)
- d) Specification for oil well cement (IS : 8229 E-1976)

3.4 Of the draft Indian Standards taken up during the period under report, particular mention may be made of the following:

- a) Hydraulic design of tunnel type intake structures
- b) Guide for requirements of low cost housing (Additional section to National Building Code)
- c) Recommendations for minimizing evaporation losses from open water storages
- d) Guide for the selection of proper method of stream gauging and devices for measuring velocity and direction
- e) Code of practice for measurement of seepage losses from canals by ponding method
- f) Safety in construction, operation and maintenance of river valley projects: Part II Amenities, protective clothing and equipment
- g) Method of test for abrasion loss of concrete
- h) Code of practice for safety of industrial buildings (acetylene)

3.5 Revision of Concrete Codes — The work of revision of the two concrete codes, ' IS : 456-1964 Code of practice for plain and reinforced concrete ' and ' IS : 1343-1960 Code of practice for prestressed concrete ', made considerable headway. The Panel responsible for the revision held three meetings and processed three parts of the draft revision of IS : 456-1964 for wide circulation; two parts each of the draft revisions of IS : 456-1964 and IS : 1343-1960 were approved for finalization. Revision of IS : 456 will be in seven parts and that of IS : 1343 will be in four parts.

input arrangement. This revision has been undertaken to include the methods of measurement of the characteristics of hearing aids with induction pick-up coil input.

5.3 The first meeting of the Standing Working Committee, Electronics and Telecommunication (SWCLT) was held on 5 October 1976 under the chairmanship of Maj-Gen K. K. Mehta. The main item considered at the meeting was the re-organization of various committees dealing with electronics and telecommunication.

On the subject of implementation of Indian Standards, it was proposed that within the national policy of harmonization of Indian Standards, the national standards should be accepted in all spheres and should form the basis for all standards effort. Other suggestions dealt with: (a) improved publicity of the contribution by ISI, (b) the responsibilities to be undertaken by the Committee members to explain the role of Indian Standards and work done by ISI at different forums, and (c) collection of information relating to conformity with the appropriate Indian Standards from the various manufacturers.

5.4 In accordance with the recommendations of the Panel on Guidelines for Standardization in Electronics of Government of India, action was initiated to harmonize the standards brought out by the Institution and the Electronics Components Standardization Organization (LCSO), which will ultimately lead to a single national standard and adoption by all interests concerned. With the availability of harmonized Indian Standards, the corresponding Joint Services Specifications will be withdrawn.

6. ELECTROTECHNICAL DIVISION

6.1 During the period under report, 72 Indian Standards were published or were under print, 26 existing Indian Standards were revised, 67 draft standards were finalized for publication and 93 were issued in wide circulation. Preliminary draft standards on a number of new subjects were also prepared.

6.2 Among the standards printed/prepared during the period under report, special mention may be made of the following:

- a) *Electrical irons* (revision of IS : 366) — The revision covers the general, safety and performance requirements for electrical irons to ensure personal safety against electric shock, safety against the effect of excessive temperature and fire, and reliable operations.
- b) *Conductors for overhead transmission purposes* (revision of IS : 498) — During the revision, the standard has been split into different parts depending upon different types of conductors,

namely, Part I for aluminium stranded conductors; Part II for aluminium conductors, galvanized-steel reinforced; Part III for aluminium conductors, aluminized-steel reinforced; and Part IV for aluminium alloys stranded conductors (*under preparation*). The main features of this revision are: (a) alignment of the national practice with the international standards, (b) further rationalization of the conductor sizes, and (c) introduction of aluminized steel reinforced aluminium conductors. The development of aluminized steel reinforced aluminium conductors will help in the conservation of zinc which is an imported material.

- c) *Power transformers (revision of IS : 2026)* — The revision which is in four parts covers general requirements, temperature-rise requirements, insulation levels and dielectric tests, tapping, marking and connections for power transformers. The revision follows the latest developments at the international level and includes a special test to find out the short circuit capabilities of power transformers.
- d) *Electrocardiograph (IS : 8048-1976)* — Specification for electrocardiograph covers the safety and performance requirements and test methods for direct-writing single channel and multichannel electrocardiographs. The standard also gives some essential information relating to the use and description of simple devices by which some of the more important requirements like low and high frequency response, linearity, input impedance and common mode rejection ratio can be spot-checked.
- e) *Multipurpose dry batteries (IS : 8144-1976)* — This standard has been prepared on a request from the Ministry of Industrial Development, and attempts to reduce the varieties of batteries being currently marketed.
- f) *Conductors for insulated electric cables and flexible cords* — Until recently the practice of specifying the exact number of wires and exact diameter of each wire was followed. In this standard, for a conductor of a particular cross-sectional area, maximum resistance and flexibility control is effected by specifying either the minimum number of wires or the maximum diameter of wires. This method gives sufficient flexibility in manufacture and results in economy in the use of conductor materials.
- g) *Compression joints for aluminium conductors in insulated cables* — In order to lay down the essential dimensions vital for interchangeability, IS : 8308-1976 and IS : 8309-1976 have been developed to cover the compression type, in-line connectors and terminal ends, respectively. These standards lay down important dimensions, such as barrel diameter, barrel length, palm widths, stud hole diameter, etc.

6.3 The Electrotechnical Division Council (ETDC) met on 23 July 1976 under the Chairmanship of Shri J. S. Zaveri, Managing Director, Bharat Bijlee Ltd, Bombay. The Council unanimously re-elected Maj-Gen K. K. Mehta, Chief Controller, Research and Development, as Vice-Chairman of ETDC for another term of three years. The Council appreciated the steps taken by the Government of India in bringing domestic electrical appliances and wiring accessories under the purview of *Household Electrical Appliances (Quality Control) Order*. The need for reliable electrical equipment was stressed and it was recommended that the reliability aspect should be incorporated in the specifications related to electrical power equipment.

6.4 The Standing Working Committee, Electrotechnical Division Council (SWCET) held its 16th meeting on 18 February 1977 at New Delhi under the Chairmanship of Shri J. S. Zaveri. The SWCET appointed new Chairmen for four Sectional Committees, besides reviewing the composition of five Sectional Committees. The Committee desired that the use of ISI Certification Mark should be made obligatory for domestic electric appliances covered under the purview of the *Household Electrical Appliances (Quality Control) Amendment Order* as it was felt that without the use of ISI Mark, the effectiveness of the Order could not be ensured.

7. MARINE, CARGO MOVEMENT AND PACKAGING DIVISION

7.1 During the period under report, 38 Indian Standards were sent for printing, 3 Indian Standards were revised. Forty draft standards were finalized for publication and 43 drafts issued into wide circulation. Besides, 55 preliminary draft standards were prepared on new subjects.

7.2 A draft Indian Standard on the 'Airconditioning requirements on boardships' was finalized in an effort to provide an efficient airconditioning system to maintain a high standard of operational alertness at the various crucial points of the ship, including the bridge and the machinery control room. The requirements for the airconditioning are very stringent for the operation of electronic equipment as well as machinery, such as gyro, radar, etc.

7.3 Among the standards published during the year particular mention may be made of the following:

IS : 8274-1976 Specification for drawbar eyes and forecarriage pins for connection between trailers of gross mass above 5 tonnes and up to 35 tonnes and transport tractor

IS : 8296-1976 Specification for towing jaw for use between trailers of up to 35 tonnes gross mass and transport tractor

IS : 8297-1976 Specification for towing jaw for use between trailers of up to 16 tonnes gross mass and transport tractor

IS : 8298-1976 Specification for towing jaw for use between trailers of up to 5 tonnes gross mass and transport tractor

IS : 8299-1976 Specification for towing hook for use between trailers of up to 16 tonnes gross mass and transport tractor

IS : 8300-1976 Specification for towing hook for use between trailers of up to 35 tonnes gross mass and transport tractor

As there has been considerable increase in the general cargo movement in the country and more and more stress is being laid on the movement of cargo by freight containers, the truck-trailer combination is playing an important part. The main object of the above standards is to provide properly designed inter-connections between the trucks and trailers and to develop guidelines to build up infrastructure for the entire range of trailers, from below 5 tonnes capacity up to 35 tonnes. Since the most crucial part in a transport tractor combination is the towing jaw, the towing hook or the draw-bars, these standards should prove very useful for the industry.

IS : 8178 (Parts I and II)-1976 — This standard issued in two parts covers the general requirements and testing of thermal containers suitable for international exchange of cargo requiring special environmental conditions in transportation. The types covered include insulated, heated and refrigerated containers.

7.4 In the packaging field a break-through was achieved when the following two draft Indian Standards were finalized:

Specification for aerosol dispensers — Aerosol dispensers which are pressurized containers permit controlled dispensing of the contents, such as perfumes, deodorants, shaving creams, insecticides, etc. The range of these dispensers varies from purse-size aerosols holding a few grams of pharmaceuticals or perfumes to giant size cans which can be filled with cleaning and sanitizing liquids. In between, a wide choice of two-piece and three-piece tin plate cans or aluminium cans without seams is available. This standard is expected to ensure the safe and efficient use of the aerosol dispensers.

Specification for roll seal pilferproof closures — The roll seal aluminium closure is one of the most extensively used pilferproof closure fitted on glass bottles containing products, such as liquor, pharmaceuticals, chemicals, syrups and food articles. This standard specifies the dimensions, sampling and testing of such closures. Implementation of the standard would ensure interchangeability of the closure with glass bottles manufactured by different manufacturers.

8. MECHANICAL ENGINEERING DIVISION

8.1 During the period under report, 112 Indian Standards were sent to press, 125 draft Indian Standards were finalized and 155 draft standards were issued into wide circulation for eliciting comments. Besides, preliminary draft standards on 132 subjects were also prepared.

8.2 A brief account of the important subjects covered during the period under review is given below:

Springs — IS : 7987 Helical extension springs, has been prepared recently by the Springs Sectional Committee (EDC 75) in two parts. These standards pertain to extension springs and form the basic design and calculations for extension springs as well as the specifications for diametral tolerances, load tolerances, length tolerances and spring ends for various extension springs. These standards are expected to be used extensively by the industry as they aim at elimination of confusion presently existing in the trade. By providing guidance for design of cold coiled extension springs and also the tolerances that are expected to be encountered in the normal manufacturing process, the standards would simplify the design and application of such springs. These specifications also provide for wider or closer tolerances for diameter, load and lengths, if required functionally and their use in the educational institutions in the under-graduate classes will help the students become familiar with the design and manufacturing trends in the spring industry.

Engineering Drawings — The Code of practice for general engineering drawings, IS : 696 initially contained a section on tolerances, performance and of position. In the second revision of this standard, the subject was omitted. This subject has now been covered in detail in the series of standards IS : 8000 and comprises 4 parts. Out of these, Parts II, III and IV have already been published while Part I is in the press.

An important contribution in this regard is the special publication SP : 13 Guide to the principles of geometrical tolerancing which is under print. It contains in a simplified manner the principles of how tolerances of form and of position should be shown on the drawings. It is hoped that this standard would be used extensively by the designers, the draftsman and the shop-floor people.

Pumps — Submersible pumpsets are used extensively in agriculture for pumping ground water as well as lift irrigation schemes from river beds. The technical requirements of these pumps were covered generally by IS : 1710-1972 'Vertical turbine pumps for clear, cold, fresh water (first revision)'. As a result of the use of the standard, it was felt that a separate specification was needed to cover the technical requirements of submersible pumpsets since the basic design of these pumpsets was quite different. In view of the large-scale purchase by

Government agencies for this type of pump, the Pumps Sectional Committee, EDC 35, formulated IS : 8034-1976 'Specification for submersible pumpsets for clear, cold, fresh water'. This standard contains recommendations relating to the materials of construction, general requirements, performance tests, tolerances, etc. Requirements have been laid down for the general design and construction of submersible motor which forms an integral part of the pump. Moreover, the concept of overall efficiency has been introduced in the standard and an attempt has been made to align it with the international standard with regard to the tolerances on efficiency.

Gas Cylinders — The acetylene cylinders which were previously imported are shortly going to be manufactured in India. The manufacture and filling of acetylene gas cylinders is controlled statutorily. With a view to educating manufacturers, users and fillers of these cylinders, IS : 8198 (Part IV)-1976 'Code of practice relating to the use of portable steel cylinders for compressed gases : Part IV Dissolved acetylene gas' has been prepared. The Code lists important physical and chemical properties of acetylene gas and gives a list of specifications (including foreign standards) which are acceptable to the statutory authority. It covers the inspection of acetylene cylinders at different stages, that is, manufacture, usage and annual examination. Other statutory requirements regarding various fittings, filling, marking and labelling are covered besides storage, handling, transportation and general precautions. The standard is an important complement to statutory regulations as well as IS : 7312-1974 'Welded low carbon steel dissolved acetylene gas cylinders'.

