

NINETEENTH ANNUAL REPORT

APRIL 1965 — MARCH 1966

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INDIAN
STANDARDS
INSTITUTION

MANAK BHAVAN
9 Bahadur Shah Zafar Marg
NEW DELHI

NINETEENTH
**ANNUAL
REPORT**

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ACKNOWLEDGEMENT

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

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



Shri S. Nijalingappa, Chief Minister of Mysore, inaugurating the Ninth Indian Standards Convention held at Bangalore in December 1965. Seated on the dais (from l to r) are Shri Prabhu V. Mehta, Shri Y. N. Gangadhara Setty, Dr T. N. Singh and Shri Jehangir J. Ghandy.

CONTENTS

PART I GENERAL REVIEW	5
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PART II DIVISIONAL REPORTS	25
0. Introduction	25
1. Agricultural and Food Products	26
2. Chemical Division	...	...	...	30
3. Civil Engineering Division	...	...	...	33
4. Consumer Products Division	...	...	...	34
5. Electrotechnical Division	...	...	...	36
6. Mechanical Engineering Division	...	...	...	38
7. Structural and Metals Division	...	...	...	39
8. Textile Division	...	...	...	41
9. Sectional Committees under the Executive Committee	...	...	...	43
10. Statistics Department	...	...	...	44
11. Research and Investigation	...	...	...	45

PART III INTERNATIONAL ACTIVITIES	...	...	...	49
1. International Organization for Standardization (ISO)	...	...	...	49
2. International Electrotechnical Commission (IEC)	...	...	...	64
3. Commonwealth Standards Conference	...	...	...	71

PART IV APPENDICES	...	...	...	73
A. Indian Standards Published and in Press During 1965-66	...	...	...	73
B. Audited Accounts for the Year 1965-66	...	...	...	96
C. Principal Officers of ISI	104

INDIAN STANDARDS INSTITUTION — General Information	107
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PART I

GENERAL REVIEW

The Indian Standards Institution has successfully completed its three Five-Year Plans and 19 years of devoted service in planned economic and industrial development of the country through standardization and quality control. The year under review represents a period of intense activity, as a result of which the targets for achievement were considerably exceeded. Concerted efforts were made to introduce standardization in industrial production at different levels, promote exports on the basis of quality control, and encourage import substitution.

The target for the formulation of new Indian Standards in different fields during the last year of the Third Plan was exceeded by 12 percent. Considerable progress was made under the ISI Certification Marks Scheme and the achievement by the end of the Third Plan period was over three times the target figure. Many new items of consumer and other interests were brought within the purview of the Scheme with the result that the total annual value of the products covered registered a marked increase; in fact, some of the important industries in the organized sector were almost fully covered. ISI testing laboratories were further expanded for the benefit of standardization and better enforcement of quality control. Implementation of Indian Standards achieved considerable progress with widespread consciousness of the vital role of standardization and quality control among different sectors of the economy.

To meet the new demands made by the conflict on the Subcontinent, a number of emergency standards were processed expeditiously. Besides contributing over Rs 40 000 to the National Defence Fund, National Defence Certificates were purchased either directly or through increased contribution to the Provident Fund. In addition, over 100 employees of the Institution donated blood for the *JAWANS*.

The Institution continued to take active part in the technical and administrative work of standardization at international level. For this, ISI collaborated closely with the International Organization for

Standardization (ISO), International Electrotechnical Commission (IEC) and the Commonwealth Standards Conference.

Meetings of GC, EC and FC — The 21st annual meeting of the General Council was held on 8 March 1966 under the chairmanship of Shri D. Sanjivayya, Union Minister of Industry and President of ISI. Shri Jehangir J. Ghandy and Shri Prabhu V. Mehta were re-elected Vice-Presidents for another term of one year ending 31 March 1967. The Executive and Finance Committees held 5 and 4 meetings respectively during the year.

Standards Published — The number of Indian Standards in force, including those under print but excluding those withdrawn, on 31 March 1965 was 2 958. During the year under report, 458 new standards, as against 426 during the previous year, were sent to press and 53 existing standards were withdrawn. Thus, the total number of Indian Standards in force, including those under print, on 31 March 1966 was 3 363.

In addition to the 458 new standards, the Institution issued, during the year, 104 revisions of existing standards and Hindi translations of another two. Thus, ISI issued during 1965-66, 562 standards, exceeding the Third Plan target of 500 by 12 percent. Lists of new and revised standards, those translated into Hindi and those withdrawn during the period under review are given in Appendix A (see P 73).

ISI Certification Marks Scheme — Considerable progress was made under the ISI Certification Marks Scheme as seen from the details given below:

a) New licences granted during the year	185
b) Total number of licences issued since the inception of the Scheme	1 235
c) Applications received during the year for the grant of licences	469
d) Total number of applications received since the inception of the Scheme	2 439
e) Annual value of goods covered under the Scheme	Rs 3 500 million (approx)

New items covered under the Scheme included ballasts for fluorescent lamps, bicycle tyres, blockboards, chlordane dusting powders, coffee powder, desiccated coconut, domestic refrigerators, enamelware, galvanized iron and steel wires, liquid amine salts, malathion dusting powders, emulsifiable concentrates and technical, metric scales, methyl parathion emulsifiable concentrates, mild steel wires, poultry feeds, rayon satin, roasted chicory powder, ropes for general engineering purposes,

round strand galvanized steel wire ropes, varnish and wooden flush door shutters.

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

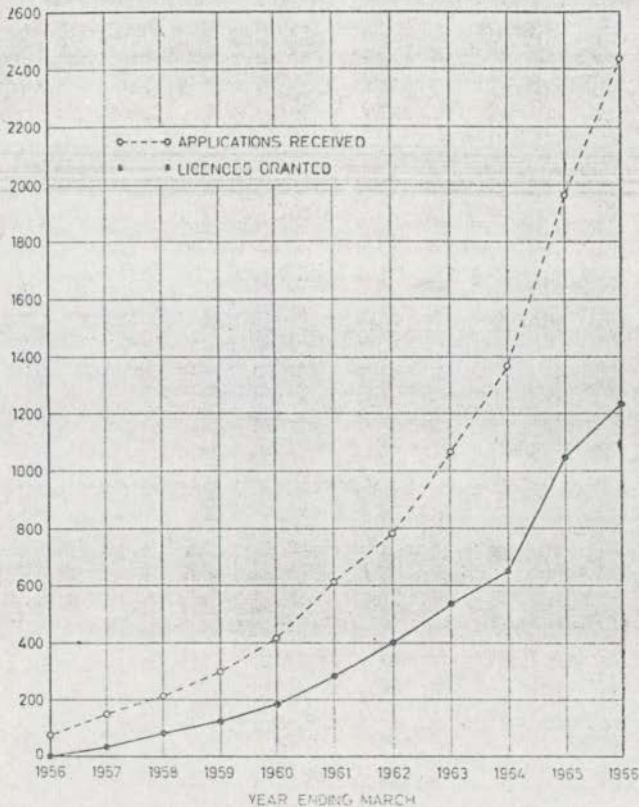


FIG. 1 PROGRESS OF ISI CERTIFICATION MARKS SCHEME

Amendment to ISI (Certification Marks) Regulations, 1955—ISI (Certification Marks) Regulations were further amended with effect from 1 January 1966. Sub-regulation 6 (2) was amended to clarify that a claim about the conformity of a manufacturer's product to an Indian Standard, in reply to a specific query or in a tender addressed to any individual customer, shall not be deemed to be a public claim. The amendment to sub-regulation 6 (3) clarified that, so long as a standard

mark was not specified for a product or a process, a person might publicly claim that his product or process conformed to the relevant Indian Standard provided such a product or process actually conformed to the relevant Indian Standard. According to this amendment, any person, with the previous sanction of the Institution, might use the designation of the relevant Indian Standard in the marking of the article or the covering thereof.

Meetings of Certification Marks Licensees—With a view to studying common problems in the operation of the Certification Marks Scheme, ISI convened, during the year under review, three meetings of the licensees for steel, bitumen felts and small ac motors.

Withdrawal of Powers Delegated to Competent Authorities—The Central Government, in consultation with ISI, withdrew the powers of competent authority delegated to the Council of Scientific and Industrial Research for flameproof electrical equipment since the projected scheme of certification in collaboration with CSIR did not materialize. The power of competent authority given to the Fisheries Development Adviser has also been withdrawn since the Central Government has entrusted the work relating to quality control and inspection of fish and fish products prior to export to the Director, Central Institute of Fisheries Technology, Ernakulam.

Training in Statistical Quality Control—With the object of imparting training in statistical quality control methods to licensees for pesticides, a training programme was organized at Bombay in July 1965. Eleven trainees representing nine firms participated in the programme which lasted eight days.

Training in Testing—Two persons, one representing a State Government and the other a licensee, were trained in testing work in ISI Laboratory.

Recognition of Other Standards as Indian Standards—Under the provisions of ISI (Certification Marks) Regulations, ISI recognized B.S. 1485:1948 'Specification for galvanized wire netting' as IS:3150-1965, B.S. 3084:1963 'Specification for metallic slide fasteners' as IS:3148-1965 and JIS S 3012-1950 'Enamelware for home use' as IS:3149-1965.

Certificates of Conformity to Standards Other than Indian Standards—The Institution has decided that, if facilities exist for testing and certifying quality of export goods to specifications other than those covered by Indian Standards, ISI will be prepared to issue certificates of compliance of particular lots of goods intended for export to such specifications. In the absence of any contractual specifications, the ISI certificates will be issued on the basis of factual inspection.

ISI Laboratory—There was considerable expansion in the testing work undertaken by ISI laboratory, the details of which are as follows:

	<i>During 1965-66</i>	<i>During 1964-65</i>	<i>Since Setting up of the Laboratory</i>
a) Samples received	2 599	2 147	7 054
b) Samples tested	2 754	2 061	6 661
c) Indian Standard Specifications covered	97	61	275
d) Value of testing work done	Rs 238 986·75	Rs 226 599·85	Rs 604 196·10

ISI laboratory had taken up, during 1964-65, investigational work on ten items, out of which work on eight was completed during the year under review. Of the remaining two, work on the mercury content of phenyl mercury chloride was dropped, it being no longer required owing to amendments in the method of test prescribed in the relevant specification. Work on the suspensibility test of water dispersible powder was in progress.

During the year under report, investigational work on fifteen items was taken up. Out of these, work on the following seven items was completed:

- a) Determination of the maximum permissible temperature for the handles of soldering iron from the point of view of comfortable use;
- b) Examination of the feasibility of replacing aluminium for brass on bayonet lampholders;
- c) Finding out the resistance of aluminium wires for investigational purposes;
- d) Carrying out impact and tumbling barrel tests on tumbler switches (5 amperes and 15 amperes, 250 volts) to find out:
 - (1) the type of mechanical strength test suitable for inclusion in the specification, and (2) the temperature at which the sealing compound covering live parts of 5 amperes, 250 volts tumbler switches melts;
- e) Carrying out all tests on 15 amperes, 250 volts tumbler switches of reduced size for their suitability in use;
- f) Finding out the thickness of wooden heald frame for incorporation in the specification under preparation; and
- g) Sieving test in dry seed dressings.

Investigational work was in progress on the remaining eight items, of which the following deserve special mention:

- a) Tests for maximum working pressure, safety pressure, bursting pressure and thermal efficiency for very large oil pressure stoves;

- b) Comparative study of iodometric and spectrophotometric methods for the determination of malathion content; and
 c) Determination of solid matter in malt extracts by distillation method.

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

<i>Laboratory</i>	<i>Product</i>
Superintendence Co of India Pvt Ltd, Calcutta	General goods, including biscuits and paints
Messrs Italab Engg Pvt Ltd, Bombay	Engineering goods
Research Department of Messrs Bird & Co Pvt Ltd, Calcutta	Cement, chemicals and metals
The Silk & Art Silk Mills Research Association (SASMIRA), Bombay	Rayon satin

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

Adoption of Indian Standards—A high level of adoption of Indian Standards was maintained by central purchase organizations of the Government of India. The position of adoption of Indian Standards by various departments of the Government of India is given below:

DEPARTMENT	NUMBER OF INDIAN STANDARDS ADOPTED		As ON 31 MARCH 66
	Up to 31 Mar 65	From 1 Apr 65 to 31 Mar 66	
Directorate General of Supplies & Disposals (DGS & D)	2 103	249	2 352
Department of Defence Production, Ministry of Defence (DDP)	1 100	88	1 188
Research, Designs & Standards Organization (Railways) (RDSO)	993	104	1 097
Posts & Telegraphs Department (P & T)	203	41	244

In addition, various state electricity boards, state public health departments, associations, production units and others intimated the Institution of their decision to adopt all or specific Indian Standards of their interests for the purpose of store purchase, design guidance and construction work.

Conference on Implementation of Indian Standards—A conference on the implementation of Indian Standards was convened by the Government of Madras on 6 April 1965. It was inaugurated by Shri M. Bhaktavatsalam, State Chief Minister, and presided over by Shri R. Venkataraman, Minister of Industries of Madras. The conference was attended by about 200 delegates representing various government departments, municipal committees, district boards and industries in the Madras State.

The Ministers emphasized in their addresses the need for active co-operation by all concerned in the formulation and adoption of Indian Standards. The conference adopted a number of resolutions, passed earlier by other State conferences, relating to the implementation of Indian Standards, recognition of ISI Certification Marks Scheme and extension of the scope of the standardization activity. This conference was twelfth in the series, others having been held earlier in the States of Orissa, Kerala, West Bengal, Punjab, Himachal Pradesh, Bihar, Maharashtra, Mysore, Gujarat, Uttar Pradesh and Madhya Pradesh. A similar conference is proposed to be held in Assam State in the near future.

In pursuance of the decision of the State conferences held from time to time, the following steps were taken, during the period under review, by some State Governments for the implementation of Indian Standards in the respective States:

- a) *Director of Industries, Government of Madhya Pradesh*—Government of Madhya Pradesh set up a 'Technical Wing' in the Industries Directorate to deal with problems relating to standardization with regard to government purchases and to act as liaison between ISI and the different State Government departments. The Government has also sanctioned the appointment of two specialists for this purpose.
- b) *Industries Department, Government of Orissa*—Industries Department, Government of Orissa, set up a 'Standards Cell' for the promotion of standards activities in the State.