Hand Tools — IS : 8235-1976 covers safety procedures for hammers and mallets, wrenches and spanners, metal cutting tools, hacksaws, chisels, files, wood cutting hand tools, screw drivers, pliers, vices and clamps, adzes and axes, picks, shovels, crowbars, etc. Various illustrations on safety procedures are included and the standard would help technical institutes, colleges and workshops in training their personnel and would also serve as a guide for the individuals using hand tools in day-to-day activities.

Optical Instruments — It had been realized that different models of ophthalmoscope with degrees of sophistication and additional features varying from one model to the other are required for use by the medical students, general practitioners and ophthalmologists. Since the ophthalmic head covered in IS : 7007-1973 serves the requirements of general practitioners and students, IS : 8257-1973 has been brought out to cover the requirements of ophthalmoscope intended for diagnostic purposes by the ophthalmic practitioners. The standard provides for aperture disc with rotary control selection for macular beam, wide angle beam, red free filter, eccentric fixation detector, and slit beam. It covers

general functional requirements and qualitative tests for checking the performance.

8.3 The Standing Working Committee of the Mechanical Engineering Division Council (SWCE) met on 25 November 1976 under the chairmanship of Maj-Gen C. Sundaram, Director General of Inspection, Ministry of Defence.

The SWCE appointed new Chairmen for five Sectional Committees besides reviewing the composition of thirteen Sectional Committees.

Inaugural meetings of Mopeds Sectional Committee (EDC 78) and Mechanical Components for Lifts and Escalators Sectional Committee (EDC 79) were held in New Delhi on 28 May 1976 and 7 March 1977 respectively. The Committees discussed scope of work and set the broad guidelines for formulating standards for various items coming under their purview.

8.4 During the year under report, meetings of 47 Sectional Committees and 85 Subcommittees and Panels were held.

9. STRUCTURAL AND METALS DIVISION

9.1 During the year under report, 88 Indian Standards including revision of 16 existing Indian Standards were sent for publication. Besides, 114 draft standards were issued in wide circulation for eliciting technical comments. Meetings of 29 Sectional Committees, and 54 Subcommittees and Panels were held. Six Subcommittees and thirteen Panels were set up under various Sectional Committees.

9.2 Of the important standards sent for publication, mention may be made of the following:

- a) *IS : 1956 (Parts I to VIII)-1976 Glossary of terms relating to iron and steel* — This revised version covers definitions of several new terms including newly developed processes of steel making. Existing definitions have been modified to reflect international practice as well as to clear ambiguities. It is hoped that this standard would be very helpful in interpreting meanings of the terms used in the iron and steel industry both for technical and custom purposes.
- b) *IS : 8062 (Parts I and II)-1976 Code of practice for cathodic protection of steel structures : Part I General, and Part II Underground pipelines* — Cathodic protection is an important corrosion control process, particularly for underground and submerged structures like pipelines, storage tanks, ships' hulls, jetties and piers and heat exchangers. With the setting up of new refineries and associated

pipelines in the country, it is hoped that these two standards will be able to guide the industry in proper maintenance of these vital installations.

- c) *IS : 8081-1976 Specification for slotted sections* — Because of their ease of erection, dismantling and re-erection, the slotted angles are now being increasingly used in the construction of various light frame structures, storage structures, display structures, etc. This standard permits the use of both hot rolled and cold rolled carbon steel sheets/strips. It is hoped that this standard will be of great help to the manufacturers of slotted sections in establishing a uniform practice in the design, manufacture and testing of their products.
- d) *IS : 8092-1976 Surface quality of steel castings for valves and fittings (visual method)* — This specification provides a series of reference photographs typical of the various surface irregularities common to steel pressure castings and illustrations of generally acceptable and generally rejectable quality. It is felt that with the publication of this standard, foundries will be benefitted to a great extent in inspection and acceptance of the casting for valves and fittings conforming to IS : 2856-1964 Carbon steel castings suitable for high temperature service (fusion welding quality) and IS : 3038-1974 Alloy steel castings for pressure containing parts suitable for high temperature service (*first revision*).
- e) *IS : 8167-1976 Method for determination of reducibility of iron ore and sinter* — The reducibility indicates a measure of the ease with which oxygen could be removed from iron ore and sinter at the time of reduction and gives one of the important characteristic of the ore and sinter. This standard will go a long way in establishing a uniform practice for the determination of reducibility of iron ore and sinter. This standard is of particular significance as iron ore is being exported from the country.
- f) *IS : 8247-1975 Liquid resins for use in shell process in foundries* — India has made pioneering effort in the formulation of standard for liquid resins for use in shell process in foundries. Hitherto the resin and catalyst binder materials were being purchased as 'Proprietary items' from resin manufacturers and any difficulty in core production was to be solved by the resin suppliers. It is felt that the standard will be of great help to foundries in selecting the proper quality of the liquid resins required by them.
- g) *IS : 8250-1976 Foundry parting agents* — This is the first national standard for parting agents which are used in foundries for easy

release of moulds and cores from pattern equipment and core boxes.

- h) *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 standards 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 the condenser and heat exchanger equipment.
- j) *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 machine. Chromium-copper in wrought and cast shapes is used 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 has been based on the experience available in the country and stipulates composition and physical properties of cadmium-copper and chromium-copper electrodes.
- k) *IS : 8376-1977 Electroplated coatings of nickel and chromium on plastics for decorative purposes* — Plastics are electroplated with nickel and chromium as it combines the advantages of plastics with the pleasing appearance of nickel and chromium. With plastics, such as acronitrile-butadiene-styrene and polypropylene, it is possible to achieve satisfactory adhesion of the electro-plated coating and plastic components. These are used for radio cabinets, decoratives components in electrical appliances, etc. This standard lays down the thickness of coating and specific tests, such as thermal cycling test for determining the quality of plating on plastics.

9.3 The nineteenth meeting of the Structural and Metals Division Council (SMDC) was held in New Delhi on 28 March 1976 under the Chairmanship of Shri J. G. Keswani, Director and General Manager, Indian Tube Co Ltd, Jamshedpur. The Council unanimously re-elected Shri M. Dhar as Vice-Chairman of SMDC for another term of three years. Reviewing the composition of its two Standing Working Committees the Council appointed new Chairmen for three Sectional Committees

9.4 First meeting of the Standing Working Committee on Structural Engineering (SWCSE) was held on 28 July 1976 under the chairmanship

of Shri M. Dhar. Besides reviewing the activities, the SWCSE approved six new subjects for formulation of Indian Standards reviewed the composition of four Sectional Committees and reconstituted them for another term of three years.

9.5 First meeting of the Standing Working Committee on Metallurgical Engineering (SWCME), was held on 19 August 1976 at New Delhi under the chairmanship of Prof V. A. Altakar, Vice-Chairman, SMDC. Besides reviewing its activities, the SWCME approved 23 new subjects for formulation of Indian Standards and appointed Chairman for four Sectional Committees and reconstituted them for another term of three years.

10. TEXTILE DIVISION

10.1 During the period under report, 43 Indian Standards on various subjects were processed for publication including revision of certain existing standards. The Division maintained its steady pace of progress in its activities.

Of the standards published, special mention may be made of the following:

- a) *IS : 8115-1976 Double hessian jute bags for pesticides, and IS : 8117-1976 DW tarpaulin laminated jute bags for pesticides* — These standards have been formulated at the instance of the Central Insecticides Board, Government of India. It is obligatory for the pesticides manufacturers to use bags conforming to these specifications for packing solid pesticides, if packed in jute based fabrics. On the basis of the research work carried out at Indian Jute Industries' Research Association (IJIRA) bags conforming to these specifications would withstand the transit hazards in incidental droppings, provide adequate protection from deterioration during storage and provide barrier against ingress of moisture.
- b) *IS : 8069-1976 Specification for high density polyethylene (HDPE) woven sacks for packing pesticides* — With the advent of woven sacks made out of HDPE, using the advantage offered by the ethylene polymer which is inert in nature the end-use of product was sought to be extended to the use of packing pesticides. Extensive trials were conducted by Indian Institute of Packaging, Bombay, on HDPE woven sacks for packing of pesticides with the help of the industry, with a view to evolving a suitable construction of sacks. The requirements of these sacks were also aligned with the requirements of packing pesticides as required by the Central Insecticides Board, Faridabad. The

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standard is expected to help in saving wastage and reducing the health hazards associated with handling of pesticides in the country.

- c) *IS : 7877 (Parts I to V)-1976 Methods of sampling and test for hand made carpets* — Carpets worth over Rs 300 million were exported from the country last year and this figure is likely to cross the mark of Rs 500 million by 1978-79. A series of standards has been prepared on methods for assessing the various characteristics of carpets which are based on the relevant ISO standards. This standard would help in amicable settlement of disputes between foreign buyers of carpets and our carpet industry.
- d) *IS : 2510-1976 Bottom rollers for drafting systems (third revision) and IS : 3078-1976 Rings for spinning and doubling frames (third revision)*— The revised standards take care of the technical developments as well as manufacturing aspects to ensure that the manufacturers are in a position to implement these standards without difficulty.

10.2 The Textile Division Council (TDC) met on 1 March 1977 at Bombay under the chairmanship of Shri D. N. Shroff, Vice-Chairman, TDC. The Council reconstituted 9 Sectional Committees appointing/re-appointing their Chairmen and approved 36 new subjects for formulation of standards. During the meeting stress was laid on the need for implementation of standards on textile machinery parts and accessories by the major machinery manufacturers as these standards had been formulated with their active participation and cooperation. The problem of quality of steel supplied to machinery manufacturers was also discussed at the meeting and it was decided to resolve such problems bilaterally between Steel Authority of India and the Textile Machinery Manufacturers' Association.

Shri G. K. Devarajulu and Shri D. N. Shroff were unanimously re-elected Chairman and Vice-Chairman of the council, respectively, for another term of three years.

11. SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

11.1 Documentation Sectional Committee (EC 2) — The thirty-second meeting of the Documentation Sectional Committee was held on 7 January 1976. The Sectional Committee finalized the draft Indian Standard Guide for standard book numbering and approved for wide circulation the draft Indian Standard Recommendations for bibliographical references: essential and supplementary elements (*first revision* of

IS : 2381). IS : 1275-1976 Rules for making alphabetical indexes (*first revision*) was printed.

New Subject Approved— Guide for bibliographical/documentation control sheet was the new subject approved by the Sectional Committee.

11.2 Quality Control and Industrial Statistics Sectional Committee (EC 3)— The thirteenth meeting of the Sectional Committee was held on 2 March 1977. The Committee finalized two draft Indian Standards on statistical test of significance, namely, Part I : t , Normal and F tests; and Part II : X^2 test (*first revision* of IS : 6200). One draft Indian Standard 'Criteria for rejection of outlying observations' was approved for wide circulation for eliciting comments.

11.3 Publications and Graphic Technology Sectional Committee (EC 10)— The third meeting of the Publications and Graphic Technology Sectional Committee was held on 1 February 1977. The Committee finalized four draft Indian Standards, namely, (a) Guide for print area, margins and type sizes for textbooks: Part III Textbooks in Malayalam; (b) Part IV Textbooks in Telugu; (c) Part V Textbooks in Kannada, and (d) Part VI Textbooks in Tamil. It approved for wide circulation Part VII Textbooks in Assamese and Part VIII Textbooks in Bengali. IS : 8010 (Part I)-1976 Guidelines for preparation of technical reports: Part I Research and development reports was published.

The Sectional Committee constituted three new Panels: for

- a) Glossary of Terms Relating to Printing and Publishing,
- b) Spoilage Allowance for Paper on Printing Jobs, and
- c) Preparation of Guidelines for Presentation of Information in Technical Manuals.

New Subjects Approved — Spoilage allowance for paper on printing jobs, and Guidelines for presentation of information in technical manuals were the new subjects approved by the Sectional Committee.

12. STATISTICS DEPARTMENT

12.1 The Department formulated following basic Indian Standards pertaining to terminology:

IS : 7920 (Part I)-1976 Statistical vocabulary and symbols: Part I General statistical terms

IS : 7920 (Part II)-1976 Statistical vocabulary and symbols: Part II Terms used in sampling and process control.

12.2 During the year under report, 619 draft Indian standards were scrutinized and in 249 cases statistically sound sampling plans were recommended.

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In this connection, mention may be made of the following Indian Standard Specifications:

- IS : 934-1976 Portable chemical fire extinguisher, soda acid type
(*third revision*)
- IS : 2631-1976 *Iso*-Propyl alcohol
- IS : 8075-1976 Back coated carbon papers for typewriter
- IS : 8076-1976 Frozen cuttle fish and squid
- IS : 8087-1976 Briefcases
- IS : 8144-1976 Multipurpose dry batteries

12.3 The Department also prepared the following two Indian Standards on methods of sampling:

- IS : 436 (Part I/Sec 2)-1976 Mechanical sampling of coal
- IS : 2051-1976 Sampling of leather footwear (*first revision*)

12.4 The Department scrutinized 120 schemes of testing and inspection meant for licences under the ISI Certification Marks Scheme. The routine inspection data collected from a number of licensees in accordance with the recommended schemes, were statistically analysed to evaluate the performance of licensees.

12.5 Extensive investigations and statistical analysis were carried out on diverse aspects of standardization work, such as:

- a) Evolving realistic performance requirements for Indian safety razor blades (*first revision of IS : 7371*)
- b) Evaluation of suitable limits for carbon equivalents to ensure the weldability of structural steels, specification limits for different characteristics of egg albumin powder, tolerance limit on substance of paper, etc.
- c) Examining and modifying the frequencies of sampling suggested for unplasticized PVC pipes and high density polyethylene pipes for potable water supplies on the basis of the data available with the manufacturers.
- d) Estimating the variability in the test result of carbaryl with a view to reducing the burden of testing by the controlling laboratory.

12.6 At the instance of the then Minister for Industry and President of the Indian Standards Institution, a study was also undertaken during the year to assess quality of general service electric lamps (GLS Lamps). While Indian Standards specified an average life of 1 000 hours, the lamps of the brands that have conformed to the specification had an average life of around 1 200 hours.

12.7 An important item of work undertaken during the year was the introduction of elaborate quality control systems in some of the selected factories of the licensees under the ISI Certification Marks Scheme.

12.8 The Department also scrutinized a number of ISO and overseas drafts received for comments. Suggestions for improvement were sent on drafts on sampling of iron ore, manganese ore, green coffee bags, animal feeding stuff as also methods of sampling of textile fibres for testing.

13. RESEARCH AND INVESTIGATIONS

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

13.1 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 Intermediates in Coal-tar Food Colours* — Covers paper chromatographic methods.
- b) *Spectro-Photometric Determination of Purity of Food Colours in Wool Green B.S., Brilliant Blue FCF and Fast Green FCF* — Covers spectrophotometric methods developed for the purpose.
- c) *Tests for Plant Response to Azotobacter* — Collaborative trials are being carried out at 6 laboratories in the country to ascertain plant response to azotobacter in relation to early germination and increase in dry mass of plants. The results will form the basis for including specific requirements on the above characteristics.
- d) *Method for Determination of Lactose in Confectionery* — A collaborative study is being carried out to ascertain practicability of the method for day-to-day estimation.

13.2 Chemical Division — Research and investigations conducted during the period under report related to creep characteristics for oil and water finding paste; quality of salt for hide curing; attrition test of ion-exchange resins; ranges of thermometers and maximum permissible scale error in measurement of petroleum products; development of a suitable method for the estimation of catechin in *KATTHA*; axial crushing strength of ceramic packings; determination of strength values of detonators by sand bomb method; solvent based inks for marking non-porous surfaces; method for determination of ethyl acetate extract in ferro-gallo tannate fountain pen inks; tolerance on grammage for writing and printing papers; evaluation of the case and limitations of various tests to check the sizing property of writing paper; evaluation of the quality of indigenous production of paper for semi-permanent record; method for determination of saleable mass of pulp for flash dried pulps; to find out reasons leading to urethritis by rubber catheters; method for determination of assay content for tetramethyl

thiuram disulphide; performance test for cycle tyres; limit of iron content in natural rubber latex; correlation between oscillating and other types of curemeters; evaluation of the effects of diesel fuel conforming to the relaxed specifications on the engines; angle of response of granulated fertilizers at different relative humidities; method of test for determination of nitrogen in compounded fertilizers method of determination of length of cotton linters; method of determination of fineness of cyanuric chlorides; and method for assay determination of anthrurufin, chrysazin and bromamine acid.

13.3 Civil Engineering Division — In order to fix the 28-day compressive strength of cement to be included in the Specification for ordinary portland cement, a Scheme of Co-operative Tests of Portland Cement was taken up in 1976-77. This Scheme essentially consists of the following:

- a) Weekly samples to be obtained from each cement producing factory in the country;
- b) Codification of the samples received by ISI, maintenance of appropriate registers, etc, and despatch of samples to 3 laboratories which have undertaken to test the samples;
- c) Testing of the samples by 3 laboratories; and
- d) Analysis of results to arrive at the 28-day compressive strength and conclusions regarding any possible strength grading of cement.

This scheme was started in June 1976. A detailed procedure for obtaining weekly samples and design for the test programme was worked out.

Thirty-nine cement factories are participating in this scheme. Every week 130 cement samples are received and despatched to the three laboratories after proper codification. The investigations and analyses of results are expected to be completed by the end of the year.

13.4 Consumer Products and Medical Instruments Division A specification on Rubberized Coir sheets for Cushioning (*under print*) has been formulated after extensive testing and investigational work at Central Coir Research Institute, Kalavoor, District Alleppey (Kerala). Rubberized coir is a cushioning material, specially suitable for tropical climates and considerably economical as compared to rubber foam. Investigations had to be conducted on different Indian-made rubberized coir samples for fixing the norms for different requirements like indentation hardness index, flexing, etc, which ultimately affect the performance of the product. Test method for testing the indentation hardness index had also to be evolved to specially suit this product. It is expected that this standard will be very

useful for the industry and the users, and the quality of rubberized coir cushioning material will improve as a result of implementation of the Standard.

As a result of implementation of the Indian Standard specification for safety-razor blades (IS : 7371-1975) by the manufacturers of the safety razor blades in the country, many suggestions were received for revising the specifications. The main suggestion was to improve upon the existing performance requirement and diluting some of the dimensional requirements. On the recommendations of the Safety Razor and Safety Razor Blades Subcommittee, CPDC 6:4, ISI Directorate General took up the study for performance test on about 650 blades. On the basis of this study and after detailed deliberations, it was decided to revise the existing standard by improving the present requirement of 4 shaves to 6 shaves for stainless steel blades. Consequent upon this decision, it was also decided that all dimensions other than critical ones should be made optional.

13.5 Structural and Metals Division— During the year under report, research and investigation on the following items were continued:

- a) Graphite for foundries,
- b) Spalling resistance of fireclay refractories, and
- c) Graphite crucibles.

Production of Reference Radiographs for Steel Welds and Castings— Fifty-nine 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 suitably reproduce these radiographs in bulk quantities.

A set of master radiographs illustrating the casting defects has also been finalized by the Central Mechanical Engineering Research Institute, Durgapur. Work on production of these radiographs will be taken up after progress is made in the case of reference radiographs for welds.

Production of Indian Standard Reference Materials of Metals and Ores— Haematite iron ore and ferro manganese standard reference materials have been evaluated and the final composition decided. Arrangements are being made for packing and sale of these Reference Materials. The bulk samples were prepared through the courtesy of the Geological Survey of India, Calcutta and the Ferro Alloys Corporation Limited Shreeramnagar, respectively. Work is also in progress with regard to testing and evaluation of plain carbon steel, leaded brass and bauxite.

13.6 Textile Division — The research and investigation conducted during the year under report related to the following:

Cotton Yarn Appearance Standard for Grading of Cotton Yarn — After a lot of testing and investigations carried out at various places, the preparation of cotton yarn appearance standard has now been entrusted to Cotton Textiles Research Laboratory (CTRL), Bombay, for making final trials for the production of Cotton Yarn Appearance Standards. These standards are expected to substitute the imported ASTM cotton yarn standards which are very costly and also not easily available to the industry. Extensive trials were being carried out at CTRL, Bombay, with the active co-operation of Bombay Textile Research Association, Ahmadabad Textile Industry's Research Association, South India Textile Research Association, Textiles Committees and a few leading textile mills in the country. Successful completion of this project will not only lead to saving of valuable foreign exchange but will also help the industry in getting the standards easily.

Air Permeability of Fabrics — Air permeability of fabrics is not only important for apparel fabrics, which gives an idea about the wearing comfort of the fabrics, but is also important for fabrics used for man-dropping and cargo-dropping parachute so vital for the efficient functioning of the Defence forces. Extensive trials are being conducted at six Research Institutes with a view to laying down a standard method of test for determination of air permeability of fabrics. A cross section of the various fabrics produced in the country is under test in these laboratories on different types of air permeability testers available with them. These tests are expected to help in establishing a correlation factor for different types of testing equipment available in the country.

Indigenous Species of Timber to Ensure Better Pin-Holding Power — After the finalization of the standard on wooden staves used for drum rollers of jute carding machines (IS : 7034-1973), the Forest Research Institute (FRI), Dehra Dun undertook a project to find out the indigenous species of timber which would be suitable in comparison to birch wood to ensure better pin-holding power. The project report from FRI highlights that quite a large number of species of timber are suitable as substitute to imported wood, having better pin-holding power to ensure re-pinning of the staves in the jute mills.

PART III

OPERATION OF ISI CERTIFICATION MARKS SCHEME

ISI CERTIFICATION MARKS SCHEME

Grant of New Licences — During the year, 905 new licences were granted to use ISI Mark on 267 products out of which 42 were new products. The break-up of these licences as per corresponding Indian Standards is given in Table 1

TABLE 1 NEW LICENCES GRANTED (DURING 1976-77)

SL No.	INDUSTRY	NO. OF LICENCES
1)	Agricultural and food products	69
2)	Pesticides and their formulations	238
3)	Electrotechnical	82
4)	Packaging materials	39
5)	Civil engineering and safety items	66
6)	Chemicals	83
7)	Consumer products and medical instruments	22
8)	Mechanical engineering items	37
9)	Metal products	25
10)	Steel and steel products	187
11)	Textiles	57
	TOTAL	905

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 6 019 and 814, respectively, on 31 March 1977 as compared to 5 114 and 799 till 31 March 1976.

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* — Baking powder, tamarind concentrates; and saccharin, food grade.

OPERATION OF ISI CERTIFICATION MARKS SCHEME

- b) *Pesticides and Equipment for Pesticides* — Pyrethrum EC; toxaphene EC; ethylene dichloride carbon tetrachloride mixture, and continuous sprayer knapsack type.
- c) *Chemicals* — Compressed oxygen gas; boiler water treatment compounds; paraffin wax; raw natural rubber; rubber mats for electrical purposes; unbonded rock and slag wool for thermal insulation; and rubber sealing rings for gas mains, water mains and sewers.
- d) *Construction Materials and Fire Fighting Equipment* — Chemical resistant mortar industrial bitumen; swing check type reflux; foam compound for fire fighting; trailer pumps for fire brigade use; milk steel tee hinges.
- e) *Electrical Items* — Multipurpose dry batteries; and hot air fans.
- f) *Engineering Products* — Welded low carbon steel gas cylinders for chlorine gas; welded low carbon steel gas cylinders for ammonia gas; piston rings for IC engines and methyl bromide cylinders.
- g) *Medical Instruments* — Sphygmomanometer, aneroid type; dental chair and syringes.
- h) *Packaging Material* — Screwed closures for drums and corrugated fibreboard boxes.
- j) *Steel Products* — Steel and volute springs; steel ingots/billets for : (1) volute and helical springs (railway rolling stock), (2) hard drawn steel wire for upholstery springs, (3) wire rods for manufacture of machine screws, and (4) spring washers; tubular steel poles for overhead power lines; leaded brass sheets; and laminated springs.
- k) *Textile Machinery* — Picking sticks for underpick cotton looms cot for top rollers and belting duck cotton.

Lapsed and Operative Licences — During the year, 242 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 2 129. The total number of operative licences on 31 March 1977 stood at 3 890 as compared to 3 227 till 31 March 1976. Of these, operation of 271 licences was deferred to enable the licensees to take suitable corrective actions. Thus, on 31 March 1977, the number of licences in actual operation was 3 619; their industry-wise and region-wise break-up is given in Tables 2 and 3, respectively.

TABLE 2 INDUSTRY-WISE DISTRIBUTION OF LICENCES IN OPERATION
(As on 31 March 1977)

Sl No.	INDUSTRY	NO. OF LICENCES
1)	Food products and food colours	252
2)	Pesticides	854
3)	Chemicals	278
4)	Paper	19
5)	Construction materials and other civil engineering items	285
6)	Plywood panels, battens and metal fittings	218
7)	Sports goods, utensils, pressure cookers, etc	50
8)	Medical instruments	20
9)	Cables and conductors	316
10)	Flameproof electrical equipment	28
11)	Electric motors	83
12)	Other electrical items	69
13)	Containers and other packaging materials	39
14)	Diesel engines	58
15)	LPG cylinders/valves	15
16)	Pump	27
17)	Other mechanical engineering items	84
18)	Metal products	120
19)	Steel	590
20)	Jute	154
21)	Textiles	60
TOTAL		3 619

Applications for Grant of Licences — The year commenced with the total number of applications standing at 2 503. During the year, 1 687 more applications were received. While 905 applications matured into licences, 783 applications were closed on account of applicants not fulfilling the requisite conditions. Of the 2 502 applications pending at the close of the year, action with the Institution rested in respect of 311 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.

The industry-wise and region-wise break up of 2 502 applications is given in Table 4.