Implementation of NCAER Recommendations—To consider the recommendations made by the National Council for Applied Economic Research (NCAER) with regard to saving in structural steel through standardization, a high-powered committee, under the chairmanship of Shri N. N. Wanchoo, Secretary, Ministry of Steel and Mines, met in Calcutta on 6 and 7 January 1966. The Committee fully endorsed the

recommendations made in the NCAER report and allocated the follow-up action on these recommendations to various Government departments and other bodies. In order to expedite the implementation of these recommendations, a permanent subcommittee, on which ISI is also represented, was set up under the Iron & Steel Controller.

List of Manufacturers Operating to Indian Standards — As a further aid to implementation, 37 inquiries covering 336 Indian Standards on various items were issued with a view to preparing a list of manufacturers claiming to produce goods according to Indian Standards. Information thus collected is made available to all those who approach ISI for assistance in procuring standard goods. The claimants, some of whom responded favourably, were also approached for joining ISI Certification Marks Scheme.

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

Industrial Safety Advisory Committee — The Industrial Safety Advisory Committee (ISAC) of ISI held its second meeting during the period under review. It reviewed the work of different technical divisions regarding the formulation of Indian Standards relating to safety and discussed, among other things, the possibility of ensuring compulsory quality control of safety equipment.

Company Standardization — To help Indian industries develop their company (in-plant) standardization practices, ISI has been organizing, since 1963, training programmes at various industrial centres. These training programmes have covered about 200 industrial units all over the country and have led to the establishment of company standardization departments in many of them.

During the period under review, the Institution organized the following programmes for promoting and developing company standardization activity in the country:

a) *Training Programmes*

Place	Period	No. of Participants	
		Organizations	Trainees
1) Simla	1-11 Jun 1965	21	21
2) Bangalore	2-12 Aug 1965	30	37
3) Delhi	11-21 Oct 1965	25	27

These programmes provided detailed training in standardization techniques, including thorough acquaintance with the basic

principles and practices. Reports about the activities of the participants in the above-mentioned courses indicated that positive steps were being taken by many of them for establishing company standards departments in their respective organizations.

b) *Survey Programmes*

Place	Period	No. of Participants	
		Organizations	Trainees
1) Coimbatore	10 May-22 Jun 65	8	13
2) Hyderabad	14 Jul -24 Aug 65	10	13
3) Jamshedpur	31 Aug -28 Sep 65	3	17

The Survey Programmes were organized in collaboration with the respective Local Productivity Councils.

c) *Symposium on Aspects of Productivity in Modern Works Management*—

At a symposium on the aspects of productivity in modern works management organized by the Bombay Branch of the Institution of Works Managers on 14 and 15 January 1966, Dr A. K. Gupta, Director (Implementation), ISI, was the principal speaker at its session on Productivity through Simplification and Variety Reduction, which was attended by 84 participants. The discussion, which followed the talk, indicated appreciation of the role of national and company standards in increased productivity through variety reduction.

Company Standardization Forum—As a result of the interest generated in Company Standardization, standards engineers employed in various industrial units in the Bangalore region decided to set up a Forum where they could meet periodically to exchange views on problems of common interest. Many ISI members in Bangalore reacted favourably to the proposal.

Library and Information Services—The ISI libraries at the Headquarters and in branch offices at Bombay, Calcutta, Kanpur and Madras continued to render useful service by disseminating information on standardization and other technical subjects. The work done in the Library at the Headquarters during the year is as under:

a) New publications accessioned during the year	14 245
b) Total number of standards and other publications	147 112
c) Additional scientific and technical journals subscribed to during the year	16
d) Total number of scientific and technical journals received	480
e) Bibliographies prepared on different subjects	125

Monthly lists of *Additions to the Library* (Part I—Overseas Standards, Part II—Books and Pamphlets) were brought out and circulated among all concerned. Details of standards and draft standards received from Commonwealth countries were regularly published in the *ISI Bulletin* which served a very useful purpose.

Arrangements were made for translation into English of documents in Czech and Polish languages, in addition to those already available for documents in Danish, Swedish, Japanese, Russian, German, French and Italian.

Membership—With the object of augmenting its resources, necessitated by the expansion of its activities and all-round increase in the price level, the Institution decided to introduce, with effect from 1 January 1966, two new categories of membership and also to revise the rates of subscription of the existing three categories in order that the subscribing members might also partially share the additional burden. The old and new membership rates for different categories are as under:

Member (Category)	Minimum Annual Subscription (Rs)	
	Old	New
Patron	—	25 000
Donor	—	10 000
Sustaining	350	500
Associate	150	200
Individual	25	50

The position of subscribing membership of the Institution on 31 March 1966, as compared to that on 31 March 1965, was as follows:

	As on 31 March 66	As on 31 March 65
Total No. of Members	3 824	3 520
Patron	1	—
Donor Member	1	—
Sustaining Members	2 195	2 087
Associate Members	1 104	913
Individual Members	523	520
Membership Subscription Collected	Rs 1.030 million	Rs 7 million

A graphical representation of the increase in Subscribing Membership since 1951 is given in Fig. 2.

regions in the country. A similar campaign, financed through donations collected in cash and advertising space from ISI licensees, was launched in the English press. Some advertisements were also released to important magazines and periodicals.

- c) *Outdoor Publicity*—ISI activities were also publicized through outdoor publicity media, such as cinema slides, bus panels and hoardings, in important cities like Delhi, Bombay, Calcutta, Madras, Lucknow, Kanpur and Bangalore.
- d) *Articles, Write-Ups, Reviews, etc*—A number of articles, write-ups, resumes, reviews about standardization and activities of ISI in different fields were contributed to newspapers, journals, directories, reference books and souvenirs.
- e) *Talks and Features on AIR*—The following talks and features were broadcast from All India Radio:

1) Talks

Date	Station	By	Occasion
i) 5-4-65	Madras	Dr Lal C. Verman, Director General, ISI	Conference on Imple- mentation of Indian Standards
ii) 12-12-65	Bangalore	Dr Lal C. Verman, Director General, ISI	Ninth Indian Standards Convention

2) Features

Date	Station	Subject	Occasion
i) 30-5-65	Delhi	Activities of ISI	Publicity through Ex- ternal Services of AIR
ii) 13-12-65 and 15-12-65	Bangalore	Activities of ISI	Ninth Indian Stand- ards Convention
		In Relation to Industrial Deve- lopment	

- f) *Exhibitions*—ISI participated in three exhibitions held in different parts of the country. Here contribution made by ISI in standardization and quality control and the operation of ISI Certification Marks Scheme were projected through charts, photographs and write-ups. Besides, Indian Standards and

certified products bearing ISI Mark were prominently displayed. The details of the exhibitions are as follows:

- 1) *Exhibition on Food Adulteration* — organized by the Andhra Unit of the National Consumer Service at Hyderabad from 7 to 11 August 1965.
- 2) *Indian Leather Fair* — organized by the Central Leather Research Institute at Madras from 31 January to 6 February 1966.
- 3) *Indian Export Products Exhibition* — organized by the Ministry of Commerce in New Delhi on the occasion of the 22nd Annual Session of the Economic Commission for Asia and Far East (ECAFE) on 22 March 1966. The Exhibition, originally scheduled to end on 4 April 1966, was extended up to 30 April 1966 and is likely to be turned into a permanent show window.
- g) *Intensive Publicity* — On the occasion of Ninth Indian Standards Convention at Bangalore in December 1965, intensive publicity was given to ISI activities through cinema slides; hoardings; press advertisements; press releases including features, articles and photographs; editorials; radio broadcasts and press conferences. Seventeen newspapers and journals brought out special supplements and carried features on ISI activities. In addition, a 190-page Souvenir was brought out by the Reception Committee during the Convention.

Distinguished Visitors — The Institution had the privilege of welcoming a number of visitors, both from India and abroad, and various parties of students. Among the distinguished visitors were:

- a) Dr John P. Lewis, Director, United States Agency for International Development Mission to India;
- b) Shri Asoka Mehta, Union Minister of Planning; and Deputy Chairman, Planning Commission;
- c) Shri Sham Lal Saraf, Chairman, Advisory Committee of Parliament Members on Films for Export Promotion, along with four members of the Committee;
- d) Professor R. Radulet, President, International Electrotechnical Commission (IEC);
- e) Professor Yos Bunnag, Director General, Department of Science, Bangkok;
- f) Mr Raymond A. Njoku, Minister of Communications, Federal Republic of Nigeria;
- g) Dipl-Ing Curt Mohr of Deutscher Normenausschuss (DNA), Berlin;
- h) H. E. Mr. Abedokun A. Haastrup, Nigerian High Commissioner in India.

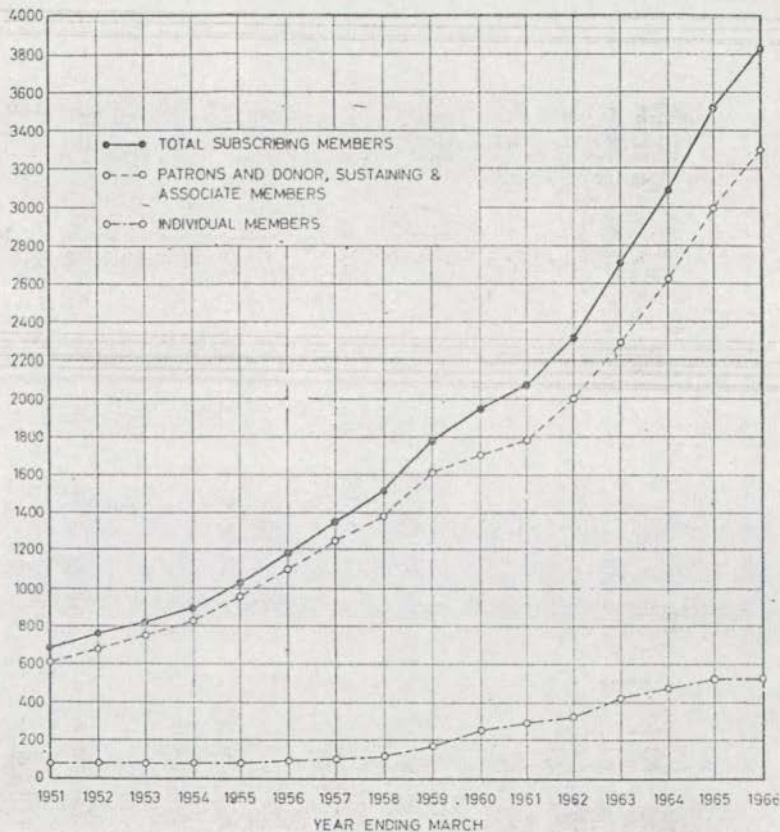


FIG. 2 ISI SUBSCRIBING MEMBERSHIP THROUGH THE YEARS

Public Relations— Various steps were taken, during the year under review, to create greater standards-consciousness, propagate ISI Certification Marks Scheme, further the cause of industrial and economic development through standardization and develop effective public relations. Different publicity media were utilized for this purpose.

Publicity

- a) *Press Notes*— 1011 press notes on published and draft Indian Standards and other important activities of ISI were issued.
- b) *Press Advertising*— With a view to educating the masses about the significance of the ISI Mark, a new advertising campaign, highlighting the importance of ISI Certification Marks Scheme, was launched in the language papers of different States and

- j) Shri S. G. Barve, Member (Industry), Planning Commission, New Delhi,
- k) Shri J. V. Narlikar, King's College, Cambridge; and
- m) Dr Lim Swee Aun, Minister of Industry and Commerce, Government of Malaysia.

The visitors, who took keen interest in the standardization and quality control activities of ISI, were taken round the Standards Exposition Hall, testing laboratories and technical departments.

Ninth Indian Standards Convention — The Ninth Indian Standards Convention was held at Bangalore from 12 to 19 December 1965. It was inaugurated by Shri S. Nijalingappa, Chief Minister of Mysore and the inaugural function was presided over by Shri T. N. Singh, the then Union Minister of Industry and President of ISI. The function was addressed, among others, by Shri Jehangir J. Ghandy, Vice-President of ISI and President of International Organization for Standardization (ISO).

A large number of delegates representing Central and State Government departments, manufacturing organizations, business undertakings, chambers of commerce, associations of trade and industry, technical institutions and research bodies, and consumers and purchasers attended the technical sessions of the Convention in which subjects of topical interest were discussed.

Particulars of the delegates, technical sessions and papers presented are as under:

Delegates

Total number of delegates who attended the Convention	906*
(Gentlemen 800, Ladies 106)	
Accompanying ladies	50

Technical Sessions

S-1 Expediting Preparation of Indian Standards	
S-2 Cost Reduction Through Standardization	
S-3 Extending Usefulness of ISI Certification Marks	
S-4 Implementation of Agricultural and Food Standards	
S-5 Standardization in the Field of Welding	
S-6 Crisis of Shortage of Building Materials	
S-7 Overseas Collaboration and Standardization in India	
S-8 Documentation and Library Housing	
S-9 Standardization as a Tool for Export Promotion	
Number of Technical papers contributed	189

*This includes three delegates from Iran and Thailand.

A Reception Committee consisting of leading citizens of Mysore and other states, under the chairmanship of Shri Y. N. Gangadhara Setty, made necessary arrangements for accommodation, transport, local visits, etc, for the delegates. Some social functions, cultural programmes and excursions were also arranged on the occasion of the Convention.

The Convention evoked great interest among scientists and technologists, industrialists and businessmen, Government policy makers and executives, and purchasers and consumers, who were brought together under this national forum for discussion of common problems concerning standardization and quality control in the context of the fast-developing industrial economy of the country. The increasing number of delegates participating in the Standards Conventions every year is an index of the growing consciousness of the importance of the Standardization in the production, distribution and consumption of goods as well as services, export promotion and import substitution.