Certification Revenue — The certification revenue touched the figure of Rs 11.268 million registering a growth of 30.5 percent. The value of the goods certified is estimated to be of the order of Rs 14 000 million.

OPERATION OF ISI CERTIFICATION MARKS SCHEME

TABLE 3 REGION-WISE DISTRIBUTION OF LICENCES IN OPERATION

(As on 31 March 1977)

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)	992
2)	Northern	a) Delhi (Delhi, Southern Haryana, Rajasthan and Western Madhya Pradesh)	520
		b) Chandigarh (Punjab, Himachal Pradesh, Jammu and Kashmir, Northern Haryana and Chandigarh)	214
		c) Kanpur (Uttar Pradesh and Central Madhya Pradesh)	147
3)	Southern	a) Madras (Tamil Nadu, Kerala and Pondicherry)	429
		b) Bangalore (Karnataka)	217
		c) Hyderabad (Andhra Pradesh)	197
4)	Western	a) Bombay (Maharashtra and Goa)	664
		b) Ahmadabad (Gujarat, Daman and Diu)	239
TOTAL			3 619

The progress of the Scheme during the past five years is graphically represented in Fig. 6.

Supervision of Operative Licences — Periodic inspections of the factories producing certified products are undertaken regularly to reascertain the suitability of raw materials and check test records and factory's quality control measures in accordance with a well-defined scheme of testing and inspection (STI). Besides, ISI inspectors also test in the factory, the samples drawn from the production line to verify conformance of test results with those maintained by the manufacturer. Samples are also drawn for independent tests at ISI's laboratories or those approved by ISI. In addition, market samples are collected for analysis to gather information on the quality of the product before it reaches the consumer.

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 preshipment inspections are given in Table 5.

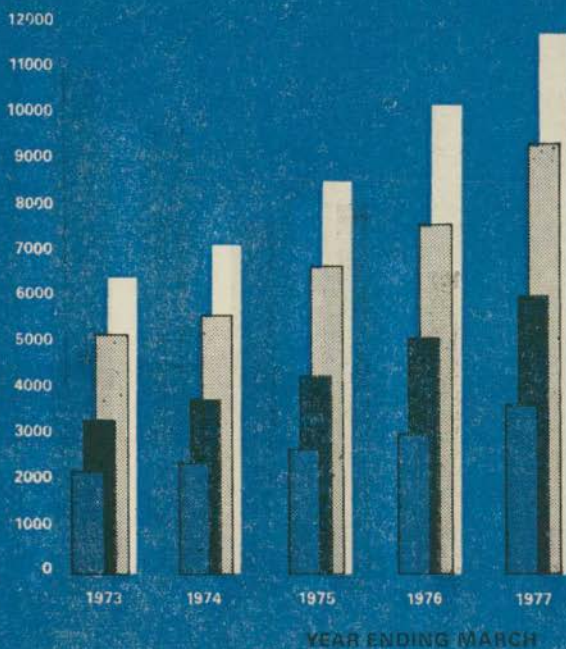
TABLE 4 APPLICATIONS FOR THE GRANT OF LICENCES TO USE ISI MARK

(As on 31 March 1977)

REGION	BRANCH	FOOD PRO- DUCTS	PESTI- CIDES	CHEMI- CALS	PLY- WOOD PANELS	CONS- TRUC- TION MATE- RIALS AND OTHER CIVIL ENGG ITEMS	CONSU- MER PRO- DUCTS AND MEDI- CAL INSTRU- MENTS	ELEC- TRO- TECHNI- CAL ITEMS	CON- TAINERS AND OTHER PACKA- GING- MATE- RIALS	MECHA- NICAL ENGG ITEMS	STEEL	METAL PRO- DUCTS	TEX- TILES	TOTAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
East	Calcutta	19	64	78	17	98	3	56	6	49	129	17	27	563
North	a) Delhi	15	82	56	—	64	12	100	8	27	49	25	6	444
	b) Chandigarh	14	11	24	2	33	3	28	5	16	25	12	1	174
	c) Kanpur	15	23	16	—	16	4	19	6	26	27	8	5	165
South	a) Madras	21	56	41	3	20	5	57	1	22	14	8	39	287
	b) Bangalore	8	25	10	—	24	—	17	—	10	40	4	1	139
	c) Hyderabad	1	49	9	—	7	1	7	4	6	17	2	2	105
West	a) Bombay	26	45	29	—	68	13	92	7	21	55	12	6	374
	b) Ahmadabad	25	81	14	—	29	11	17	5	41	18	5	5	251
Total		144	436	277	22	359	52	393	42	218	374	93	92	2502

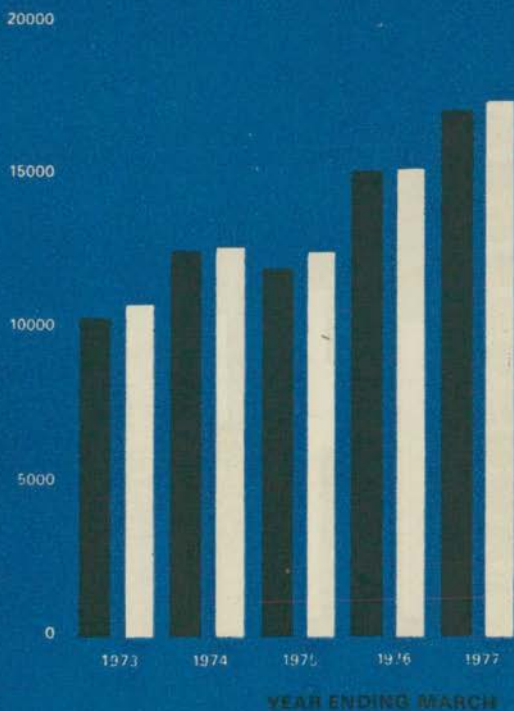
Fig. 6 PROGRESS OF ISI CERTIFICATION MARKS SCHEME

- APPLICATIONS RECEIVED
- ▨ APPLICATIONS PROCESSED
- LICENCES GRANTED
- ▨ LICENCES IN OPERATION



**Fig. 7 PROGRESS OF TESTING IN
ISI LABORATORY**

■ SAMPLES TESTED
□ SAMPLES RECEIVED



OPERATION OF ISI CERTIFICATION MARKS SCHEME

TABLE 5 INSPECTIONS CARRIED OUT

SL. No.	REGION	BRANCH OFFICE	PRELIMINARY INSPECTIONS	PERIODIC INSPECTIONS	PRE-SHIPMENT INSPECTIONS
1)	Eastern	Calcutta	276	2 743	266
2)	Northern	a) Delhi	322	1 441	5
		b) Chandigarh	86	763	1
		c) Kanpur	104	504	8
3)	Southern	a) Madras	114	1 610	7
		b) Bangalore	106	921	16
		c) Hyderabad	93	840	—
4)	Western	a) Bombay	226	3 478	354
		b) Ahmadabad	124	847	30
		Total	1 451	13 147	687

Other Significant Developments — During the year, a number of commodities received special attention of the Government and ISI for intensive coverage under the ISI Certification Marks Scheme. Some important developments are briefly reported below:

- a) The Union Government issued the 'Household Electrical Appliances Quality Control Order' on 31 May 1976. Subsequently, this was amended on 21 October 1976. This order now covering 41 electrical items is likely to become effective by the end of 1977. It prescribes that 'No person shall himself or by any person on his behalf manufacture or store for sale, sell or distribute any household electrical appliance which does not conform to the standard specified in the Order'. During the year, the Institution made large scale preparation for equipping its laboratory to handle the increased load of testing and providing technical assistance to the industry, such as identifying and distributing the list of test equipment and organizing training programmes for building up the testing personnel required by the industry.
- b) The Tariff Advisory Committee (TAC), Bombay announced a list of over 30 electrical items and about 20 fire fighting equipment for which ISI licensees will be automatically considered as 'approved by TAC' for the purpose of getting concessional rates on fire insurance premium. Consequently, about 275 applications were received by the Institution which are being processed on priority basis.

- c) The State Government of Karnataka amended *Motor Vehicle Rules* to stipulate that 'No person shall drive a motor cycle unless he wears a safetyhelmet made of fibre glass conforming to the Indian Standard specification securely fastened to his head with the help of a leather strap buckled at the chin'. The competent authorities in the States of Andhra Pradesh and Haryana and Union Territories of Chandigarh and Delhi, also prescribed rules on these lines. Consequently, a large number of manufacturers joined the ISI Certification Marks Scheme for protective helmets for scooter and motor cycle riders.
- d) Consequent upon the amendment of Rubber Rules in 1975, a number of manufacturers came forward to grade and market raw natural rubber and ammonia preserved concentrated natural rubber latex under the ISI Certification Marks Scheme. For this purpose the Rubber Board was declared by ISI as the competent authority and it is hoped that a large number of units will be covered under the Scheme during the next year or so.
- e) The Government of India issued *Mild Steel Tubes Quality Control Order, 1976*, which would now come into effect from 1 September 1977. This Order, mainly intended to improve the quality of pipes used for water works, prescribes that 'No person shall manufacture or store for sale, sell or distribute any mild steel tubes which do not conform to the following Indian Standards:
- i) IS : 1239 (Part I)-1973 Mild steel tubes and tubulars:
Part I Mild steel tubes;
 - ii) IS : 1161-1968 Steel tubes for structural purposes; and
 - iii) IS : 4270-1967 Steel tubes used for water wells.
- For this purpose of the Order, mild steel is defined as 'Carbon steel containing generally less than 0.3 percent carbon'.
- f) Consequent upon the study made by ISI on the quality of blades produced in the country and further discussion by the then Union Ministry of Industrial Development and Civil Supplies with the manufacturers of blades, six large scale units covering bulk of the production in the country have joined the ISI Certification Marks Scheme.
- g) The Institution carried out a detailed study on the quality of dry batteries of different brands as produced in the country. On the basis of this study, the Government requested manufacturers to join the ISI Certification Marks Scheme. Three units have already joined the Scheme and practically all the manufacturers have applied.

OPERATION OF ISI CERTIFICATION MARKS SCHEME

Financial Incentives for ISI Licensees — The Industrial Development Bank of India 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 small-scale sector. The Andhra Pradesh State Financial Corporation (APSFC), Hyderabad, went a step further and agreed to make advance up to 100 percent, that is, for the purchase of testing equipment costing up to Rs 30 000.00 and also allow 0.5 percent discount in the rate of interest charged by the Corporation for the units operating the ISI Certification Marks Scheme. The UP Financial Corporation, Kanpur also announced similar concessions for UP.

Amendments to ISI (Certification Marks) Act, 1952 — During the year, the Institution proposed the following amendments to ISI (Certification Marks) Act, 1952:

- a) Additional powers to ISI Inspecting Officers for search and seizure of goods in any premises, vehicle or conveyance and search any person where the Standard Mark is suspected to be misused or is about to be misused or where articles carrying the unauthorized Standard Mark are stocked or are being offered for sale.
- b) Enhancement of penalty:
 - i) *Misuse of Standard Mark or of the Institution's name or the expression ' Indian Standard ' or ' Indian Standard Specification ' or any abbreviation thereof* — The offence should carry a penalty of Rs Fifty thousand and/or rigorous imprisonment which may extend to one year (against the present provision of Rs Ten thousand);
 - ii) *Misuse of any other provisions of the Act* — The offence should carry a penalty of Rs Ten thousand and/or rigorous imprisonment which may extend to six months (against the present provision of Rs One thousand).

Users' Preference for ISI-Certified Products — The Directorate of Export promotion and Marketing, Government of Orissa agreed to allow price preference of 3 percent for ISI-certified materials. This price preference will be over and above the price preference admissible on goods produced by small-scale industries.

The Chief Architect, Government of West Bengal, directed the approved contractors to use ISI-certified materials wherever available for building construction.

Chief Engineer, PWD, Nagaland, agreed in principle to give preference to ISI-certified materials in their purchase programme and decided

to quote Indian Standards in tenders for ready mixed paints, varnishes, enamel paints, putty, thinner and water based paints.

Under Assam preferential Stores Purchases Rules 1972, the Government of Assam asked the manufacturers of blockboards to follow Indian Standards, wherever available.

National Agricultural Co-operative Marketing Federation of India agreed to implement Indian Standards for jute fabrics and bags and to invite tenders as per IS specifications.

Fertilizer Corporation of India issued directives for the purchase of only ISI-certified:

- a) laminated jute bags for packing fertilizers,
- b) tarpaulin, and
- c) Polyethylene lined hessian bags and B-twill bags for their use as store items.

West Bengal Infrastructure Development Corporation directed that only certified valves should be purchased for its Haldia Water Supply Project.

The Controller of Stores, Rourkela agreed in principle to give preference to ISI-certified materials in their purchase programme to encourage the manufacturing units to adopt ISI Certification Marks Scheme.

The Director of Agriculture, Government of Karnataka issued a Notification stating that only ISI-certified plant protection equipment would be purchased by their Department for their use.

The Director of Animal Husbandry, Government of Karnataka issued a Notification to all the manufacturers of animal feeds that they should purchase only ISI-certified feeds for consumption in Karnataka State.

Government of Bihar agreed to allow price preference of 3 percent in respect of cattle feed with ISI Mark. This price preference will be over and above the price preference admissible on goods produced by small scale industries.

Central Fuel Research Institute, Dhanbad, agreed to specify Indian Standards in their tender enquiry issued from time to time for purchase of stores.

On the lines of the decision already taken by the State Government of UP, the Department of Agricultural and Cooperative, Government of Bihar, also decided that only such diesel engine pumpsets for irrigation purposes as have ISI mark or have complied with the basic requirements

OPERATION OF ISI CERTIFICATION MARKS SCHEME

for grant of licence to use the ISI Mark will be entitled to financing through land development banks, nationalized banks, etc.

Andhra Pradesh State Chamber of Panchayati Raj, Hyderabad has decided that ISI-marked goods will be given preference while purchasing the paper.

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 testing facilities are being created and expanded to meet the growing need of voluntary and compulsory Certification Marks Scheme. For the expansion of the Central Laboratory, a two-hectare plot of land has been taken at Sahibabad situated about 10 km away from Manak Bhavan. A plan for the construction of a 4-storeyed building on the plot having a floor area of about 8 500 m² has been finalized and CPWD has been entrusted with its construction. Construction of sheds at the new premises has already started which will house the test equipment for testing of domestic electrical appliances. The Regional Laboratory in Madras has already been shifted to its new spacious premises. The Laboratory in Bombay has shifted to Chunabhati in the premises of Maharashtra State Industrial Research Laboratory and the regional laboratory in Calcutta continues to function in Lower Rowdon Street.

The number of Indian Standards for which testing facilities are available in these laboratories is as follows:

No. of Indian Standards for Which Testing is Done

	Full	Partial
Headquarters	559	115
Bombay	26	—
Calcutta	69	36
Madras	68	29

The Central Laboratory and Regional Laboratories tested 17 540 samples during the period under review, in different disciplines, namely, chemical, electrical and mechanical. Details of the testing work carried out is given in Table 6. Graphical representation of the testing work carried out since 1972-73 is given in Fig. 7.

TABLE 6 PROGRESS OF TESTING UNDERTAKEN

	1976-77	1975-76	SINCE SETTING UP OF THE LABORATORY
1) Samples:			
a) Pending at the beginning of the year (1 April)	1 361	1 406	—
b) Received	17 954	15 407	115 542
c) Tested	17 540	15 177	111 329
d) Withdrawn	355	275	2 579
e) Pending at the close of the year (31 March)	1 420	1 361	—
2) New specifications covered	67	27	730
3) Testing charges estimated (Rs) for the work done	2 367 889	2 113 860	10 873 545

New Equipment Installed — The facilities at the Central Laboratory and Regional Laboratories were augmented by installing a number of new pieces of equipment. The list of equipment received in Laboratory is given in Table 7.

TABLE 7 LIST OF EQUIPMENT RECEIVED IN THE LABORATORY DURING 1976-77

1. *Chemical Laboratory*
 - i) Recording polarograph for estimation of gamma-isomer
 - ii) Muffle furnace for general purposes
 - iii) Disc polisher for polishing metallic samples for microstructure
2. *Mechanical Laboratory*
 - i) Apparatus for knapsack sprayers for endurance test
 - ii) Performance test machine for knapsack sprayer
 - iii) Machine for testing of springs
 - iv) Endurance testing machine for LPG valves
 - v) Hydraulic crane for general purposes
 - vi) Flexural endurance testing machine for miner's boots
 - vii) Endurance testing machine for floor springs
 - viii) Dead weight pressure gauge tester
3. *Electrical Laboratory*
 - i) Multi-channel temperature recorder for refrigerator testing
 - ii) Sound level meter
 - iii) Peak volt meter
 - iv) Plug pins deflection test apparatus for 5 A rating
 - v) Ball pressure test apparatus
 - vi) Impact test hammer set to 0.22, 0.35, 0.5 and 0.7 Nm
 - vii) Time totalisers
 - viii) Multi-meter
 - ix) Vacuum pump

OPERATION OF ISI CERTIFICATION MARKS SCHEME

Training of Personnel — At the request of the licensees and also the State Government laboratories, the Central Laboratory has been organizing training programmes in testing in individual fields. Such requests for training have increased and to meet the growing demand it has become inevitable to make comprehensive plans to organize training programmes in groups in particular fields properly spread over the whole year. Details of the training programmes conducted during 1976-77 are given below:

<i>Sl No.</i>	<i>Discipline of Training Programme</i>	<i>Duration</i>	<i>No. of Participants</i>
1)	Testing of pesticides	6-16 July 1976	26
2)	Physical testing of metals	2-6 Aug 1976	17
3)	Testing of conductors and power cables	6-17 Sep 1976	12
4)	Testing of water meters	11-15 Oct 1976	7
5)	Testing of food colours	8-12 Nov 1976	8
6)	Testing of domestic electrical appliances	6-17 Dec 1976	9

At the request of the Electrical Appliances Manufacturers' Association, Delhi, arising out of the proposed compulsory certification of domestic electrical appliances by the Government of India, the Central Laboratory organized the following three group training programmes:

<i>Sl No.</i>	<i>Discipline of Training Programme</i>	<i>Duration</i>	<i>No. of Participants</i>
1)	Domestic Electrical Appliances	31 Jan to 5 Feb 1977	11
2)	do	14-19 Feb 1977	10
3)	do	14-21 March 1977	10

At the request of the Indian Oil Corporation Ltd, ISI Laboratory at headquarters organized a training programme for their officers in the re-certification of LPG cylinders from 14-18 February 1977, the number of participants being 8. With this training programme, the Indian Oil Corporation would now be able to carry out the recertification of cylinders which was so far being done by ISI.

Investigations — The Central Laboratory undertook 114 investigational problems during the period under report a few of which are mentioned in Table 8.

TABLE 8 LIST OF INVESTIGATIONS

1. *Mechanical Laboratory*

- i) Quality evaluation of abortion apparatus for WHO.
- ii) Quality evaluation of indigenous suture needles in comparison with imported needles for surgical purposes.
- iii) The tensile behaviour of low pipes of different thicknesses with different dumbbell test specimens.
- iv) The effect of machining on tensile properties of round steel bars.
- v) Comparison of relative performance characteristics of polypropylene and high density polyethylene and high density polyethylene box trappings.
- vi) Comparison of the physical properties, namely, tensile strength, yield strength and elongation of circumferential parent metal test pieces for LPG cylinders.

2. *Electrical Laboratory*

- i) Life test data on multipurpose dry cells.
- ii) Verification of the requirement of the standard of mixers for testing fire resistance properties.
- iii) Samples of hot plates for thermal efficiency.

3. *Chemical Laboratory*

- i) The chewing and bubble gum samples for base content by German method.
 - ii) Tests for the presence of mineral oils in cotton seed oil.
 - iii) The *zarda* samples.
 - iv) Determination of volatile oil as allyliso-thiocyanate and moisture contents of different grades of mustard (*Rai*).
 - v) The rum samples of different maturation.
 - vi) Method of test for theobromine in cocoa powder and drinking chocolate.
 - vii) Determination of alkalinity of the capsules required in the fire extinguisher.
 - viii) Determination of the chemical composition of urinary rubber catheter.
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INTERNATIONAL ACTIVITIES

PART IV

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

1.1 Out of 152 Technical Committees of the International Organization for Standardization (ISO), as on 31 March 1977, ISI was a Participating Member of 111 Technical Committees and an Observer Member of 31 others. Of these, the Institution held the Secretariats of 4 Technical Committees, 6 Subcommittees and 11 Working Groups.

1.2 **ISO General Assembly** — The ISO General Assembly met in Geneva during 20-24 September 1976. India was represented by Shri D. C. Kothari, Vice-President, ISI, and Shri Y. S. Venkateswaran, Deputy Director General, ISI. Prof V. V. Boitsov (USSR) was elected President of ISO for the next three-year term beginning January 1977. Some of the decisions of particular interest to India were election of India as a member of ISO Council for a three-year term commencing January 1977; appointment of Director General, ISI, as a member of the Planning Committee, which deals with all matters concerning the organization, co-ordination and planning of the technical work of ISO; and mandate to the Executive Committee to examine and develop an effective structure in ISO for dealing with consumer questions, policy matters and formation of ISO Information Network.

1.3 **Development Committee** — The Development Committee (DEVCO) advises the ISO Council on the needs and requirements of the developing countries in the fields of standardization and related areas and recommends measures to assist the developing countries in meeting them. A meeting of DEVCO was held on 21-22 September 1976 in Geneva, which was attended by about 50 delegates from member-countries and some international organizations. India was represented by Shri Y. S. Venkateswaran, Deputy Director General, ISI. The Indian delegate highlighted the large quantum of assistance ISI has been giving to various developing countries in different forms which fact was very much appreciated.

1.4 **Seminar for ISO Technical Secretaries** — At the time of the General Assembly, ISO organized a Seminar for ISO Technical Secretaries in

Geneva on 15-17 September 1976. India was represented by Shri Y. S. Venkateswaran, Deputy Director General, ISI, who also acted as a speaker at the session 'Life of the Technical Committee'. The discussions centred round the entire spectrum of the working of ISO and its technical committees. Many hurdles in efficient working of the technical committees were brought out and suggestions were made to revise the rules of procedure to improve the working of the ISO technical committees.

1.5 Planning Committee — The Planning Committee (PLACO) is responsible for co-ordination of all technical work of ISO as well as consideration and approval of new subjects before they are taken up by the ISO Council. Director General, ISI, attended the PLACO meeting held on 22-24 February 1977 in Geneva. It discussed various technical points concerning distribution and re-allocation of technical committee secretariats, criteria for assessing the performance of technical secretariats, review of idle technical committees, etc.

1.6 Committee on Reference Materials (REMCO) — Second meeting of ISO Committee on Reference Materials (REMCO) was held in Geneva on 21-22 September 1976. Shri Y. S. Venkateswaran, Deputy Director General, ISI, attended the meeting. Draft ISO Guide 6 — Use of reference materials in international standards, Doc : ISO/REMCO 2 (REM 2) was considered at the meeting.

1.7 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 such committees which are of direct interest to India is given in the following paragraphs :

ISO/TC 2 Agriculture (Sectt: ISO Central Sectt) — Fourth meeting, 14-15 September 1976. Eighteen delegates representing 11 countries attended the meeting. Shri Y. S. Venkateswaran, Deputy Director General, ISI; and Shri T. Purnanandam, Head, Agricultural and Food, ISI; attended on behalf of India. This ISO Technical Division co-ordinates the work of 8 ISO Technical Committees relating to the field of agriculture. India is one of the 11 Participating Members of the Technical Division. At the meeting, several new subjects were considered to be taken up for work at ISO level, which covered irrigation and drainage machinery and equipment; pest control; deep sea and coastal fishing; and fish preserves. All these subjects are of special importance to India and work in this regard has already been initiated at the national level.

ISO/TC 17 Steel (Sectt : UK) — Twelfth plenary meeting, 13-17 September 1976, London. India was represented by Shri B. S. Krishnamachar, Director General, ISI; and Dr G. Mukherjee, General Manager, Alloy Steels Plant, Durgapur.

Methods of Test

- g) Determination of piperine content in black pepper
- h) General method for thin layer chromatography
- j) Determination of volatile organic sulphur compound in dehydrated garlic
- k) Determination of colouring power of turmeric

The draft International Standard 1218:2 Ground spices — Determination of filth (Reference Method) was approved on behalf of India.

ISO/TC 34/SC 8 Tea (Sectt: UK) — Seventh meeting, 9-10 September 1976, Geneva. Twenty six delegates representing 11 countries attended the meeting. Shri T. Purnanandam and Dr K. K. Mitra attended the meeting on behalf of India. Ten delegates representing the Organization of European Tea Committees also attended the meeting. Specifications for black tea and instant tea were considered for further processing. These were also simultaneously scrutinized by the Codex Alimentarius Commission. Indian proposals put forward in this connection were approved.

ISO/TC 45 Rubber and Rubber Products (Sectt: UK) — The 24th meeting of TC 45 was held from 30 September to 9 October 1976 at Barcelona (Spain). The meeting was attended by more than 200 delegates from 22 countries. India was represented by Shri M. M. Patel who is also the Convener of the Working Group 4 Physical Properties. Along with the meeting of TC 45, meetings of all its Working Groups were also held. In these meetings, documents relating to methods of test and specifications for natural and synthetic rubber, latex, compounding ingredients and various rubber products, like hoses, footwear, treated fabrics, cellular materials, rubber seals, etc, were discussed. The Working Group for Physical Properties (WG 4), the Secretariat of which is held by India, agreed to process three draft ISO Standards as ISO Standards and circulate 2 draft proposals as draft ISO Standards.