A detailed report of the Standards Convention was published in February 1966 issue of the *ISI Bulletin*.

Standards Conferences in Uttar Pradesh—With the dual object of bringing into focus the role of standardization and quality control and of publicizing the activities of ISI two conferences of industrialists, technologists, Government representatives and eminent citizens of Uttar Pradesh were organized. The first conference was held at Lucknow on 24 November 1965 under the chairmanship of Shri S. P. Gupta, Deputy Minister of Industry, Government of Uttar Pradesh, and the other at Varanasi on 9 January 1966 under the chairmanship of Shri T. N. Singh, the then Union Minister of Industry and President of ISI. Both the conferences discussed matters relating to standardization and industrial development in the State and adopted resolutions laying stress on the implementation of Indian Standards and increasing the coverage of ISI Certification Marks Scheme.

K. L. Moudgill Prize—The K. L. Moudgill prize for the year 1965, of the value of Rs 1 000·00, was awarded to Dr Noshir N. Dastur, Director, National Dairy Research Institute, Karnal, by Shri S. Nijalingappa, Chief Minister of Mysore, at the inaugural function of the Ninth Indian Standards Convention at Bangalore.

Finances—A certified statement of accounts for the year 1965-66 is given in Appendix B (*see* P 96). Total income of ISI from various sources, such as Government of India grant, membership subscription, sale of standards and certification marks fee, amounts to Rs 6 904 807·76 as against an expenditure of Rs 7 099 157·38. In addition, consideration may be given to the expenses directly incurred by committee members from Government and private organizations for attending the meetings of ISI committees within India and abroad. Besides, several

organizations, both governmental and private, undertook testing work and supplied samples. Such invisible contributions for the year under report are estimated at Rs 1 160 000·00.

National Defence Efforts—The employees of the Institution made their contribution to the national defence efforts in different ways. Up to 31 March 1966, a sum of Rs 9 347·00 was contributed to the Prime Minister's Defence Fund, Rs 3 470·00 invested in the purchase of National Defence Certificates and Rs 27 600·00 contributed towards Contributory Provident Fund for investment in National Defence Certificates, all totalling up to Rs 40 417·00.

Besides, 175 employees of the institution volunteered to donate blood for the *JAWANS*. Out of them, 108 have already donated blood up to 31 March 1966 while others are awaiting the call from Blood Bank.

Welfare—Fifty-four employees of the Institution utilized the ISI Holiday Home at Mussoorie and spent a portion of their leave at the hill station.

Co-operative Store—ISI Employees Consumer Co-operative Store Ltd, which started functioning in February 1965, continued to cater to the employees' needs of consumer goods against rising prices of commodities of daily use. In addition to rent-free accommodation and staff from the ISI strength, a loan of Rs 5 000·00 was provided by the Institution to the Co-operative Store by way of financial assistance.

Canteen—The departmental Canteen continued to serve the employees with wholesome and pure eatables, snacks, tea, coffee, etc, at prices fixed in 1958 in spite of the spiralling rise in prices of raw materials. The Institution decided to meet the expenditure on wages of the ISI Canteen staff and cash value of food or the cash allowances given in lieu thereof, in accordance with the instructions of the Government of India from time to time.

Branch Offices—The four branch offices of the Institution at Bombay, Calcutta, Kanpur and Madras continued to render useful service to industry, trade and commerce in their respective regions by disseminating information relating to standardization, selling Indian and foreign standards, enrolling subscribing members, inspecting factories under the ISI Certification Marks Scheme and maintaining liaison with commerce and industry. With the expansion of work connected with the ISI Certification Marks Scheme, the branch offices, particularly in Bombay and Calcutta, devoted greater attention to inspection work. The work at Calcutta Branch increased manifold during the year on account of the introduction of compulsory certification marking for jute goods exported out of India and the coming of the entire steel production in India under the ISI Certification Marks Scheme. Besides, officers of the Bombay Branch Office gave evidence at the Tariff Commission inquiries from time to time.

Second ISI Building—The construction of the second ISI building, undertaken in March 1964 and scheduled to be completed by May 1965, was considerably delayed owing to paucity of funds. As on 31 March 1966, the building had almost been completed except for certain services. Contracts for air-conditioning, transformers and switchgears were yet to be finalized.

An All-India Building Fund Committee consisting of leading industrialists was set up under the chairmanship of Shri K. K. Birla for collecting funds. Besides, one of the floors was let out to the Minerals and Metals Trading Corporation of India Ltd, and an advance rent for five years received from them.

Against the total estimated expenditure of Rs 4.650 million for the building project (including laboratory equipment), a sum of Rs 3.337 million was collected up to 31 March 1966 according to the details given below:

	<i>Rs in millions</i>
a) Government Grant	0.729
b) Interest-free deposits and overdraft	1.092
c) Donations	0.170
d) Miscellaneous	0.031
e) Advance rent	1.315
Total	3.337
Balance amount required to complete the building	1.313
Total cost of the building	4.650

The Government of India was approached for a grant-in-aid of the balance amount to the Institution so that the remaining part of the building and the laboratory was fully equipped and properly utilized.

Women's Advisory Committee (WAC)—The Programme Subcommittee of the Women's Advisory Committee (WAC) held its first meeting on 11 March 1966. It outlined the task before WAC within the objectives set forth for it after taking into consideration similar activities in the United Kingdom. The task worked out by the Subcommittee, awaiting WAC's approval, is to educate women about:

- a) the benefits derived from national standards,
- b) the services that standards render to ensure safety in the home and elsewhere,

- c) the certification marking of goods to guide buying of quality consumer goods, and
- d) apprising ISI regarding housewives' needs for development of standard specifications.

In order to fulfil this task, a detailed programme of lectures, talks, articles and demonstrations was chalked out.

Fourth Five-Year Plan of ISI— During the period under review, the Fourth Five-Year Plan Frame of ISI was drawn up and forwarded to the Union Ministry of Industry for onward transmission to the Planning Commission.

The Plan has been prepared keeping in view the continuous picture of the development of resources and demand for standardization from the Third to the Fourth Plan period. The assessment of increase in the workload during Fourth Plan over the Third, both in respect of the preparation of Indian Standards and Certification Marks activity, has been worked out as about 100 percent. The Fourth Plan aims at bridging the gap between the income and the expenditure of Certification Marks Scheme which has been the objective from the beginning but only now it seems to be within reach.

It is expected that 4 770 additional standards (including revisions) will be issued during the Fourth Plan period, thereby reaching a grand total of 8 900 Indian Standards (including revisions). The capacity to issue new Indian Standards will be gradually increased so that a total of 1 150 standards is expected to be published in the last year of the Fourth Plan period. The total number of applications and licences under the ISI Certification Marks Scheme at the end of 1970-71 is expected to reach 3 800 and 1 900 respectively as against 2 300 and 1 150 respectively at the end of the Third Five-Year Plan. Testing facilities in the ISI laboratory are envisaged to be expanded more than three times to cope with the increasing work of the ISI Certification Marks Scheme.

As against about 100 percent increase in the workload envisaged in the Fourth Plan the increase in the total staff strength is expected to be about 70 percent. A notable feature of the Plan is to bring down the ratio of officers to non-technical staff from about 5 to 3.8.

The recurring and capital expenditure during the Fourth Plan is expected to be Rs 58.02 and Rs 5.00 million respectively, making a grand total of Rs 63.02 million of which Rs 34.01 million are expected to come from the Government of India and the balance of Rs 29.01 million is to be raised from non-governmental sources. The income from non-governmental sources like membership subscription, sale of publications and certification marking fee is to be stepped up. The

grant from the Government of India during Fourth Plan period would be about 50 percent.

International Activities—The Institution participated actively, during the year under report, in the work of 83 committees of International Organization for Standardization (ISO) and 58 committees of International Electrotechnical Commission (IEC). Besides providing the chairmanship for IEC/TC 43 Electric Fans, ISI held secretariats of the following 16 technical committees, subcommittees and working groups dealing with subjects of interest to India:

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

The Director General of ISI continued to serve as Chairman of the ISO Planning Committee (PLACO), as a member of the ISO Standing Committee for the study of Scientific Principles of Standardization (STACO) and as ISO Liaison Officer for the Economic Commission for Asia and the Far East (ECAFE).

Shri Jehangir J. Ghandy, Vice-President of ISI, Dr Lal C. Verman, Director General of ISI, and Shri K. N. P. Rao and Shri H. Hodgkinson, both of the Tatas, attended the Sixth Commonwealth Standards Conference held at London from 20 to 27 July 1965. The Conference

discussed matters of common interest relating to standardization among Commonwealth countries.

Dr Lal C. Verma, Director General of ISI, acted as Senior Consultant to the United Nations Centre for Industrial Development, New York, from 21 to 25 June 1965 to review the present work of the Centre in the field of standardization in relation to developing countries and to suggest the lines along which the work could be developed in future. Dr Verma's recommendations, which were given in particular relation to (a) developing countries, and (b) ISO and IEC can be made to form the basis of a plan of action by the United Nations for promoting industrial standardization in developing countries.

Dr A. N. Ghosh, Deputy Director General, ISI, was appointed by the Economic Commission for Asia and the Far East (ECAFE), Bangkok, as a Consultant for Institutional Study on Standardization, Patents, and Marketing for a period of two months commencing from 15 June 1965.

Shri S. K. Sen, Director (Marks), was deputed to the British Standards Institution (BSI) in December 1965 for a period of six months to assist BSI in organizing a cell for co-ordinating metricization of British Standards.

PART II

DIVISIONAL REPORTS

0. INTRODUCTION

0.1 This part of the report gives the record of technical work done by different divisions and sections of the Institution during the year 1965-66.

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

0.2 Progress of Standards — During the period under review, 458 new Indian Standards were adopted and sent to press; 104 standards were revised (*see* Appendix A); 424 new proposals for formulation of Indian Standards were received and 512 proposals (including some made during the previous year) were accepted and referred to various committees for further processing.

The growth of Indian Standards is graphically represented in Fig. 3 (*see* P 27).

0.3 ISI Committees and Their Membership — As on 31 March 1966, 1 602 committees of the Institution, with a membership of 18 786 experts representing various interests — manufacturers, consumers, research and technical organizations, purchasers and Government departments — were at work for the formulation of Indian Standards.

During the year 1965-66, 940 committee meetings were held for standards work.

The growth of ISI Committees, their membership and their activities is shown in Fig. 4 and 5 (*see* P 28).

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

**TABLE 1 RECORD OF ISI TECHNICAL DIVISIONS AND SECTIONS
(FOR THE YEAR 1965-66)**

(For details of standards published and those under print during 1965-66,
see Appendix A)

DIVISION OR SECTION	NO. OF COMMIT- TEES	NO. OF MEETINGS	NEW AND REVISED STANDARDS PUBLISHED AND UNDER PRINT	AMEND- MENTS TO STANDARDS	DRAFT STAND- ARDS CIRCULATED	NEW SUBJECTS TAKEN UP
Agricultural & Food Products	117	66	61	54	39	175
Chemical	369	238	84	59	153	49
Civil Engineering	216	120	84	52	77	85
Consumer Products	87	66	35	8	41	52
Electrotechnical	127	87	71	67	62	60
Mechanical Engi- neering	271	114	86	33	88	33
Structural & Metals	283	127	74	38	84	38
Textile	108	93	66	38	94	18
Miscellaneous	24	29	1	—	8	2
TOTAL	1 602	940	562*	349	646	512

*This includes two B.S. Specifications and one JIS Specification recognized as Indian Standards.

1. AGRICULTURAL AND FOOD PRODUCTS DIVISION

1.1 The Indian Standards formulated by the Agricultural and Food Products Division Council during the year under report (see 1.9) covered important fields, such as farm implements, propagation materials, animal feeds, fruits and vegetables, pesticides and their formulations, pest control equipment and processed cereals and pulses.

1.2 Of these, 20 standards related to farm implements and machinery commonly used by farmers in the country. These standards, which were prepared on a priority basis at the instance of the Union Ministry of Food and Agriculture, are expected to help the farmers in getting quality implements and in augmenting agricultural production as they cover implements useful for soil conservation, inter-cultivation, post-harvest operation and horticultural practices. Some of the important standards in this series are in respect of the following: *BUND* former; harrow *PATELA*, puddler, animal drawn; green manure trampler, animal drawn; single row cotton seed drill, animal drawn; paddy thresher, pedal operated; *TRIPHALI* (three-tined cultivator), animal drawn; levelling *KARHA (KENI)*, animal drawn; soil scoop; wheel hand hoe; and pruning scateur. In all these standards, a typical design of the implement has also been included for the guidance of small-scale manufacturers.