ISO/TC 72/SC 1 Spinning Preparatory, Spinning and Doubling (Twisting) Machinery (Sectt: Switzerland) — Fourteenth meeting, 7-8 September 1976, Berlin (Germany). India was represented by Shri Suresh M. Mehta (Leader), Chairman and Managing Director, Textile Machinery Manufacturers' Association (India) and Shri T. Ramachandra Rao, Director (Textile Machinery), Office of the Textile Commissioner, Bombay. The following subjects were considered in the meeting:

- a) Top rollers
- b) Bottom fluted rollers for drafting systems
- c) Flanged bobbins for doubling and twisting
- d) Condenser rubbers for cards
- e) Card wires, terminology
- f) Bead wires for cards
- g) Flyer bobbins
- h) Sliver cans
- j) Ring-spinning frames and speed frames — top and bottom aprons
- k) Tubes for open-end spinning machines
- m) Terminology for open-end spinning machines

It was decided that ISO/R 2 05 'Tubes for draw-winders for man-made fibres' be withdrawn in view of the publication of ISO 3914 'Cylindrical tubes — Recommended values of inner diameters and lengths'.

ISO/TC 102/SC 2 Methods of Chemical Analysis of Iron Ores (*Secti : Sweden*) — Eighth meeting, 10-14 May 1976, Budapest. Dr A. N. Chowdhury, Chief Chemist, Geological Survey of India, attended this meeting on behalf of India. At this meeting draft ISO proposals on methods of determination of metallic iron, aluminium, sulphur, fluorine, titanium, combined water, sodium, potassium, hygroscopic moisture, calcium magnesium and vanadium in iron ores were considered.

India played an important role by participating in the investigations with regard to determination of sulphur aluminium, copper, calcium and magnesium in iron ore. India's efforts in introducing gravimetric determination of sulphur finally succeeded at this meeting. India was also included for active participation in the following working groups:

- a) Working Group for Complexometric Determination of Aluminium
- b) Working Group for Determination of Sodium and Potassium by Atomic Absorption Method
- c) Informal Working Group for Complexometric Determination of Calcium and Magnesium
- d) Informal Working Group for Determination of Lead, Zinc and Cadmium

A number of laboratories in India are participating in investigations conducted by ISO in connection with the above Working Groups set up at the Budapest meeting.

ISO/TC 104 Freight Containers (Sectt: USA) — The ninth plenary meeting of TC 104 was held in Washington (USA) from 31 May to 4 June 1976. India was represented by Capt B. L. Batra, Scindia Steam Navigation Co Ltd, Bombay, and Capt V. Subramaniam of the Shipping Corporation of India Ltd, Bombay. The Committee considered the various documents concerning freight container standardization as also the reports of the Inter-Governmental Maritime Consultative Organization (IMCO).

The report of the Group of Experts on Container Standards for International Multi-modal Transport was presented and as the interests of the developing countries were vitally affected by the report. India vigorously put forward their viewpoint. India was made a member of the *ad hoc* group. It was stressed at the meeting that in the absence of delegates from developing countries their views when communicated in writing, should be fully taken into consideration because there was a feeling in the developing countries that the container standards tended to be oriented towards the needs of the developed countries. India also voiced the problems of the developing countries due to large ratings and sizes of containers. It was stressed that in order to harmonize the infrastructure for container movement it was necessary to have a complete system to contribute to the economy of the developing countries.

India also voiced its disapproval to the 8'-6" containers and the deletion of the same from 'ISO 668-1973 Freight containers — External dimensions and ratings'. These views elicited a lot of support from other countries.

ISO/TC 113 Measurement of Liquid Flow in Open Channels (Sectt: India) — The sixth plenary meeting of ISO/TC 113 alongwith its six working groups was held in London during 17-28 May 1976. A joint meeting between ISO/TC 113 and ISO/TC 30 Errors in Flow Measurement was held on 29 May 1976. India holds the Secretariat of ISO/TC 113 and all its Working Groups. The Indian delegation comprised Shri K. K. Framji, Shri C. V. Gole, Shri O. P. Garg and Shri K. Raghavendran (Secretariat: ISI). Shri Framji presided over the meeting of the Technical Committee and one of its working groups (WG 6) and in the absence of the Chairman of WG 4, the meeting was presided over by Shri C. V. Gole. At the Technical Committee meeting, Shri Framji was unanimously renominated as Chairman for a further three-year term.

The meetings approved the following draft International Standards for printing:

- a) ISO/DIS 3716 Requirements and characteristics of suspended sediment load samplers,

- b) ISO/DIS 3846 Finite crest with weirs, and
- c) ISO/DIS 3847 End depth method in rectangular channels.

Draft proposals on (a) Revision of ISO 748 Velocity area methods, (b) Flumes, (c) Flat 'V' weirs, (d) Round nose weirs, and (e) Echo sounders, were approved for submission as draft International Standards. In addition, supplement to first revision of ISO 772 Vocabulary and symbols, was approved for submission to the Central Secretariat.

First draft proposal on ISO/DIS 3716 Requirements and characteristics of suspended sediment load samplers, and ISO/DIS 3847 End depth method in rectangular-channels, were from India. Significant additions have been made by India in ISO/DIS 3846 Finite crest width weirs, and flumes, based on Indian experience. Comments were made on all other documents, which were mostly accepted.

ISO/TC 157 Mechanical Contraceptives (*Sectt: Sweden*) — The second meeting of this Committee was held from 23 to 25 November 1976 at New Delhi. Thirty four delegates including 14 from India participated in the meeting hosted by India. The subjects discussed in the meeting related to the specifications and methods of test for condoms and intra-uterine device (IUD).

2. INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

2.1 As on 31 March 1977, there were 72 Technical Committees, 118 Subcommittees and 514 Working Groups of the International Electrotechnical Commission (IEC) of interest to Electrotechnical Division Council and Electronics and Telecommunication Division Council of ISI. India participated in the work of a large number of Technical Committees, Subcommittees and Working Groups.

2.2 A brief report of the meetings of the various committees which met during the period under review and in which India took active interest is given in the following paragraphs.

Annual General Meeting — The 41st Annual General Meeting of IEC was held in Nice (France) from 17 to 29 May 1976. Apart from 35 Technical Committees and Subcommittees with 40 Working Groups/*Ad hoc* Working Groups, the IEC Council and Committee of Action met during this period. India was represented at these meetings by Shri N. Srinivasan, Director (Electrotechnical), ISI.

The number of delegates who participated in the meetings totalled approximately 1 200 accompanied by 400 lady/other members. The total number of documents recommended for Six Months' Rule arising out of meetings was approximately 150.

Council (21 and 25 May 1976) — The Council is the highest body of IEC on which all national committees are represented. It meets at least once a year generally during the IEC Annual General Meetings. The Council, which met under the chairmanship of Dr V. I. Popkov, held four half-day sittings attended by representatives of 34 national committees.

The Council, *inter alia*, transacted the following business:

- a) *Finance* — The budget for 1977 was approved which provides for an income of S. Fr. 7 432 000. This includes membership subscription of S. Fr. 5 372 000 an increase of 8 percent over the last year. The Indian delegation supported by a number of other countries strongly opposed any increase in the membership subscription.
- b) Redefinition of the task of the Committee of Action.
- c) Progress Report for the IEC Quality Assessment System for Electronic Components.
- d) Procedure for election of new members of Committee of Action.

The Council elected 3 new members, namely, Australia, Turkey, and USA to fill the vacancies resulting from the retirement of France, South Africa and USSR from the Committee of Action of IEC.

The Council also took note of the developments on standardization of world-wide plug and socket outlet system.

It was reported that the next Annual General Meeting of the Council will be held in Moscow (USSR) between 6-17 June 1977.

Committee of Action (18 and 28 May 1976) — The Committee of Action, which met under the chairmanship of Dr V. I. Popkov, President, IEC, is the technical management body of IEC and deals with all technical problems delegated to it by the Council. India not being a member of the Committee of Action, attended these meetings as an 'Observer'. The Committee of Action considered the reports from the technical committees, and approved about 150 documents for circulation under Six Months' Rule. It also considered appointment of Chairmen of Technical Committees, implementation of IEC Publications at the national level, liaison with the ISO Standing Committee for the Study of Principles of Standardization; summary review of activities in the field of safety, future of IEC/TC 75 Classification of Environmental Conditions and IEC/TC 58 Methods of Measurement of Electrical Properties of Metallic Materials. With a view to pursuing standardization activity in the field of flammability, it directed TC 50 to constitute a new Subcommittee for this purpose.

The question of allotment of safety standards on projectors, and dictating machines (which was handled by SC 12B Safety) to TC 74

Safety of Data Processing Equipment and Office Machines evoked a very critical discussion. The final decision was to maintain a *status quo*.

Reports from Technical Committees

IEC/TC 1 Terminology (Sectt: France) — 19-20 May 1976. The Committee considered the International Electrotechnical Vocabulary (IEV), distribution of its chapters, the state of progress of the IEV work, and the preparation of general index of IEV.

IEC/TC 5 Steam Turbines (Sectt: USA) — 24-27 May 1976. The Committee considered various controversial items relating to the preparation of thermal acceptance test documents and steam turbine control. The possibility of establishing new Working Groups for vibration noise and power unit manoeuvrability was considered. It was agreed not to proceed with the standardization of direction of rotation of steam turbines.

IEC/TC 9 Electric Traction Equipment (Sectt: France) — 25-27 May 1976. Document on rules for electrodynamic and electromagnetic breaking was accepted for circulation under Six Months' Rule. A Working Group was set up on evaluating and identification of insulation systems of rotating machines for traction.

IEC/TC 12 Radio Communications (Sectt: Netherlands) — 24 May 1976, **IEC/SC 12B Safety (Sectt: Netherlands)** — 18-21 May 1976, **IEC/SC 12C Transmitting Equipment (Sectt: Netherlands)** — 17-19 May 1976, and **IEC/SC 12F Equipment Used in the Mobile Services (Sectt: USA)** — 20-22 May 1976. Arising out of these meetings TC 12 approved 15 documents for circulation under Six Months' Rule and 2 documents for circulation under Accelerated Procedure relating to safety of electronics equipment, radio transmitters and equipment used in mobile services. One significant decision taken at the meeting is the deletion of the word 'Radio' in the titles of SC 12A and SC 12C as it has been clearly indicated in the title of TC 12 itself.

IEC/SC 12B Safety, which is a Subcommittee of TC 12 Radio Communications, deals with safety aspects of radio communications and similar electronic equipment. Eight documents relating to various clauses of IEC Pub 65 Safety requirements for mains operated electronic and related apparatus for household and similar general use, were approved for circulation under Six Months' Rule.

Indian proposal to specify mechanical strength test of handles of portable apparatus from the point of view of safety was accepted and Indian Delegation agreed to make a proposal based on the method adopted by IEC/TC 43 Electric fans for domestic and similar uses. This test was considered important since safety of equipment and safety of personnel were involved in case of failure of mechanical handles provided.

An important aspect that came up for discussion related to the elevation of this Subcommittee as a full-fledged technical committee to deal with general safety aspects. This was not agreed to primarily because of the expert knowledge being restricted to electronic entertainment equipment and also on account of the load of work caused by rapid changes in technology. The need for coordinating safety work with those carried out by other committees, such as TC 13 Measuring Instruments, TC 61 Safety of Household Electrical Appliances, TC 66 Electronic Measuring Equipment, etc, was stressed. SC 12B expressed its willingness to assist other committees on problems relating to electronic field.

IEC/SC 14D Small Special Power Transformers (*Sectt: France*) — 25-27 May 1976. The Subcommittee discussed documents on isolating transformers, safety isolating transformers and test voltages, creepage and clearance distance.

IEC/TC 16 Terminal Markings and Other Identifications (*Sectt: Netherlands*) — 21-22 May 1976. The documents relating to Amendment to Publication 455 'Additional alphanumeric markings for apparatus terminals and particular conductors' and Supplement to Publication 73 'Flashing signals, annunciators and digital readouts' were accepted for circulation under Six Months' Rule.

IEC/TC 23 Electrical Accessories (*Sectt: Belgium*) — 26-27 May 1976, **SC 23B Plugs, Socket-Outlets and Switches** (*Sectt: Italy*) — 24-26 June 1976, **SC 23C World-Wide Plug and Socket-Outlet Systems** (*Sectt: South Africa*) — 20-22 May 1976. The documents relating to basic dimensions and principles for a world-wide plug and socket-outlet system and principles for a modular system were accepted for circulation under Six Months' Rule.

IEC/TC 28 Insulation Co-ordination (*Sectt: France*) — 27-28 May 1976, **SC 28A Insulation Coordination for Low Voltage Equipment** (*Sectt: Germany*) — 25-27 May 1976. The documents relating to phase-to-phase insulation co-ordination for equipment having a highest voltage for equipment not more than 245 kV and insulation co-ordination of low-voltage systems and equipment-clearance were accepted for circulation under Six Months' Rule.

IEC/TC 32C Miniature Fuses (*Sectt: Netherlands*) — 26-28 May 1976. The documents relating to fuse holders for miniature cartridge fuse-links were accepted under Six Months' Rule. A revised draft for the document on Terminal fuses would be circulated.

IEC/TC 33 Power Capacitors (*Sectt: Italy*) — 27-28 May 1976— The document relating to shunt capacitor for power systems was discussed at length and it was decided that the Working Group 4 should reconsider the whole matter and that a new Secretariat document should be prepared.

IEC/TC 38 Instrument Transformers (*Sectt: Germany*) — 22-24 May 1976. The documents on test for capacitor voltage transformers, measurement of partial discharges in instrument transformers, combined instrument transformers and rated instrument security current were approved for circulation under the Six Months' Rule.

IEC/TC 40 Capacitors and Resistors for Electrical Equipment (*Sectt: Netherlands*) — 17-25 May 1976 and **IEC/TC/SC 40A Variable Capacitors** (*Sectt: UK*) — 17 May 1976. The Committee decided to undertake following new subjects:

- a) Pulse test methods for resistors, and severities, together with guidance;
- b) Passive integrated circuits;
- c) Reliability requirements in relation to quality assessment of capacitors and resistors;
- d) ac endurance tests for capacitors (liaison with IEC/TC 33 to be established);
- e) Pulse testing methods for capacitors; and
- f) Specifications for metallized polypropylene capacitors.

Fifteen drafts were approved for circulation under Six Months' Rule including 3 on resistors, 10 on capacitors and 2 of a general nature.

An agreement with TC 47 Semiconductor Devices and Integrated Circuits, was arrived at to deal with integrated circuits containing only capacitors and/or resistors (for example, thin film or thick film circuits). For the dimensional standardization of the final package (indivisible for the purpose of testing and commerce) the requirements laid down by TC 47 shall apply. SC 40A Variable Capacitors (*Sectt:UK*) was disbanded.

IEC/TC 41 Electrical Relays (*Sectt: France*) — 26-27 May 1976. The documents on terminology and test methods, measuring relays with more than one input, thermal relays, relay contacts and make dry read relays were approved for circulation under the Six Months' Rule. Environmental tests for relays and protective systems were discussed.

IEC/SC 41A All-or-Nothing Relays (*Sectt: Germany*) — 22-25 May 1976, **SC 41B Measuring Relays** (*Sectt: France*) — 20-21 May 1976. The documents relating to test and measurement procedures for all-or-nothing relays, methods of quality evaluation rules for grouping of tests classification of all-or-nothing relays, and qualification approval quality conformance procedure for relays were accepted for circulation under Six Months' Rule. It was agreed to circulate revised drafts for biased differential relays under impedance relays, over and under power 1 relays and directional relays.

IEC/SC 47 Semiconductor Devices and Integrated Circuits (*Sectt: France*)—17-21 and 24 May 1976, **SC 47A Integrated Circuits** (*Sectt: France*)—17-21 May 1976. These two committees are very active committees of IEC and had very heavy agenda for their Nice meetings. TC 47 works through *ad hoc* working groups and the plenary sessions were attended by the Indian Delegation.

Arising out of the international certification of electronic components, need has arisen for developing standards for quality assessment procedures, insofar as semiconductor devices and integrated circuits are concerned. Indian Delegation brought to the attention of TC 47 the need for bringing out such detailed individual specifications to avoid proliferation of types of devices, to ensure reduction of variety and harmonization of various devices with minor variations. At this meeting this question was discussed at length.

Benefits to the consumer were brought out by the Indian Delegation and it was noted that if TC 40 Capacitors and Resistors for Electronic Equipment could develop such standards, it should also be possible for TC 47 to do the same. The Chairman stated that the IEC recommendations from ACET to each technical committee was to deal with generic specifications first and subsequently with detailed specifications. He further confirmed that the Preparatory Working Group No. 13 was created for this purpose and had started its work at the generic specifications which was required urgently. It was felt that the working Group on Quality Assessment Procedures should deal with this subject also.

Arising out of the meetings, 13 and 3 documents were recommended for approval under Six Months' Rule and Two Months' Procedures respectively. These related to different types of semiconductor devices and integrated circuits, letter symbols, graphical symbols, essential ratings and characteristics, methods of measurements and dimensions.

IEC/TC 52 Printed Circuits (*Sectt: Italy*)—17-20 May 1976. Arising out of this meeting six documents dealing with printed boards, metal-clad base material for printed circuits and specifications for copper foil would be prepared for publication after editing. Ten drafts on specifications for printed boards, metal-clad base material for printed circuits and packaging of components on continuous tapes were accepted for circulation under the Six Months' Rule and one draft [based on 52 (Secretariat) 113] dealing with revision of IEC Pub 249-1 'Metal-clad base materials for printed wiring: Part I Test methods' would be circulated under accelerated procedures.

IEC/TC 55 Winding Wires (*Sectt: Germany*)—17, 18 and 19 May 1976. The documents relating to resistance to transformer oil in

the presence of water, enamelled round copper wires with a temperature index of 200, methods of test for round winding wires for springiness and test procedures for the evaluation of thermal endurance properties, and temperature index of enamelled winding wires were accepted for circulation under Six Months' Rule.

IEC/TC 56 Reliability and Maintainability (*Seckt: USA*) — 24-28 May 1976. This Committee is considered as one of the very active committees, having dealt a large number of problems expeditiously. Based on a critical review of work by various national committees and IEC Council/Committee of Action, TC 56 had prepared a time bound plan covering a period of 5 years.

Arising out of this meeting, 7 documents were approved for circulation under Six Months' Rule dealing with maintainability of equipment, terminology and design of test cycles. Dr L. Podolsky, Vice-President of IEC, attended this meeting. India's interest in this committee was primarily on account of the fact that introduction of reliability requirements in Indian Standards had been increasingly felt by different electronic committees and ISI had developed the standards closely following IEC/TC 56. Indian proposal for endurance test was accepted in principle but was given low priority because of other urgent items on the programme of work of TC 56. India was requested to submit a basic proposal on this subject.

IEC/TC/59 Performance of Household Electrical Appliances (*Seckt: France*) — 22 May 1976, **SC 59A Electric Dishwashers** (*Seckt: USA*) — 19-20 May 1976, **SC 59B Cooking Appliances** (*Seckt: Germany*) — 21-22 May 1976, **SC 59C Heating Appliances** (*Seckt: Belgium*) — 21-22 May 1976, **SC 59D Home Laundry Appliances** (*Seckt: France*) — 21-22 May 1976, **SC 59H Microwave Appliances** (*Seckt: USA*) — 17 May 1976. The documents relating to methods for measuring the performance of electric grills, methods for measuring the performance of electric household coffee makers, methods of measuring performance of household electric room heaters, other than storage heaters and modifications to IEC Pub 436 were accepted for circulation under Six Months' Rule. In addition, it was agreed to create a Working Group on Terminology for Domestic Electrical Appliances in cooperation with TC 61.

IEC/TC 61 Safety of Household Electrical Appliances (*Seckt: USA*) — 27-29 October 1976, **SC 61C Household Appliances for Refrigeration** (*Seckt: France*) — 25-26 October 1976, **SC 61D Appliances for Air-Conditioning for Household and Similar Purposes** (*Seckt: USA*) — 26 October 1976, **SC 61E Commercial Catering Equipment** (*Seckt: South Africa*) — 22-24 May 1976. The documents relating to modifications to some publications on safety of household electrical appliances, safety requirements for coffee mills and safety requirements for massage appliances were accepted for circulation under Six Months' Rule.

PART V
APPENDICES

APPEN

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

PREVIOUS YEAR Rs	SL No.	HEADS OF EXPENDITURE	AMOUNT Rs
	1.	<i>Pay</i>	
4 262 870	1.1	Officers	4 657 061
4 683 162	1.2	Staff	4 943 525
	2.	<i>Allowances</i>	
2 259 546	2.1	Officers	2 297 206
3 447 472	2.2	Staff	3 452 704
277 967	3.	CGHS and other Medical Charges	318 110
279 786	4.	Provident Fund Contribution	299 676
578 978	5.	Pension Fund	708 252
30 000	6.	Gratuity Fund	30 000
34 563	7.	Staff Welfare	51 781
	8.	<i>TA</i>	
101 580	8.1	Overseas	148 276
546 329	8.2	Officers and Staff	618 708
29 181	8.3	Committee Members	22 158
55 036	8.4	Leave Travel Concession	56 524
	9.	<i>Subscription to International Organizations</i>	
793 093	9.1	ISO	724 797
427 615	9.2	IEC	366 011
	10.	<i>Production</i>	
1 079 142	10.1	Standards	1 143 829
415 593	10.2	Bulletin	379 932
21 667	10.3	Calculation Aids and Binders	161 448
135 143	10.4	Other Publications	79 106
1 772	11.	Research and Consultation	13 852
300 261	12.	Testing Fees	482 255
275 706	13.	Laboratory Apparatus and Stores	369 018
	14.	<i>Publicity</i>	
25 983	14.1	Exhibitions	9 929
41 796	14.2	Advertising	96 436
—	14.3	Short Films	5 200
22 817	14.4	Miscellaneous	25 989
81 968	15.	Conferences	106 101
35 323	16.	Training Programmes	29 938
—	17.	Electronic Data Processing	—

20 244 349

CARRIED OVER

21 597 822

DIX A

THE YEAR ENDED 31 MARCH 1977

INCOME

PREVIOUS YEAR Rs	SL No.	HEADS OF INCOME	AMOUNT Rs
3 112 051	1.	Membership Subscription	3 702 528
	2.	<i>Sales</i>	
2 612 611	2.1	Indian Standards	3 114 872
53 364	2.2	Calculation Aids	173 298
454 329	2.3	Overseas Publications (Commission)	661 476
194 437	3.	Bulletin Advertisements	140 980
8 649 535	4.	*Certification	11 274 260
13 766	5.	CGHS Contributions	22 043
17 279	6.	Conferences (Delegates Fee)	—
57 612	7.	Training Fees	63 441
112 988	8.	Miscellaneous	220 412
15 277 972			19 373 310
7 820 000	9.	Government Grant	6 900 000

23 097 972

CARRIED OVER

26 273 310

*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
20 244 349		BROUGHT FORWARD	21 597 822
60 439	18.	<i>Library</i>	56 801
	19.	<i>Office Expenses</i>	
410 543	19.1	Stationery	481 551
251 632	19.2	Postage	332 728
284 745	19.3	Telephones and Telex	418 375
23 127	19.4	Recruitment	87 522
45 286	19.5	Refreshment and Entertainment	55 590
62 438	19.6	Liveries	54 460
96 373	19.7	Conveyance and Cartage	128 631
48 532	19.8	Insurance and Bank Charges	50 027
86 292	19.9	Miscellaneous	126 842
61 411	20.	<i>Furniture and Equipment (Maintenance)</i>	67 364
	21.	<i>Buildings</i>	
524 290	21.1	Rent and Taxes	662 363
239 469	21.2	Electricity and Water Charges	322 199
184 669	21.3	Maintenance	314 854
138 376	22.	<i>Local Transport (Maintenance)</i>	147 697
54 553	23.	Audit Fees and Legal Charges	31 913
350	24.	Staff Training	12 676
1 455	25.	Loss on Assets Written off/Disposed of	2 084
500 690	26.	<i>Depreciation</i>	500 445

23 319 019

—

Excess of Income over Expenditure

25 451 884

821 426

23 319 019

Total

26 273 310

THE YEAR ENDED 31 MARCH 1977 — *Contd*

I N C O M E			
PREVIOUS YEAR Rs	SL NO.	HEADS OF INCOME	AMOUNT Rs
23 097 972		BROUGHT FORWARD	26 273 310
23 097 972			26 273 310
221 047		Excess of Expenditure over Income	—
23 319 019		Total	26 273 310

BALANCE SHEET AS

		LIABILITIES		
PREVIOUS YEAR	SL NO.		Rs	Rs
Rs				Rs
	1.	<i>Capital Fund</i>		
	1.1	As per last Balance Sheet		8 493 753
	1.2	<i>Add cost of Assets Capitalized</i>		
	a)	Lab Bldg at Ghaziabad	596 194	
	b)	Laboratory Equipment	599 934	
	c)	Compulsory Certification Equipment	249 856	
	d)	Xerox Copying Equipment	50 000	
	e)	Furniture and Equipment, etc, out of S & T Projects	183 983	1 679 967
	1.3	<i>Add: Excess of Income during the year as per annexed statement of Income and Expenditure</i>		821 426
				10 995 146
8 493 753	1.4	<i>Less: Unutilized Govt Grant for 1975-76 refunded</i>		2 052 10 993 094
	2.	<i>Reserve and Funds</i>		
	2.1	K. L. Moudgill Prize Fund		14 117
	2.2	Gratuity Fund		231 315
	2.3	Benevolent Fund		12 180
	2.4	<i>Building Fund</i>		
	a)	As per last Balance Sheet	365 652	
	b)	<i>Add: Receipt during the year</i>	110 389	
			476 041	
	c)	<i>Less:</i>		
	i)	Transferred to Madras Bldg Project	358 699	
	ii)	Repair of Manak Bhavan	41 331	400 030 76 011
	2.5	<i>Lab Bldg at Ghaziabad and Laboratory Equipment, etc</i>		
	a)	Govt Grant Received	1 500 000	
	b)	<i>Less: Transferred to Capital Account</i>		
	i)	Lab Bldg at Ghaziabad	596 194	
	ii)	Laboratory Equipment	599 934	
	iii)	Compulsory Certification Equipment	249 856	
	iv)	Xerox Copying Equipment	50 000	1 495 984 4 016
8 493 753		CARRIED OVER		337 639 10 993 094