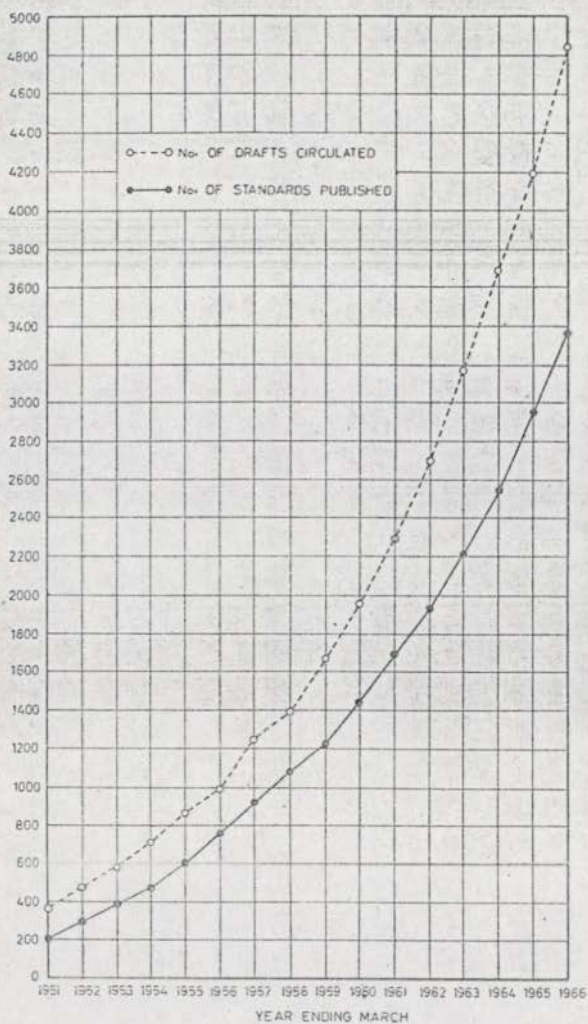


FIG. 3 GROWTH OF INDIAN STANDARDS

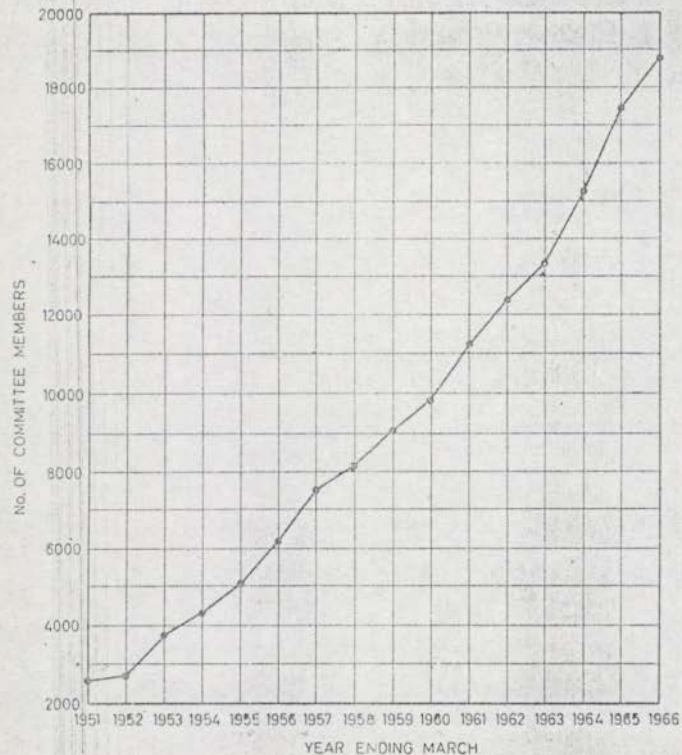


FIG. 4 GROWTH OF COMMITTEE MEMBERSHIP

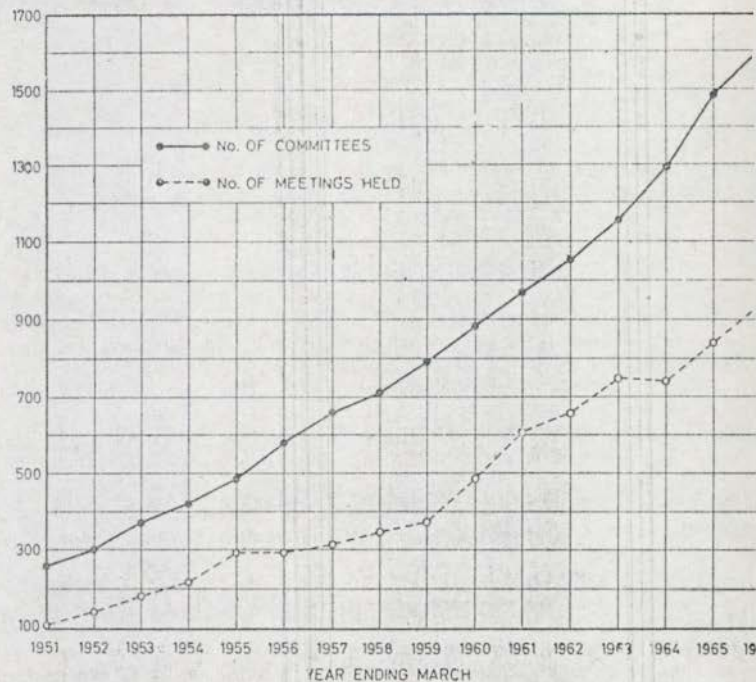


FIG. 5 GROWTH OF COMMITTEES AND THEIR ACTIVITIES

1.3 Eight standards were formulated for seeds covering different kinds of vegetables and cash crops. These standards have been prepared for the guidance of seed producers and seed traders as good seeds are an essential pre-requisite for increasing agricultural production.

1.4 Other standards of direct interest to consumers included those relating to onions, garlic, canned peas, canned okra (*BHINDI*), canned tomatoes, canned bitter gourd (*KARELA*), multi-purpose food, pickles, chutney, roasted and ground coffee, and soluble french coffee powder. Of these, the standards on fruits and canned products are expected to help in promoting quality production and export drive.

1.5 Another important field in which seven standards were issued is that of animal feeds for which industry is developing rapidly.

1.6 Other important standards include: a code of practice for the transport of monkeys by air and two specifications relating to dairy industry, namely, stainless steel milk pipes and fittings, and density hydro-meters.

1.7 The standard for the construction of hexagonal-type concrete bins for bulk storage of foodgrains, published during the year, was in line with the fast-changing pattern of foodgrain-handling in bulk in the country and is expected to help avoid wastage.

1.8 The Agricultural and Food Products Division Council held its annual meeting on 25 March 1966. While reviewing the work of the Division in general, the Council recommended a large number of subjects for the formulation of Indian Standards especially seeds, farm implements, animal feeds, spices and condiments, and fresh fruits.

On a representation by one of the manufacturers of alcoholic drinks, the Division Council reconsidered the question regarding the formulation of Indian Standards* for alcoholic drinks and, in the light of the consensus of opinion expressed during the Council meeting, decided that the work already initiated in this connection be continued keeping in view the needs of public health in general and Defence Services in particular.

In view of the development of the dairy industry, the Council split the Dairy Industry Sectional Committee, AFDC 12, into two sectional committees, namely, (a) Dairy Products and Laboratory Apparatus Sectional Committee, AFDC 34; and (b) Dairy Equipment Sectional Committee, AFDC 35.

The Council also reviewed the composition of the following sectional committees and reconstituted them:

- a) Tobacco Products Sectional Committee, AFDC 13;
- b) Food Colours Sectional Committee, AFDC 19;
- c) Farm Implements and Machinery Sectional Committee, AFDC 20;

- d) Spices and Condiments Sectional Committee, AFDC 21; and
- e) Storage and Marketing Structures for Agricultural Commodities Sectional Committee, AFDC 28.

1.9 A list of 61 Indian Standards formulated by the Agricultural and Food Products Division Council and sent to the press during the year under review is given in Appendix A.

2. CHEMICAL DIVISION

2.1 In order to meet the growing demands of the fast-expanding chemical industry, the Chemical Division Council formulated, during the year under review, a number of Indian Standards, of which the following deserve special mention:

- a) IS : 3306-1965 Tolerance limits for industrial effluents discharged into public sewers
- b) IS : 3307-1965 Tolerance limits for industrial effluents discharged on land for irrigation purposes

These two Indian Standards would provide effective guidance to local authorities in controlling the discharge of effluents into public sewers or on land and, along with IS : 2490-1963 'Tolerance limits for industrial effluents discharged into inland surface waters' published earlier, are a landmark in our work for regulating the disposal of industrial wastes and effluents into public sewers and inland surface waters.

- c) IS : 2836-1964 Methods of test for laboratory porcelain
- d) IS : 2837-1964 Porcelain crucibles and basins

The British Standards Institution, acting as the Secretariat of Technical Committee 48 Laboratory Glassware and Related Apparatus of the International Organization for Standardization, had sought specific permission from ISI for circulating the relevant draft Indian Standards on these subjects as ISO/TC 48 documents. These two Indian Standards influenced international thinking on porcelain crucibles and basins, and dimensions as well as performance tests on the lines given in these standards have been incorporated in the revised ISO draft proposal now under preparation.

- e) IS : 3101-1965 Collapsible tubes

This standard has achieved both rationalization and variety reduction in respect of collapsible tubes, which were being manufactured in more than 30 sizes and have now been cut down to 11 only.

f) IS : 3055-1965 Clinical thermometers

According to the decision of the Government of India, clinical thermometers are required to be graduated in centigrade units only after April 1966. This Indian Standard effectively meets all the requirements for changeover to the clinical thermometers graduated in degree Celsius.

g) IS : 3346-1966 Method for the determination of thermal conductivity of thermal insulation materials (two slab, guarded hot-plate method)

One of the important properties of thermal insulation material from the performance point of view is its thermal conductivity. Two-slab, guarded hot-plate method, giving reproducible and repeatable results with an experimental error not exceeding ± 5 percent, has been prescribed in this standard.

h) IS : 2840-1965 China clay for ceramic industry

This Indian Standard emphasizes the need for beneficiation of clays and provides a basis on which the consumers can formulate their requirements to suit the manufacturing process or to achieve certain properties in the finished product or both.

Mention may also be made here of the draft Indian Standard specification for ball clays, prepared during the period, which would make import substitution possible.

2.1.1 Substitution of Tinplate in Packaging—In view of the acute shortage of tinplate in India, the relevant technical committee of the Division Council considered the use of black plate or other alternative packing materials in place of tinplate, wherever possible. In general, it was recommended that the blackplate could be substituted for tinplate for those types of containers which would not require soldering and where the contact between the packed material and the blackplate would not adversely affect the former's quality. As regards containers having soldered side-seams, it was agreed that in many cases the ends of the containers could be made from suitable protected blackplate. With regard to the packing of *VANASPATI*, it was decided to send the following recommendations to the Union Ministry of Industry which would initiate action with the concerned ministries/departments for implementing the same:

- a) To permit the immediate packing of *VANASPATI* in containers where the components (tops and lever lids of containers fitted with a diaphragm), which are not in direct contact with *VANASPATI*, are made from suitably protected blackplate.
- b) To permit, at a subsequent stage, the packing of *VANASPATI* in containers made partly or wholly (as may be technologically feasible) from suitably protected blackplate.

2.2 Emergency Specifications — Another notable development relates to the formulation of emergency specifications, about 13 of which would soon be made available. Besides, requests were also received from various departments of the Government of India for the formulation of emergency specifications on different subjects. The relevant details in this respect are given below:

<i>Sl No.</i>	<i>Subject of Proposal</i>	<i>From Whom Received</i>	<i>Remarks</i>
1.	Paints	Directorate General of Technical Development	Ref 2.2.1
2.	High speed diesel oil	Ministry of Petroleum & Chemicals	Lowering of flash point with a view to increasing the production by blending a part of heavy naphtha with HSD of the present specification is under consideration
3.	Automotive lubricating oils	Ministry of Petroleum & Chemicals	Automotive lubricating oils with pour point of the order of 0°C are also under consideration
4.	Solvent hexane, food grade	Ministry of Health	} Ref 2.2.2
5.	Solvent-extracted vegetable oils for edible and industrial uses	Ministry of Health	

2.2.1 The proposal to formulate emergency standards for paint industry emanated from the Directorate General of Technical Development with a view to effecting import substitution and making the paint industry self-reliant so that it depends entirely on indigenous raw materials without having to spend any foreign exchange whatsoever. The crisis in the paint industry is largely due to the acute shortage of raw materials based on non-ferrous metals, namely, lead and zinc, which, at present, are wholly imported. A number of emergency standards based on the alternative titanium dioxide, mica pigment, etc, was, therefore, formulated. The use of alkyd-based compositions which not only possess improved durability but also enable conservation of vegetable oils for earning foreign exchange, was also promoted. In some cases, where expedient, foreign exchange was saved by prescribing only alkyd-based compositions for paints and colours like post-office red, signal red and India saffron, which are based on pigments derived from imported intermediates and are in great demand. This will definitely reduce the frequency of demand for imported pigments. Work was also in progress in the direction of discouraging wasteful production and use of stiff paints (oil pastes).

2.2.2 With the formulation of standards on food-grade, solvent hexane, and solvent-extracted vegetable oils a strong impetus will have

been given to revolutionizing the age-long manufacture of vegetable oils based on expression methods, which have been responsible for low recovery of oils from the respective oleaginous materials as well as a high residual oil content in the oilcakes, mostly going waste. With the solvent extraction of oleaginous materials, including oilcakes, potential reserves of oils, both for edible and industrial purposes, will be made available in the country without raising any extra crop of oleaginous plants. The solvent-extracted oilcakes/meals will be further available not only for livestock and poultry feeding but also for consumption in a number of ways.

2.2.3 The emergency specifications mentioned above will go a long way in achieving self-reliance by boosting large-scale production of much-needed materials in the country.

2.3 During the period under report, 47 new subjects were approved for the formulation of Indian Standards.

2.4 The Standing Working Committee of the Chemical Division Council met on 6 October 1965 and the Chemical Division Council held its Annual meeting on 18 March 1966.

2.5 At the instance of the Drugs Controller to the Government of India and with the object of meeting the pressing need for formulating national standards for containers for packing various types of pesticides to ensure the safety of human beings and animals, a Sectional Committee—Pesticide Containers Sectional Committee, CDC 49—was set up.

2.6 A list of 84 Indian Standards formulated by the Chemical Division Council and sent to press during the year under review is given in Appendix A.

3. CIVIL ENGINEERING DIVISION

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

3.2 Of the printed standards, special mention may be made of the codes of practice for concrete structures for the storage of liquids, for the use of masonry mortars, for the use of lime concrete in buildings, for the design and construction of raft foundations, for the design and construction of timber pile foundations, for industrial ventilation and for laying of cast iron pipes; specifications for pencil slats, for wood particle boards and fibre hardboards, for metal tables, for chairs and wardrobes and for low-density polythene pipes for cold water services; classification of burnt clay bricks; sampling and grading of structural granite, criteria

for the design of precast concrete trusses, method of test for permeability of cement mortar and concrete; and methods of measurement and evaluation of defects in timber.

3.3 Of the Indian Standards taken up during the period under review, particular attention may be drawn to the codes of practice for detailing reinforcement in reinforced concrete works, for heat insulation of non-industrial buildings, for safety while working with compressed air, for earthquake-resistant construction of buildings, for the design and construction of well foundations and for the design and construction of impact type machine foundations; specifications for masonry cement, for fly ash and for dimensions of tables and chairs for general office purposes; revision of the specification for cut sizes of timber; and recommendations for the stacking and storage of building materials at site.

3.4 With a view to encouraging substitution of imported and scarce raw materials like non-ferrous metals, which are specified in some of the specifications for water supply fittings, work on the formulation of emergency standards, wherever feasible, was taken up during the period under review. Of these, special mention may be made of the Emergency Revision of Indian Standard Specification for Water Meters (Domestic Type).

3.5 Some of the committees set up for the purpose of formulating standards in the field of multi-purpose river valley projects met during the period under review and worked out their future programme of work. Draft standards were also prepared on a number of subjects, including project reports, design of solid gravity dams and various types of spillways and energy dissipators, design of fixed wheel gates used in dams and canal linings.

3.6 The Standing Working Committee of the Civil Engineering Division Council met on 28 October 1965 and the Civil Engineering Division Council held its annual meeting on 8 March 1966.

3.7 A list of 84 Indian Standards formulated by the Civil Engineering Division Council and sent to press during the year under review is given in Appendix A.

4. CONSUMER PRODUCTS DIVISION

4.1 The Indian Standards formulated during the period under report, covered many subjects of consumer interest and those relating to surgical and medical equipment. All the 22 Sectional Committees under this Division, including nine relating to surgical and medical group, remained active.

4.2 The Committees working on surgical instruments and medical equipment broke an entirely fresh ground in many fields, such as dental cutting, filling, prosthetic and other instruments.

4.2.1 The Surgical Instruments Sectional Committee, CPDC 11, considered the more important cutting instruments and mating dimensions of scalpel blades and their handles.

4.2.2 The Medical Glass Instruments Sectional Committee, CPDC 12, took a decision of far-reaching consequence by accepting Leur type of fittings for syringes and their needles as well as interchangeable dimensions of plungers and barrels of general purpose syringes. The almost universal interchangeable dimensions of plungers and barrels of syringes are expected to help boost the export of Indian syringes based on these dimensions.

4.2.3 In view of the importance of the subject, close liaison was maintained with the work being done at international level on medical, surgical and dental equipment.

4.3 The committees dealing with consumer items paid special attention to factors like safety and interchangeability and considered the substitution of scarce imported materials by indigenous ones. Some of these committees also covered hospital requirements, such as utensils, cutlery, pressure heaters and stoves.

4.4 The Sports Goods Sectional Committee, CPDC 4, maintained a steady pace of progress. An Indian Standard on sports nets was published while two others on sports goods were revised. Nine draft standards, including those for cricket bats, hockey sticks, tennis and badminton racket frames, batting and boxing gloves, were prepared and 14 new subjects, including those relating to table tennis bats and boards, badminton balls, track and field equipment, weight-lifting equipment, steel hurdles and gymnastics equipment, were approved for the formulation of Indian Standards in future.

4.5 During the period under report, 52 new subjects were approved for preparing new standards. Among these, special mention may be made of medical and pathological glass apparatus, syringes for micro injections, bellows for artificial respiration, high pressure-high vacuum sterilizers, dental spot lights and spittoons, surgical bandages and domestic gas appliances.

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

- a) Fountain Pens and Ball Points, CPDC 16;
- b) Travel Requisites, CPDC 18; and
- c) Surgical Dressings, CPDC 19.

4.7 The Standing Working Committee of the Consumer Products Division Council (SWCCP) met on 14 October 1965 and the Consumer Products Division Council (CPDC) held its third meeting on 10 March 1966. The following new Sectional Committees were set up:

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

Work on the formulation of Indian Standards relating to artificial limbs assumes special significance in view of the fact that a large number of rehabilitation centres and units involving a total outlay of over Rs 90 million would be set up for the production, maintenance and servicing of artificial limbs during the Fourth Five-Year Plan.

4.8 Thirty-five Indian Standards, listed in Appendix A, were formulated by the Consumer Products Division Council and sent to press during the year.

5. ELECTROTECHNICAL DIVISION

5.1 The standards formulated and revised by the Electrotechnical Division covered a number of important subjects. Indian Standards relating to a large number of domestic electrical appliances, such as kettles, immersion water heaters, toasters and stoves were revised with a view to clearly defining the safety and performance requirements and also to specifying appropriate tests. Indian Standard specifications for paper insulated lead-sheathed cables and varnished cambric insulated cables for the supply of electricity were also revised.

5.2 An important standard published during the year related to dimensions for porcelain transformer bushings up to and including 36 kV. The long-felt need for this standard will ensure easy availability of bushings for the transformer industry and also enable the bushing manufacturing industry to produce quickly and economically the required types of bushings, particularly in view of the very large reduction in variety that has been achieved.

5.3 The Division brought out, during the year 1965-66, an exhaustive code of practice for the climate proofing of electrical equipment, which is expected to provide considerable guidance to manufacturers of electrical equipment.

5.4 In the field of electronics and telecommunications, the reorganized committees on components made a sizable progress by processing standards on several components in order to meet the demands of the growing industry. Similar advance was made in equipment standards, including electronic measuring instruments. The first phase of the

work on standards for X-ray tubes was completed with the publication of the specification for diagnostic type of X-ray tubes and accessories. This is one of the series of standards for X-ray tubes being formulated at the specific request of the Government of India for the economic production of X-ray tubes in the country in the near future.

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

5.6 Among other important items, work on hand included preparation of standard specifications for metal parts for the bushings, television receivers, heavy duty fuse gear and performance requirements of monochrome TV receivers. Besides, work on requirements and tests for circuit-breakers up to and including 11 000 V was completed while the question of taking up work on circuit-breakers of voltage rating exceeding 11 000 V was being examined.

5.7 With a view to conserving foreign exchange by restricting imports of non-ferrous metals a number of amendments was issued to several existing standards permitting substitution of indigenous materials.

5.8 The Standing Working Committee of the Electrotechnical Division Council met on 22 September 1965 and the Electrotechnical Division Council held its annual session on 9 March 1966.

5.9 With the object of accelerating the pace of standardization in the field of domestic electrical appliances and accessories, the Light Electrical Appliances Subcommittee and the Electrical Wiring Accessories Subcommittee were elevated to the status of two separate Sectional Committees.

5.9.1 Similarly, the Illuminating Engineering and Lifts Sectional Committee, which had hitherto dual responsibility to both Civil Engineering and Electrotechnical Division Councils, was bifurcated into two separate Sectional Committees, each dealing with illuminating engineering and electric lifts and escalators and functioning under the Electrotechnical Division Council.

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

5.11 Seventyone Indian Standards formulated by the Electrotechnical Division which were sent to press during the year under review are listed in Appendix A.

6. MECHANICAL ENGINEERING DIVISION

6.1 During the period under review, 86 Indian Standards, including 8 revisions, were published or sent to press. Important subjects covered by these standards include machine tools and small tools, marine engineering and shipbuilding, chemical engineering, fasteners, hand tools, instruments (drawing, optical and surveying), internal combustion engines, automotive vehicles, transmission devices, weights and measures, bearings and gears. Besides, Indian Standard Steam Tables (including mollier diagrams for temperature up to 800°C and pressure up to 500 kgf/cm²) was sent for publication. This document will be helpful not only to educational institutions and designers interested in the properties of steam but also to the boiler manufacturing industry in the country.

6.2 All the 38 sectional committees and 231 subcommittees and panels of the Division made satisfactory progress in their work and included additional subjects in their programme of work. During the period under report, the Bicycles Sectional Committee, EDC 26; and the Sewing Machines Sectional Committee, EDC 34, decided to issue emergency amendments to the standards on bicycle and sewing machine components respectively, providing for alternate finishes in order to conserve scarce material in view of the present emergency.

6.3 The Mechanical Engineering Division Council held its sixteenth meeting on 21 February 1966 at New Delhi and reviewed the activities of the Division since its last meeting. The Council approved of the transfer of the Refrigeration and Air Conditioning Sectional Committee, BDC 18, from the Civil Engineering Division Council to the Mechanical Engineering Division Council as the work falling within the scope of this Committee comprises mostly mechanical engineering items.

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

- a) Conveyors, Vertical Hoists and Bucket Elevators, EDC 61;
- b) Pneumatic Tools, EDC 64;
- c) Material Handling Equipment, EDC 65; and
- d) Refrigeration and Air Conditioning, EDC 66.

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

6.5 Eightysix Indian Standards, formulated by the Mechanical Engineering Division Council and sent to press during the period under review, are listed in Appendix A.

7. STRUCTURAL AND METALS DIVISION

7.1 In view of the national emergency, the need was felt for conserving scarce non-ferrous metals and thereby saving foreign exchange. Accordingly, emergency amendments were finalized in respect of the following Indian Standards relating to copper and copper alloy products:

- IS : 28-1958 Phosphor bronze ingots and castings (*revised*)
- IS : 291-1961 Naval brass rods and sections (suitable for machining and forging) (*revised*)
- IS : 292-1961 Brass ingots and castings (*revised*)
- IS : 304-1961 High tensile brass ingots and castings (*revised*)
- IS : 306-1960 Tin bronze ingots and castings (*revised*)
- IS : 318-1962 Leaded tin bronze ingots and castings (*revised*)
- IS : 319-1962 Free cutting brass rods and sections (*revised*)
- IS : 320-1962 High-tensile brass rods and sections (*revised*)
- IS : 410-1959 Rolled brass plate, sheet, strip and foil (*revised*)
- IS : 531-1959 Leaded brass strip for use in the manufacture of parts for instruments
- IS : 1385-1959 Phosphor bronze rods and bars, sheet and strip, and wire
- IS : 1458-1965 Railway bronze ingots and castings (*revised*)
- IS : 2451-1963 Nickel silver ingots and castings for cutlery and hollow-ware
- IS : 3168-1965 Brass strip and foil for deep drawing

7.1.1 It is hoped that considerable saving of non-ferrous metals will be achieved by implementing these emergency amendments. The changes incorporated in the emergency amendments will also help make maximum use of scrap in the manufacture of non-ferrous metal products.

7.1.2 It was also decided to collect necessary data in regard to the following standards pertaining to lead, zinc, tin, antimony and their alloys before deciding on the changes to be incorporated in the emergency amendments to these standards:

- IS : 25-1961 Antifriction bearing alloys (*revised*)
- IS : 193-1956 Soft solder (*revised*)
- IS : 713-1955 High-purity zinc and zinc base alloy ingots for die casting
- IS : 1654-1960 Antimonial lead for storage batteries

IS : 1921-1961 Rosin-cored solder wire, activated and non-activated (non-corrosive)

Draft Indian Standard specification for metal used in the casting of movable types for hand composing and spacing materials

7.1.3 As zinc is one of the raw materials for which we have to depend mainly on imports, substitution of zinc by aluminium in various applications is being encouraged. According to a recent report of the Subcommittee on Aluminizing of ACSR Core Wire set up by the Development Council for Non-Ferrous Metals, the substitution of galvanized steel core wire by aluminized steel core wire in the production of ACSR conductors may lead to a saving of foreign exchange to the tune of Rs 3 million per annum. To encourage the production of aluminized steel core wire for use in ACSR conductors, a draft Indian Standard specification was prepared on the subject and issued for wide circulation for eliciting comments.

7.2 Of the standards processed for publication during the year, special mention may be made of the codes of practice for the design of overhead travelling cranes and for the packaging of steel and steel products for export; specifications for aluminium bronze ingots and castings for overhead fittings in electrical tractions, for cold-rolled steel strips for springs, for shipbuilding quality structural steel, for dimensions for wrought copper and copper alloys, plate, sheet, strip and foil, for bentonite for use in foundries and for steel castings for ships structure; sampling inspection tables for inspection by variables for percent defectives; glossary of general terms for copper and copper alloys; comparison of Indian and overseas standards for wrought steel for general engineering purposes; and commentary on Indian Standard schedules for wrought steels for general engineering purposes. The comparison of steels includes Indian, British, American (SAE, AISI, ASM and ASTM), German (DIN and Werkstoff), Japanese and Russian standards for wrought steels. In the commentary, steels have been discussed in groups according to their metallurgical behaviour and heat treatment. Some typical applications of the standard steels have also been given for the guidance of users in selecting proper steels.

7.2.1 In addition, a Structural Engineers' Slide (Steel) was brought out to assist the design engineers to obtain readily structural properties of hot rolled steel sections, tubes, rivets, bolts, etc, conforming to various Indian Standards.

7.3 Draft standards on a number of important subjects, including those for crane rail sections, cast iron pipe flanges and flanged fittings for petroleum industry, glossary of terms relating to corrosion of metals and recommended practice for hot dip galvanizing of iron and steel, were finalized for publication.

7.4 The draft standards issued for wide circulation included those for the chemical analysis of bronzes and copper tellurium alloys; methods

of sampling for light metals and their alloy products, and for iron ores (*revision of IS : 1405-1960*); safety code for industrial radiographic practices; code of practice for the use of high tensile friction grip bolts in steel structures; and specifications for rolling and cutting tolerances for hot-rolled steel products, for ferro boron, for centrifugally cast (spun) iron pressure pipes for water, gas and sewage (*revision of IS : 1536-1960*), for metal used in the casting of movable types for hand composing and spacing materials, for refined secondary lead, for limestone for use in foundries, for steel pipe fittings for marine purposes, and for image quality indicators for radiographic testing.

7.5 Draft standards relating to codes of practice for general pipeline welding, tubular scaffolding, use of high tensile friction grip bolts in steel structures and specification for skelp and strip for tubes and pipes were compiled.

7.6 Among the important new subjects taken up for the formulation of standards included steel tubes used for transformers; reference radiograph for aluminium and steel castings, pattern plates for moulding boxes, and dimensional tolerances for malleable and grey iron castings.

7.7 The Standing Working Committee of the Structural and Metals Division Council held its fifth meeting on 27 November 1965 at which the composition of three existing committees was reviewed and 30 new subcommittees and panels were set up.

7.8 Seventyfour Indian Standards formulated by the Structural and Metals Division Council and sent to press during the period under report are listed in Appendix A.