AT 31 MARCH 1977

ASSETS

PREVIOUS YEAR	SL NO.		Rs	Rs	Rs
		1. Fixed Assets			
		1.1 Buildings			
		a) As per cost value		4 921 703	
		b) Less: Depreciation w/o			
		i) Up to 1976-03-31	1 525 439		
3 396 264		ii) During 1976-77	124 433	1 649 872	3 271 831
		1.2 Lab Bldg at Ghaziabad (under construction)			
		a) As per last Balance Sheet		424 111	
424 111		b) Addition during 1976-77		596 194	1 020 305
		1.3 Madras Building (under construction)			
		a) As per last Balance Sheet		742 848	
742 848		b) Addition during 1976-77		301 219	1 044 067
		1.4 Land for Bombay and Calcutta Offices			
381 051		As per last Balance Sheet			381 051
		1.5 Xerox Copying Equipment			
		a) As per cost value up to 1976-03-31		242 000	
		b) Addition during 1976-77		50 000	
				292 000	
		c) Less: Depreciation w/o			
		i) Up to 1976-03-31	46 426		
195 574		ii) During 1976-77	37 437	83 863	208 137
		1.6 Laboratory Equipment			
		a) As per cost value up to 1976-03-31		3 221 515	
		b) Addition during 1976-77 (including Rs 249 856 for Compulsory Certification)		849 790	
				4 071 305	
		c) Less: Depreciation w/o			
		i) Up to 1976-03-31	1 198 401		
2 023 114		ii) During 1976-77	247 640	1 446 041	2 625 264
		1.7 Furniture and Equipment			
		a) As per cost value up to 1976-03-31		1 869 703	
		b) Addition during 1976-77 (including Rs 182 734 out of S & T Projects)		491 368	
7 162 962				2 361 071	8 550 655

CARRIED OVER

(Continued)

BALANCE SHEET AS

LIABILITIES

PREVIOUS SL YEAR NO. Rs		Rs	Rs	Rs
8 493 753	BROUGHT FORWARD		337 639	10 993 094
	2.6 <i>Madras Building Project</i>			
	a) As per last Balance Sheet	761 301		
	b) <i>Add</i> : Transferred from ISI Building Fund	<u>358 699</u>	1 120 000	
	2.7 <i>Govt Grant for Land for Lab Bldg at Bombay</i>			
	As per last Balance Sheet		35 890	
	2.8 <i>S & T Projects</i>			
	a) Govt Grant Received	500 000		
	b) <i>Less</i> : Expenditure during 1976-77	<u>338 467</u>	161 533	
	2.9 Pension Fund		3 880 472	
	2.10 CPF		10 945 164	
18 542 469	2.11 GPF		4 572 563	21 053 261
	3. <i>Loans: From Govt of India for</i>			
	3.1 Conveyance Advances		218 750	
225 000	3.2 House Building Advances		<u>500 000</u>	718 750
	4. <i>Current Liabilities</i>			
	4.1 Advance Subscription (1977)		2 522 339	
	4.2 <i>Sundry Creditors</i>			
	a) Inland	381 640		
	b) Abroad	559 663		
3 942 287	c) Earnest Money	<u>43 653</u>	984 956	3 507 295

31 203 509

CARRIED OVER

36 272 400

AT 31 MARCH 1977—Contd

ASSETS

PREVIOUS YEAR Rs	SL NO.		Rs	Rs	Rs
7 162 962		BROUGHT FORWARD		2 361 071	8 550 655
		c) <i>Less: Cost of Equipment disposed of during 1976-77</i>		608	
				<u>2 360 463</u>	
		d) <i>Less: Depreciation w/o</i>			
		i) Up to 1976-03-31	1 026 368		
		ii) During 1976-77	79 373		
			<u>1 105 741</u>		
		iii) <i>Deduct: Depreciation on Equipment disposed of during 1976-77</i>	495	1 105 246	1 255 217
843 335					
		1.8 <i>Vehicles</i>			
		a) As per cost value up to 1976-03-31		214 358	
		b) <i>Less: Depreciation w/o</i>			
		i) Up to 1976-03 31	156 547		
57 811		ii) During 1976-77	11 562	168 109	46 249
		1.9 <i>Library Books</i>			
		a) As per last Balance Sheet		293 377	
		b) Addition during 1976-77 (including Rs 1 250 out of S & T Projects)		72 368	
				<u>365 745</u>	
		c) <i>Less: Cost of Books w/o during 1976-77</i>		2 001	363 744
293 377					
		2. <i>Investments at Cost</i>			
		2.1 Deposits with Banks	200 000		
		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)	11 400	2 18 900	
		2.4 Pension Fund		3 880 472	
		2.5 CPF		10 945 164	
17 743 447		2.6 GPF		<u>4 572 563</u>	19 617 099
		3. <i>Current Assets</i>			
		3.1 Stock of Printing Paper (at cost value)		350 719	
		3.2 <i>Sundry Debtors</i>			
		a) Sale of Publications	556 783		
		b) Bulletin Advertisements	91 761		
26 100 932		CARRIED OVER	648 544	350 719	29 832 964

(Continued)

BALANCE SHEET AS

LIABILITIES

PREVIOUS YEAR	SL No.		Rs	Rs
31 203	509	BROUGHT FORWARD	36 272	400

31 203 509

TOTAL

36 272 400

I have examined the accounts of the Indian Standards Institution, New Delhi, for the year 1976-77 and obtained all the information and explanations that I have required and subject to the observations in the separate Audit Report, I certify, as a result of my audit that in my opinion these accounts are properly drawn up so as to exhibit a true and fair view of the state of affairs of the Institution according to the best of my information and explanations given to me and as shown by the books of the Institution.

Sd/-

(K. P. Rangaswami)

Accountant General

Commerce, Works and Miscellaneous
New Delhi

New Delhi

Dated : 15 Dec 1977

AT 31 MARCH 1976-77 — Contd

ASSETS

PREVIOUS YEAR	SL NO.		Rs	Rs	Rs
26,100	932		648 544	350 719	29 832 964
		BROUGHT FORWARD			
	976 613	c) Licence, Inspection Charges, etc	92 077	<u>740 621</u>	1 091 340
		4. Loans and Advances			
		4.1 Advances			
		a) Conveyance Advances	1 98 376		
		b) Festival	6 240		
		c) Flood	18 269		
		d) Foodgrains	36 300		
		e) Store Purchases, etc	<u>255 055</u>	514 240	
		4.2 Security Deposits		109 282	
		4.3 Pre-paid Expenses		76 434	
		4.4 Due from Ministry of External Affairs (A/c ITEC Trainees)		102 602	
699 315		4.5 Due from Ministry of Finance (A/c SCAP Trainees)		<u>25 554</u>	828 112
		5. Cash and Bank Balances			
		5.1 With Bankers (including Rs 45 000 BC's Account II)		4 433 607	
		5.2 In hand (including Imprest)		77 960	
3 426 649		5.3 Postage Stamps		8 417	4 519 984
				<u> </u>	
<u>31 203 509</u>			TOTAL	<u>36 272 400</u>	

(Figures have been rounded off to whole rupees)

Sd/-
(A. K. Gupta)
Director General
Indian Standards Institution
New Delhi

Sd/-
(Raj K. Satia)
Director (Accounts)
Indian Standards Institution
New Delhi

APPENDIX B

Principal Officers of INDIAN STANDARDS INSTITUTION

(As on 31 March 1977)

General Council (GC)
President

SHRI MOHAN DHARIA
Union Minister of Commerce, Civil
Supplies and Cooperation,
Government of India

Vice-Presidents

SHRI D. C. KOTHARI
SHRI HARISH MAHINDRA

Executive Committee (EC)

Chairman

SHRI D. C. KOTHARI

Finance Committee (FC)

Chairman

SHRI HARISH MAHINDRA

*Agricultural & Food Products Division
Council (AFDC)*

Chairman

DR M. S. SWAMINATHAN

Vice-Chairman

DR B. L. AMLA

Chemical Division Council (CDC)

Chairman

DR S. P. VARMA

Vice-Chairmen

DR M. G. KRISHNA

DR D. BANERJEE

Civil Engineering Division Council (CEDC)

Chairman

DR K. L. RAO

Vice-Chairmen

SHRI Y. K. MURTHY

SHRI V. R. VAISH

Consumer Products & Medical Instruments

Division Council (CMIDC)

Chairman

COL R. D. AYYAR

Vice-Chairman

BRIG M. M. TALWAR

Electronics and Telecommunication Division

Council (LTDC)

Chairman

MAJ-GEN K. K. MEHTA

Vice-Chairman

COL G. K. RAO

Electrotechnical Division Council (ETDC)

Chairman

SHRI J. S. ZAVERI

Vice-Chairman

MAJ-GEN K. K. MEHTA

Marine, Cargo Movement and Packaging

Division Council (MCPDC)

Chairman

Vice-Chairmen

—

SHRI S. PARMANANDHAN
SHRI A. RAY

Mechanical Engineering Division Council

(EDC)

Chairman

MAJ-GEN R. JANARDHANAM

Vice-Chairman

SHRI ABHIJIT SEN

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*Structural & Metals Division Council
(SMDC)*

Chairman

Vice-Chairmen

SHRI J. G. KESWANI

PROF V. A. ALTEKAR

SHRI M. DHAR

Textile Division Council (TDC)

Chairman

Vice-Chairman

SHRI G. K. DEVARAJULU

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

BRIG G. R. CHAINANI

*Consumer Advisory Committee for
Standardization (CACS)*

Chairman

*Environmental Protection Advisory
Committee (EPAC)*

Chairman

DR B. D. NAG CHAUDHURI

*Ahmadabad Branch Office Advisory
Committee*

Chairman

SHRI S. J. COELHO

*Bangalore Branch Office Advisory
Committee*

Chairman

DR S. M. PATIL

Pombay Branch Office Advisory Committee

Chairman

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

STAFF

(As on 31 March 1977)

Director General	: DR A. K. GUPTA		
Deputy Directors General	: SHRI Y. S. VENKATESWARAN SHRI A. B. RAO	} HEADQUARTERS	
	SHRI A. P. BANERJI ...		EASTERN REGION
	SHRI S. SRINIVASAN ...		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 and Medical Instruments Department	
Director	SHRI SOM PRAKASHA
Electronics & Telecommunication Department	
Director	SHRI N. SRINIVASAN
Electrotechnical Department	
Deputy Director/Head	SHRI T. RAJARAMAN
Marine, Cargo Movement & Packaging Department	
Director	SHRI P. S. DAS
Mechanical Engineering Department	
Deputy Director/Head	SHRI S. CHANDRASEKHARAN
Structural & Metals Department	
Director	SHRI C. R. RAMA RAO
Textile Department	
Director	SHRI S. M. CHAKRABORTY
Accounts Department	
Director	SHRI R. K. SATIA
Personnel Department	
Secretary	SHRI GIRDHARI LAL
General Services Department	
Director	SHRI K. P. KHANNA
Central Marks Department	
Director, Central Marks	DR HARI BHAGWAN
Director, Electrical Appliances Cell	SHRI S. P. SACHDEV
Certification Marks Department (Delhi)	
Deputy Director/Head	SHRI E. N. SUNDAR
Implementation Department	
Director	SHRI S. R. KUPPANNA

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Laboratory

Director

DR S. GHOSH

Library

Deputy Director/Head

SHRI V. P. VIJ

Publications Department

Director & Chief Editor

SHRI RAM D. TANEJA

Editor

SHRI GURCHARAN SINGH

Public Relations Department

Director

SHRI MANOHAR LAL

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 L. G. BANERJI

Chandigarh Branch Office

Deputy Director/Head

SHRI R. I. MIDHA

Hyderabad Branch Office

Director

SHRI M. RAGHUPATHY

Kanpur Branch Office

Director

SHRI M. S. SAXENA

Patna Branch Office

Deputy Director/Head

SHRI S. K. KARMAKAR

Trivandrum Branch Office

Deputy Director/Head

SHRI G. S. VILKHU