8. TEXTILE DIVISION

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

- a) Standards for textile materials for aircraft purposes, namely, nylon fabric for man-dropping parachutes, cotton web for man-dropping parachutes, silk sewing thread, cotton tapes and cotton webbing statchute.

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

- b) Standard for hawser-laid nylon rope for mountaineering purposes.

This standard gives requirements which ensure that the ropes are sufficiently strong, flexible, light in weight and

easy to handle and would inspire confidence among the mountaineers.

- c) Standards for mill-made cotton fabrics like flannelettes, bed sheets, bedtickings, drills, twills, dosuti, sheetings, leopard cloth, mazri, mulls, long cloth and poplins.

These standards, which were first published in 1951 as tentative standards, have been revised to specify the current defence varieties in the respective specifications.

- d) Standards for industrial textiles, such as cotton calico and cotton yarn for braiding for electric cables.

These standards, formulated at the instance of the cable industry and the Indian Posts and Telegraphs Department will help promote effective co-ordination among the consumers of cables, and cable and textile industries.

- e) Standards for hosiery items, such as cotton stockinette, gents' cotton socks, men's wool-cotton short drawers and wool-cotton vests.

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

- f) Standards for handloom articles, such as jhoot silk coating, matka silk fabric, dupion silk fabric and silk coating.

These specifications will help improve the quality of silk fabrics which are mostly produced in the *KHADI* sector of the textile industry and have, in view of their aesthetic appeal, attained popularity in the country and abroad, particularly in the UK, USA, USSR, Australia, West Germany and Italy.

- g) Standards for textile mill accessories, such as high speed jute bobbins, weft pirns (taper fit) for use in shuttles for plain calico looms, jacquard harness, wooden heald frames for wire and flat steel healds, dobbie harness, leather aprons for drafting systems, dobbie lags and pegs.

- h) Standards for spinning and weaving machinery components like lap rods, rings for spinning frames, aluminium cylindrical sliver cans for spinning mills, top rollers for ring spinning frames, saw-toothed wire for jicker-in cylinder, designation of sides and hand of spinning preparatory, spinning and doubling machinery, weaver's beams for use in plain calico looms and working widths and reed spaces of plain calico looms.

It is hoped that the standards given here and at (g) will be helpful to the manufacturers in maintaining the quality of their products and will ensure dependable supplies, higher efficiency and less breakdown to the consumers, that is, textile mills.

- j) Standards for jute products like bags for packing cement and D.W. tarpauling jute bags for packing mint coins.

The question of packing cement and mint coins suitably had been under active consideration of all concerned for the past several years. Bags filled with cement and those with coins are usually subjected to rough handling during transit and storage. It is hoped that jute bags conforming to these specifications will withstand the normal strain and hazards of transit.

- k) Standards for packaging, such as codes for inland and sea-worthy packaging of cotton hosiery yarn and goods and code for inland packaging of ropes and cordages.

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

8.2 The Textile Division Council held its sixteenth meeting on 14 December 1965 at Bangalore. Twelve sectional committees were reconstituted and 18 new subjects were approved for the formulation of Indian Standards. The Council recommended to the International Organization for Standardization (ISO) to take up the work of formulating an ISO Recommendation on method of test for the determination of clean wool fibre content of raw wool. The question regarding the formulation of standards for bazaar quality fabrics was discussed in detail and the Council ultimately decided that standards for such fabrics may be prepared as (a) have become established varieties during the course of the last few years, and (b) are exported in bulk.

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

9. SECTIONAL COMMITTEES UNDER THE EXECUTIVE COMMITTEE

9.1 **Documentation (EG 2)** — (Sectt : Publication Deptt) — Three standards, namely, IS : 792-1964 'Specification for title-page and back of title-page of a book (revised)', IS : 3050-1965 'Code of practice for reinforced binding of library books and periodicals' and IS : 3130-1965 'Code of

practice for the storage and use of microfilms of permanent value' were issued.

The twentieth meeting of the Documentation Committee was held on 22-23 April 1965 when code of practice for the storage and use of microfilms of permanent value was finalized and two draft standards, namely, (a) Glossary of cataloguing terms (*revision of IS : 796-1959*), and (b) Code of practice for processing microfilms, were approved for wide circulation.

New fields of work were explored which included (a) subject headings in English and Indian languages, (b) canons for establishing technical terminology in Indian languages, and (c) presentation of technical glossaries for different disciplines.

9.2 Quality Control and Industrial Statistics Sectional Committee (EC 3)—(Sectt: Statistics Deptt)—The Committee compiled three draft Indian Standards relating to method for the determination of precision of test methods, method for statistical quality control during production by the use of control charts for attributes and tests of significance. These draft standards, when printed, will considerably promote the knowledge and application of statistical techniques in industries.

10. STATISTICS DEPARTMENT

10.1 During the year under review, the Department organized the joint training course in SQC for the benefit of ISI licensees for pesticides. It was also actively engaged in the formulation of Indian Standards on quality control and sampling as also in the introduction of provisions for process control in material specifications, wherever possible.

10.2 Draft Indian Standards were scrutinized with the object of introducing statistical quality control concepts in them. Statistically sound sampling plans were recommended for incorporation in 373 cases and most of these recommendations were accepted by the sectional committees concerned. Particular mention in this connection may be made of Indian Standard specifications for chlordane dusting powders (IS : 2864-1964), chromium alloy steel balls (IS : 2898-1964), umbrellas (IS : 2920-1964), electric stoves (IS : 2994-1965), chemically resistant salt glazed stoneware pipes and fittings (IS : 3006-1965), density hydrometers (IS : 3104-1965), cap copper alloy strip (IS : 3167-1965) and silk coating (IS : 3359-1965).

10.3 The Department scrutinized 59 sampling inspection schemes referred to it for the issue of licences under the ISI Certification Marks Scheme. The routine inspection data collected from different licensees in accordance with the recommended scheme were statistically analysed to find out the conformity of the certified products to the relevant Indian Standards as also to examine the adequacy of the recommended frequencies of testing and inspection.

10.4 Second study of the time taken in the formulation of Indian Standards published during the years 1961-1965 was carried out. This study was parallel to the first conducted four years ago and gave a quantitative assessment of the effects of the various measures taken for speeding up the preparation of Indian Standards—the overall average time being reduced from 70 to 52 months and the average processing time from 41 months to 33 months. These studies also formed the basis of a technical session on the subject held during the Ninth Indian Standards Convention at Bangalore in December 1965.

10.5 The Department carried out extensive investigations and statistical analysis of available data for the benefit of standardization work. Among others, these included:

- a) Correlation and other studies for import substitution purposes, such as relationship between the time taken in drilling holes by twist drills in the indigenous tyre steel and imported steel billets, and between the mortar making properties of Ennore sand and imported standard sands;
- b) Evaluation of the specification requirements for a number of materials like cotton hosiery yarn, mahua cake, neem cake for fertilizer purposes, *KATTHA* and fish oil for leather industry;
- c) Laying down of tolerances, such as those for the weight of travellers for ring spinning frame;
- d) Precision of test methods, such as the correct choice of lengths of test specimens of cotton webbing statchute for the determination of breaking load; and
- e) Determination of the optimum number of tests that should be made for the evaluation of various characteristics of cotton yarn, cotton fabrics, leaf spring for automobile suspension, etc.

10.6 Comments and suggestions for improvement were sent on a number of draft proposals of ISO and overseas standards bodies, pertaining to iron ore, statistical terminology and symbols, fresh fruits and vegetables and oil seeds.

11. RESEARCH AND INVESTIGATION

11.1 The Institution continued to undertake research and analytical studies in different fields with the active collaboration and assistance of national, state and private laboratories, testing organizations and research institutions.

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

Agricultural and Food Products Division—Research and investigations were undertaken on the analysis of infant milk foods, black and green tea, soluble coffee powder, food yeast, edible groundnut flour (*expeller pressed*), malt extract, Indian multi-purpose food flour, hooka tobacco, solvent extracted groundnut oilcake as livestock feed, BHC and DDT water dispersible powder concentrates, DDT technical, BHC smoke generators, aldrin dusting powder, malathion technical, chlor-dane technical, and organo mercurial dry seed-dressing formulations.

Chemical Division—Research and investigation carried out by this Division related to the time lag of clinical thermometers, transparency of tracing cloth, tear strength evaluation of PVC-coated fabrics for foul weather clothing, air permeability tests for fire resistant brattice cloth, available yield of cotton linters and apparent density under specified load of mineral wool, glass wool and slag wool mats. Data were collected for the revision of IS:533-1954 'Specification for gum spirit of turpentine' and for the preparation of standards for oil of peppermint (dementholized), oil of palmarosa, *iso*Borneol, *KATTHA*, refills for vacuum flasks, rubber components for different types of footwear, leather meant for sports goods and fine china dinnerware. Further investigations were carried out for determining the repeatability and reproducibility of the methods of test for coal and coke and methods of test for determining nitrogen, phosphorus and potash for fertilizers. Besides, tests were carried out on samples of millboard, greyboard, strawboard, marsden layboard, sodium aluminate (for stability, matter insoluble in water and carbonates) and 85 percent magnesia asbestos (for thermal insulation and for the detection of fibres other than asbestos).

Civil Engineering Division—This Division carried out research and investigation in respect of the quantity of water to be used in the compressive strength test for cement; mortar-making properties of Ennore sand; permissible limit of magnesia content in building limes; lime reactivity test as an alternative to the method prescribed for lime reactivity in the standard specification for *SURKHI* for use in mortar and concrete; testing of natural building stones; thermal efficiency of brick kilns; requirements for abrasion resistance of cement concrete tiles; field test for abrasion resistance of cement concrete tiles; use of square and circular plates for load test on soils; effect of vibration on soils; testing and calibration of sieve shaker; performance tests for batch type concrete mixers; performance of concrete vibrators; polythene pipes for their suitability for potable water supply; moulded rubber rings; effect of silt quantity on velocity distribution and hence on discharge; effect of silt quantity on rating of current meter; minimum number of verticals for discharge measurements in canals; position of current meter with reference to the boat; use of bubble gauge; effect of silt quantity on the discharge coefficient of notches, weirs and flumes; instructions for collection of data for the determination of error in the measurement of flow by velocity area methods; performance requirements for wooden flush

door shutters; cupping and twisting of fibre hardboard; and preservative treatment for cores for blockboards.

Structural and Metals Division—The National Council of Applied Economic Research (NCAER), New Delhi, completed its study of the case referred to it by the Institution with regard to arriving at an objective assessment of the saving expected to be made in the use of steel consequent on the full implementation of Indian Standards published by ISI under the Steel Economy Programme. The NCAER Report entitled 'Saving in Structural Steel through Standardization' has revealed that a saving of over 23 percent in the use of steel can be achieved if all the Indian Standards published so far in the field are fully implemented. The study also shows that if the various standards and codes of practice evolved by ISI are implemented during the Fourth Five Year Plan the saving in structural steel would amount to nearly 1.79 million tonnes valued at Rs 1 253 million at current prices.

Another problem completed during the year related to the finding out accuracy of the potassium permanganate method for the determination of antimony as compared to that obtained by the potassium bromate method. The result of this investigation revealed that the permanganate method would not be accurate enough for correctly determining a high content of antimony. It was decided that antimony should be determined by difference.

New problems undertaken for investigation included tensile testing of copper and copper alloys on the basis of $5.65\sqrt{S_0}$ gauge length, determination of spalling resistance, cold crushing strength and modulus of rupture of fireclay bricks.

Work on the remaining 21 problems was continued at various laboratories in the country.

Textile Division—Investigations were carried out in respect of the determination of optimum count-strength-product values for viscose rayon cut staple (spun) yarn using indigenous staple fibre of 1.2 and 1.5 denier; tests for arriving at the breaking load, shrinkage and other constructional particulars of silk kora cloth; tests for determining breaking load and other constructional particulars of nylon ropes for mountaineering purposes; tests for evaluating breaking load, count, twist and unevenness of cotton hosiery yarn collected from various mills in the country; test for arriving at the breaking load of the cord used in dobby harness and jacquard harness and the determination of dimensions of their mails; and the finding out of deterioration in physical and chemical characteristics of washed and unwashed wool on prolonged storing and determining how far it would affect the quality of drugget manufactured from the two types of wool. With a view to revising the standard on the grading of continuous filament viscose rayon yarn and acetate yarn, bright and dull, for upgrading the various grades

prescribed in the standard, samples of yarn in 120 denier were being collected from the rayon yarn manufacturers in the country for analysis at SASMIRA. A small study team is to visit some weaving establishments to make an on-the-spot study of the extent to which the present indigenous yarn falls short of the requirements of the weaving establishments.

INTERNATIONAL ACTIVITIES

1. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

1.1 Out of 114 technical committees of the International Organization for Standardization (ISO), as on 31 March 1966, ISI was a participating member of 83 technical committees and an observer member of 30 others. Of these, the Institution held the Secretariat of 4 technical committees, 3 subcommittees and 8 working groups.

1.2 ISO Council—The 19th meeting of the ISO council was held in Geneva from 13-16 July 1965 under the presidentship of Shri Jehangir J. Ghandy, President of ISO. Dr Lal C. Verman, Director General, ISI, attended the meeting as Advisor to the President. One of the important decisions taken by the Council was to set up an Organization Committee (ORCO) under the chairmanship of Mr H. A. R. Binney, Director, British Standards Institution, with Director General, ISI, as one of its members. This Committee will report to the President on the reorganization of the General Secretariat and its staff in order to improve the efficiency of its working for meeting the fast growing demands that are being made on ISO. Two meetings of ORCO were held as a result of which several important steps have been taken to improve the working of ISO.

1.3 ISO Planning Committee (PLACO)—PLACO, one of the standing committees of the Council with Dr Lal C. Verman as Chairman and representatives of France, UK, USA and USSR as members, held its meeting in Geneva on 8 July 1965. Apart from the usual items of work, the Committee dealt with the question of equitable distribution of technical committee secretariats among various member-bodies, emphasizing the considerations which each aspirant for a technical committee secretariat should bear in mind and recommending principles for the guidance of PLACO and ISO Council for the actual allotment of secretariats in future.

1.4 ISO Development Committee (ISO/DEVCO)—One of the important points considered by DEVCO at its meeting held in Geneva on 10 and 12 July 1965 under the chairmanship of Mr J. Birle (France) related to the privileges of and fee chargeable from Correspondent Members. The Committee made certain definitive recommendations to the ISO Council in this regard. It would be recalled that, on the recommendation of DEVCO, ISO had decided in 1964 on the creation of this new class of membership.

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

ISO/TC 5 Pipes and Fittings—(Sectt : Switzerland)—Draft ISO Recommendations approved on behalf of India related to steel pipes, welded or seamless, for gas, water and sewage; cold-drawn precision steel tubes, metric series; general specifications and methods of test, and detailed specifications for adhesives for pipes and fittings of rigid PVC; and adhesives for cold welding based as 'weak' and as 'strong' solvent.

ISO/TC 5/SC 2 Cast Iron Pipes, Fittings and Their Joints—(Sectt : France)—Fifth meeting, 13-14 May 1965, Paris. The subjects discussed at this meeting were the basis for a draft ISO Recommendation on cast iron sanitary pipes and fittings for waste water and ventilation lines and explanatory report concerning document ISO/TC 5/SC 2 (Sectt-20) 64. The draft ISO Recommendation on cast iron sanitary pipes and fittings for waste water and ventilation lines was approved by India.

ISO/TC 6 Paper—(Sectt : France)—Fourth meeting, 10 December 1965, Paris. Draft ISO Recommendations relating to envelopes, postcards and similar articles, cancellation area, picture postcard, area reserved for the address and method for the determination of bulking thickness and the bulk of paper were accepted.

Draft ISO Recommendations on untrimmed stock sizes for the A-series (primary range) of paper; paper internal diameters of covers of reels; and untrimmed sizes, designation and tolerances of paper were submitted to the ISO Council for acceptance. Draft ISO Recommendations for the determination of the thickness of a single sheet of paper, determination of the water absorption of paper or board (Cobb method), methods of sampling for paper (Revision of ISO/R 186-1961), determination of the dry matter content of pulps for paper and the solubility of pulps in sodium hydroxide solutions (alkali solubility) were received for approval.

ISO/TC 12 Quantities, Units, Symbols, Conversion Factors and Conversion Tables—(Sectt : Denmark)—Three draft ISO Recommendations, accepted as ISO Recommendations, related to the

basic quantities and units of the SI system and quantities and units of space and time, quantities and units of electricity and magnetism and quantities and units of acoustics. India's comments were sent on the draft ISO Proposal on tables of dimensionless parameters.

ISO/TC 12/SC 1 Procedures for Inter-conversion of Values From One System of Units to Another — (Sectt : India) — The Secretariat prepared the first draft ISO Proposal on the procedures for the inter-conversion of values from one system of units to another and circulated it to all the members of the subcommittee for consideration at its next meeting to be held on 23-25 June 1966 at Helsingør (Denmark).

ISO/TC 12/SC 2 General Rules for the Use of SI Units, Their Multiples and Sub-multiples in the Various Industries — (Sectt: Denmark) — A new subcommittee was set up to formulate ISO Recommendations for the selection of suitable SI Units, their multiples and sub-multiples for application in the various trades and industries.

ISO/TC 17 Steel — (Sectt : UK) — Draft ISO Recommendations received for comments related to quenched and tempered unalloyed steels; wrought quenched and tempered steels with one percent Cr and 0.2 percent Mo; structural steels; micrographic determination of austenitic grain size of steels; hardenability test by end quenching steels (Jominy test); Vickers hardness test for steel (Revision of ISO/R 81-1959); verification of Vickers hardness testing machines (Revision of ISO/R 146-1960); Brinell hardness test for steel (Revision of ISO/R 79-1959); verification of Brinell hardness testing machines (Revision of ISO/R 156-1960); methods of rotating bar bending fatigue testing, axial load fatigue testing and torsional stress fatigue testing; and Rockwell hardness test (B and C scales) for steel (Revision of ISO/R 80-1959).

ISO/TC 17/SC 1 Methods of Chemical Analysis and Spectrographic Analysis of Steel — (Sectt: Italy) — Third meeting, 29-30 September 1965, Firenze (Italy). ISO drafts on photometric analysis of silicon, phosphorus; Gravimetric determination of silicon, sulphur; and chemical analysis of iron and steel were considered. Besides, two draft ISO Recommendations for the determination of manganese and sulphur in steel were received.

ISO/TC 17/WG 1 Methods of Mechanical Testing — (Sectt : UK) — Twentysecond meeting, 22-25 February 1966, London. The following draft ISO Proposals were considered: Rockwell superficial hardness testing machines (30 N and 30 T scales—steel), verification of Rockwell superficial N and T scale hardness testing machines, calibration of standardized blocks to be used for rockwell superficial N and T scale hardness testing machines, calibration of standardized hardness test blocks for Brinell hardness testing machines (steel), calibration of standardized hardness test blocks for Rockwell C and B scale hardness

testing machines (steel), and calibration of standardized blocks for diamond pyramid hardness testing machines (steel).

ISO/TC 17/WG 4 Heat Treated and Alloyed Steels — (Sectt : Germany) — Fifth and sixth meetings, 31 May-2 June 1965 and 17-20 January 1966, London and Dusseldorf, (Germany), respectively. Draft proposals relating to quenched and tempered 1.5 percent Mn-Mo steels; quenched and tempered 3 percent Cr, 0.5 percent Mo steels; case hardening steels; flame and induction hardening steels; and nitriding steels were considered.

ISO/TC 17/WG 8 Dimensions of Hot-rolled Steel Sections — (Sectt : India) — Fourth meeting, 5-9 July 1965, London, under the chairmanship of Shri O.S. Murthy, General Manager, Western Railway, Bombay. Thirty delegates, representing 10 countries, namely, Belgium, Canada, France, Germany, Hungary, India, Japan, Sweden, UK and USA, participated in this meeting.

Draft proposals for ISO Recommendations on dimensions for hot-rolled equal leg angles, metric series; dimensions for hot-rolled unequal leg angles, metric series; dimensions for hot-rolled steel square bars, metric series; dimensions for hot-rolled steel round bars, metric series; and dimensions for parallel flange I-beam section, inch series; were prepared by the Working Group and circulated by the Secretariat (UK) of ISO/TC 17 to all ISO member-bodies.

Further progress was also made in the direction of formulating draft proposals for metric series of flats, I-beam and I-column sections.

ISO/TC 17/WG 9 Tinsplate — (Sectt : UK) — Fourth meeting, 5-7 October 1965, Philadelphia. Draft ISO Proposal for cold reduced tinsplate and cold reduced blackplate was considered.

ISO/TC 17/WG 10 Steels for Pressure Vessels and ISO/TC 11/SC 1 Boiler Materials — (Sectt : Germany) — Joint meeting, 6-9 September 1965, Dusseldorf (Germany). Properties of steels for boilers and pressure vessels to be specified in the related ISO Recommendations were considered.

ISO/TC 18 Zinc and Zinc Alloys — (Sectt : Belgium) — Second draft ISO Recommendation on zinc ingots was approved on behalf of India. Draft ISO Proposal for the chemical composition of zinc alloy die castings was received for comments.

ISO/TC 18/SC 1 Methods of Chemical Analysis of Zinc and Zinc Alloys (Sectt : Belgium) — Second meeting, 8-10 March 1966, Paris. India could not participate. Draft ISO Proposals for the photometric determination of copper in zinc, tin in zinc, iron in zinc; titrimetric determination of aluminium in zinc; polarographic determination

of cadmium in foundry zinc, and lead and cadmium in zinc alloys; and selection and preparation of samples for chemical analysis were considered.

ISO/TC 24 Sieves—(Sectt: Germany) — Meetings of two subcommittees, ISO/TC 24/SC 1 Test Sieves and SC 2 Test Sieving, were held on 5-6 and 7-8 April 1965 respectively in Berlin. Draft proposals on perforatory plates in test sieves, perforated plates in test sieves (handicap method), volume of material to be placed on test sieves for hand sieving, test sieving and test sieving methods were discussed.

ISO/TC 25/WG 2 Spheroidal Graphite Cast Iron—(Sectt: France) — Second meeting, 24-25 March 1966, Paris. Draft ISO Proposal for spheroidal graphite or nodular graphite or ductile cast iron was considered.

ISO/TC 26 Copper and Copper Alloys — (Sectt: Germany) — Nineteen draft ISO Proposals were approved on behalf of India. These related to chemical and physical tests for copper and copper alloys; classification of wrought copper, special copper alloys and cast copper alloys; and specifications for fire-refined high conductivity copper wire bars, cakes, slabs, billets, ingots and ingot bars; fire-refined copper for wrought products and alloys; phosphorus deoxidized copper billets, rolled flat products, round tubes (other than condenser tubes), solid products supplied in straight length, coils or on reels, extruded sections, forgings and condenser and heat exchanger tubes.

ISO/TC 26/SC 1 Methods of Chemical Analysis of Copper and Copper Alloys—(Sectt: Germany) — Second meeting, 20-21 October 1965, Taunus (Germany). India was not represented. Draft ISO Proposals on polarographic determination of lead as impurity in brasses, special brasses and copper-nickel-zinc alloys; sampling for chemical analysis of electrolyte and fire-refined high conductivity copper wire, bars, cakes, slabs, billets, ingots and bars; and photometric determination of manganese in high-tensile brasses, aluminium bronzes, special aluminium bronzes, copper-nickel alloys and copper-nickel-zinc alloys were considered.

Two draft ISO Proposals for the determination of copper in wrought and cast copper alloys, and electrolytic determination of copper in unalloyed copper containing not less than 99.90 percent of copper were approved on behalf of India.

ISO/TC 27/SC 2 Brown Coals and Lignites—(Sectt: Poland) — Fifth meeting, 2-5 March 1965, Budapest. It was resolved that the Secretariat should prepare draft proposals on sampling, sample preparation, determination of resinous substances and determination of sodium and potassium in salt brown coals. It was also resolved to continue the work on the standardization of ash analysis.

ISO/TC 33 Refractories — (Sectt: UK) — Fourth meeting, 22-23 November 1965, London. Subjects relating to standard pyrometric cones, dimensions of arch bricks, determination of refractoriness under load of refractory products and classification of shaped refractory products were considered.

ISO/TC 33/WG 3 Dimensions — (Sectt: UK) — Fourth meeting, 24 June 1965, Paris. The Working Group considered draft proposals for the dimensions of rectangular refractory bricks (second series) and those of refractory arch bricks as well as UK proposals for additional standard sizes of refractory bricks.

ISO/TC 34 Agricultural Food Products — (Sectt: Hungary) — Draft ISO Recommendations on butter triers, cheese triers and nomenclature for spices and condiments, were circulated by the ISO General Secretariat, approved on behalf of India.

ISO/TC 34/SC 2 Oleaginous Seeds and Fruits — (Sectt: Rumania) — Fourth meeting, 23-25 September 1965, Bucharest. Draft ISO Recommendations received for approval related to the determination of impurities, oil content and acidity of oil in oleaginous seeds and reduction of contract samples of oleaginous seeds to samples for analysis, determination of acidity, moisture, volatile matter and impurities (insoluble in light petroleum) in crude vegetable oils and fats and preparation of contract samples of crude vegetable oil and fats for analysis, and routine method for the determination of moisture content and basic reference method for the determination of water in cereals and cereal products.

ISO/TC 34/SC 3 Fruits, Vegetables and Their Derived Products — (Sectt: Poland) — Fifth meeting, 30 September 1965, Bucharest. The Subcommittee approved the reports of its four working groups, the meetings of which had preceded that of the Subcommittee.

ISO/TC 34/SC 5 Milk and Milk Products — (Sectt: Netherlands) — Third meeting, 28 April 1965, Budapest. The meeting was preceded by those of Working Groups 1, 2 and 3. India was represented at these meetings by Dr N. N. Dastur, Director of Dairy Research, National Dairy Research Institute, Karnal.

ISO/TC 34/SC 6 Meat and Meat Products — (Sectt: Germany) — Third plenary meeting, 7 May 1965, Budapest. The Subcommittee approved the reports of its three working groups, the meetings of which had preceded that of the Subcommittee. The Subcommittee also decided against any further addition to its programme of work at present.

ISO/TC 35 Paints, Varnishes and Related Products and Their Raw Materials — (Sectt: Netherlands) — Fourth meeting, 18-22 October 1965, Wiesbaden (Germany). It was attended by delegates from Czechoslovakia, France, Germany, Iran, Italy, Netherlands,

Switzerland, Sweden and UK and observers from Denmark and Technical Committee 78 Aromatic Hydrocarbons. ISO Recommendation on gum spirit of turpentine and wood turpentine was published. India sent her approval of the draft ISO Recommendations on titanium dioxide and general methods of test for pigments.

ISO/TC 37 Terminology (Principles and Co-ordination) — (Sectt : Austria) — Three draft ISO Recommendations on symbols for languages, countries and authorities; vocabulary of terminology and guide for the preparation of systematic vocabularies received during the year were approved. Besides, the second draft proposal on lexicographical symbols was approved by India.

ISO/TC 38 Textiles — (Sectt : UK) Fifth plenary meeting, 21 and 24 June 1965, London. India was represented by a delegation of four members headed by Shri Harshavadan Mangaldas (Chairman of the Textile Division Council). Other members of the delegation were Dr R. L. N. Iyengar, Shri Rasesh N. Mafatlal and Shri K. C. Parikh. Eighteen countries participated in the meeting through 85 delegates. On the basis of the suggestions made by the Indian delegation that the atmosphere for testing with 27°C and 65 percent RH suitable for tropical and sub-tropical countries should also be held as standard atmosphere and not as supplementary standard as it was at present, the Committee decided to call it 'standard tropical atmosphere'. The atmosphere for testing with 20°C and 65 percent RH suitable for temperate countries was called 'standard temperate atmosphere'.

The work of ISO/TC 38/SC 3 'Systematic reduction in the number of cloth widths', was deleted from the programme of work.

The following new subcommittees were set up:

- a) ISO/TC 38/SC 10 Stitches, seams and stichings;
- b) ISO/TC 38/SC 11 Care labelling of textiles; and
- c) ISO/TC 38/SC 12 Methods of test for carpets.

Draft ISO Recommendations relating to the designation of the direction of twist in textile yarns; standard atmospheres for conditioning and determining the physical and mechanical properties of textiles, method of test for dimensional change of woven fabrics subjected to laundering near the boiling point and tests for the colour fastness of textiles (fourth series) were circulated for comments.

Drafts Revision of ISO/R 105/I: Tests for the Colour Fastness of Textiles (first series) and first draft proposal for an ISO Recommendation on the test for the colour fastness of textiles (fifth series) were received for comments.

ISO/TC 38/SC 5 Yarn Testing — (Sectt : USA) — Fifth meeting, 23 June 1965, London. India was represented by Sarvashri Harshavadan Mangaldas, K. C. Parikh and Rasesh N. Mafatlal.

Comments on the draft dealing with linear density, twist and strength of single strand were reviewed. The draft on the determination of yarn strength by the use of skein method was approved. The definition of 'oven dry weight' was modified to read as 'The weight of a sample dried to substantially constant weight in an oven maintained at $105^{\circ} \pm 3^{\circ}\text{C}$ and supplied with air at the standard temperate atmosphere for testing (65 ± 2 percent RH and $20^{\circ} \pm 2^{\circ}\text{C}$) or standard tropical atmosphere for testing (65 ± 2 percent RH and $27^{\circ} \pm 2^{\circ}\text{C}$)'.

ISO/TC 38/SC 6/WG 1 Cotton Fibre Tests — (Sectt : USA) — Third meeting, 22 June 1965, London. India was represented by Sri Harshavadan Mangaldas and Dr R. L. N. Iyengar.

A draft for the determination of cotton fibre maturity was finalized for circulation to the Working Group for its approval, the basis of a test for fibre length by array method was settled and two tests for measuring the lighting of classing rooms, one for natural and the other for artificial sources, were settled in principle. It was also decided to prepare a preliminary document for the determination of fibre length and length distribution based on the scanning of fibres by optical methods.

ISO/TC 38/SC 7 Ropes and Cordages — (Sectt : France) — Fourth meeting 11-12 May 1965, Hamburg (Germany). Draft proposals for ISO Recommendations on Manila, sisal, polyamide and polyester ropes were considered.

ISO/TC 38/SC 8 Fabric Properties and Names — (Sectt : UK) — First meeting, 22 June 1965, London. India was represented by Sarvashri K. C. Parikh and Rasesh N. Mafatlal. Besides, the approval of draft proposals on the determination of crease recovery in dry state, it was decided to prepare another draft for the determination of crease recovery in wet state on similar lines. The subjects regarding cloth strength testing and measurement of cloth dimensions were also discussed.

ISO/TC 39 Machine Tools — (Sectt : France) — Eighth meeting, 30 March to 1 April 1965, Paris. India was represented. Two first draft ISO Proposals relating to mounting of grinding wheels by means of hubs flanges and spindle noses for lathes, A type and Camlock type, were adopted. Other subjects discussed included cotter slots of taper shanks of boring tools, unit heads and test conditions for lathes and milling machines.

ISO/TC 44 Welding — (Sectt : France) — The following draft ISO Recommendations were approved on behalf of India: Methods of test for determining whether an electrode is a deep penetration

electrode, filler rods for braze welding, methods of test for filler rods for braze welding, strength calculation of butt-welded joints and calculation of rectangular symmetrical fillet welds.

ISO/TC 44/SC 3 Filler Materials and Electrodes — (Sectt : France) — Sixth meeting, 31 January to 2 February 1966, Paris. The Subcommittee recommended the modification of draft ISO Recommendations No. 226, 227 and 231 relating to the code of symbols for filler rods and mechanical properties of metal deposited by filler rods. Besides, seven draft proposals were considered.

ISO/TC 45 Rubber — (Sectt : UK) — Thirteenth meeting, 4-9 October 1965, Budapest. Dr D. Banerjee (*Leader*), National Rubber Manufacturers Ltd, Calcutta; Dr D. K. Roy Choudhury, ICI (India) Private Ltd, Calcutta; and Shri Lalit Mohan Jamnadas, Cosmos India Rubber Works Private Ltd, Bombay attended the meeting on behalf of India. The delegation was led by Dr Banerjee. The Committee approved for circulation 37 draft proposals and 14 draft recommendations covering subjects like physical properties, chemical test, latex, unvulcanized rubber, visco-elastic properties, degradation tests, electrical tests, flexible cellular material, classification of vulcanized rubber, hoses and industrial rubber boots. One draft was approved for submission to the ISO Council. The highlight of the meeting was the formulation of a specification for natural rubber in which India is vitally interested. It was agreed to have three grades of natural rubber, based on physical and chemical requirements.

ISO/TC 46 Documentation — (Sectt : Netherlands) — A new subcommittee, ISO/TC 46/SC 2 Conversion of Written Languages, was set up with US member-body as the Secretariat. The Committee had resolved to establish this subcommittee at its tenth meeting held at Budapest from 12 to 17 October 1964.

Draft ISO Recommendation on the essential and supplementary elements of bibliographical references was at the final stage of editing and was to be submitted to the ISO Council for approval.

ISO/TC 46/SC 1 Documentary Reproduction — (Sectt : France) — Two draft ISO Recommendations, namely, ISO conventional typographical character for legibility tests (ISO character) and microcopies for legibility tests — description of the ISO mire and its use in photography — were published as ISO/R 435-1965 and ISO/R 446-1965 respectively.

ISO/TC 48 Laboratory Glassware and Related Apparatus — (Sectt : UK) — Tenth meeting, 3-7 May 1965, Paris. It was decided to recommend the use of cubic centimetre (cm^3) as the unit of capacity and inscription on all volumetric laboratory apparatus, while permitting the use of millilitre (ml) as an alternate inscription except in a few cases where apparatus of the highest precision is involved.

The meeting succeeded in reaching agreement on internationally, acceptable recommendations on methods of verification and use of volumetric glassware, enclosed-scale adjustable range thermometers, solid-stem adjustable range thermometers and conventional value for thermal expansion coefficient of glass hydrometers. Useful progress was also made in respect of graduated measuring cylinders, correction of hydrometer leadings on account of temperature pyknometers, colour coding for pipettes, laboratory glass beakers and porcelain and silica crucibles.

ISO/TC 50 Lac— (Sectt : India) — Comments received on draft ISO proposal on the method for the determination of adhesion of shellac to mica were considered by the Secretariat. Also, a modified Indian method for determining the bleach index of seedlac was approved for circulation to members.

ISO/TC 54 Essential Oils — (Sectt : Portugal) — Eighth meeting, 31 May to 5 June 1965, Rome. The meeting was attended by 29 delegates from seven countries, namely, France, India, Italy, Netherlands, Portugal, United Kingdom and Yugoslavia. India was represented by Dr Sadgopal, Director (Chemicals), ISI. Twentyfive documents were considered and recommendations made for processing the proposed draft ISO Recommendation/draft ISO Recommendations. These included several oils of vital interest to India from the point of view of export, such as oils of sandalwood, palmarosa, Himalayan cedarwood and lemon-grass. The documents concerning methods for determining impurities in essential oils — oils of ylang-ylang, oil of cedarwood and oil of sandalwood — were discussed in great deal. The Indian Standard specification for palmarosa oil provided the basis for the corresponding ISO documents. This alignment would strengthen India's export markets.

At the instance of India, the Committee also discussed a proposal to redefine the title and scope of TC 54. It was suggested that the present title 'Essential Oils' should be changed to 'Natural Perfumery Materials' as quite a large number of natural perfumery materials, such as the 'concretes', 'absolutes', 'resinoids' and 'oleoresins' had to be excluded at present from the scope of TC 54. A detailed document on the revision of the title and scope of TC 54 as tabled by the Indian delegate, will now be circulated to ISO member-bodies for further consideration.

Draft ISO Recommendations on the determination of freezing point of essential oils; determination of solubility of essential oils in ethanol, determination of cineole content of essential oils and determination of ester value and calculation of the ester content of essential oils were issued.

ISO/TC 55 Hewn, Sawn and Planed Timber — (Sectt : USSR) — Draft ISO Recommendations on the sizes, methods of measurement and values of shrinkage and deviations of coniferous sawn timber were

adopted and submitted to ISO member-bodies for approval as ISO Recommendations. They were approved by ISI on behalf of India.

ISO/TC 56 Mica — (Sectt: India) — Fifth meeting, 28 June to 1 July 1965, New York. Dr Lal C. Verma, Director General, ISI, presided over the sessions and Shri S. K. Sen, Director (Marks), ISI, acted as the Secretary. India was represented by Shri P. Kota Reddy. Draft proposals on visual classification of muscovite mica blocks, thins and films; grading and visual classification of muscovite mica splittings; and thermal classification of phlogopite mica splittings were finalized.

These will now go to the members of TC 56 for adoption as draft ISO Recommendations. A decision of far-reaching consequence, that no reference should be made to the basic colour of mica in the classification system, was taken by the Committee.

A working group was set up to prepare master standard samples for illustrating the visual classification of muscovite mica finalized at the meeting.

New subjects included in the programme were in respect of the method of measuring the thickness of mica; cut and punched mica films; and Bridge mica.

Also, a draft ISO Recommendation No. 598 on methods for grading phlogopite mica blocks, thins and splittings was accepted as an ISO Recommendation and registered as ISO/R 444-1965.

ISO/TC 61 Plastics — (Sectt: USA) — Fifteenth meeting, 13-18 September 1965, Bucharest. Draft ISO Recommendations approved for submission to the ISO Council for publication related to the determination of stiffness in torsion as a function of temperature, change of mechanical properties after contact with chemical substances, tensile properties of plastics, melt flow index of polyethylene and polyethylene compounds and refractive index of transparent plastics; definitions of the terms 'semi-rigid plastics', 'non-rigid plastics' and 'unplasticized PVC', testing of plastics with torsion pendulum; and the methods for maintaining constant relative humidity in small enclosures by means of aqueous solutions.

The following draft ISO Recommendations were circulated to ISO member-bodies for comments: Determination of maximum temperature and rate of increase of temperature during setting of the unsaturated polyester resin; determination of the percentage of monomer and low molecular mass polymer in polyamide resins; determination of the relative viscosity of polyamides in concentrated solution; determination of the compressive properties of plastics; determination of the tensile creep of plastics; determination of the melt flow index of polypropylene and polypropylene compounds; determination of the vicat softening point; determination of the apparent density of rigid cellular materials;

determination of the viscosity number of polyethylene and polypropylene in dilute solution; determination of the moisture content of non-plasticized cellulose acetate; determination of the resistance of plastics to colour change upon exposure to light of the enclosed carbon arc; determination of the resistance of plastics to colour change upon exposure to light of the xenon lamp; determination of the water vapour transmission rate of plastics films and thin sheets; determination of the brittleness point of plastics by impact; determination of the density and specific gravity of non-cellular plastics; determination of the viscosity number of methyl methacrylate polymers and copolymers in dilute solution; determination of the viscosity number and viscosity ratio of cellulose acetate in dilute solution; determination of the percentage of chlorine in vinyl chloride polymers and copolymers; determination of vinyl acetate in vinyl chloride vinyl acetate copolymers; supplement to the list of equivalent terms; compression test of rigid cellular materials; resistance of plastics to colour change upon exposure to daylight; recommended practice for evaluating the resistance of plastics to fungi by visual examination; and specification for phenolic moulding materials.

ISO/TC 65 Manganese Ores — (Sectt : USSR) — Three draft ISO Recommendations on the determination of chromium content, zinc content and metallic iron content in manganese ore, respectively, were approved on behalf of India, subject to certain comments.

ISO/TC 69 Statistical Treatment of Series of Observations — (Sectt: France) — The Secretariat of the Committee was transferred from Netherlands to France. India's views regarding priority that should be given to the work of TC 69 were sent to the Secretariat. India also sent to the Secretariat a document pertaining to the application of statistical concepts and techniques in the various phases of standardization, which was circulated to other members of the Committee. It is felt that this document would be of great help to the Committee in advising other technical committees of ISO on matters concerning the application of statistical methods in standardization.

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

ISO/TC 72/WG C Weaving Preparatory and Weaving Machinery — (Sectt : UK) — Eighth meeting, 5-6 May 1965, Manchester. India was not represented. Draft proposals on weft pirns for box loaders on automatic looms, weft pirns for automatic winding at the looms, twin wire healds with flat oval inset mail, inset wire healds for automatic drawing-in machines, closed and drop wires for Barber and Colman type drawing-in machines for mechanical and electrical stop motions and closed end drop wires for Zellweger type drawing-in machines for mechanical warp stop motions were discussed.

ISO/TC 74 Hydraulic Binders — (Sectt : Belgium) — Sixth meeting, 18 and 22 October 1965, Paris. India was represented by Shri R.M. Shah of Associated Cement Co Ltd, Bombay. Meetings of two subcommittees and four working groups were also held during this period. A meeting of SC 2/WG 3 was also held on 6 and 8 April 1965.

Draft ISO Recommendations on the definitions and terminology of cement, method for testing the strength of cement and compressive and flexural strengths of plastic mortar (Rilem-Cembureau method), chemical analysis for the main and minor constituents of Portland cement and that of cement for the determination of sulphur as sulphide were approved by the Committee as ISO Recommendations.

Draft ISO Recommendations adopted by the Committee for circulation to ISO member-bodies for approval as ISO Recommendations related to the method for testing pozzolanicity for the control of pozzolanic cements, chemical determination of the loss on ignition of slag containing cements, gypsum rock for the manufacture of binders, and definitions, classification and nomenclature of binders based on calcium sulphate.

ISO/TC 77 Products in Asbestos Cement — (Sectt : Switzerland) — Draft ISO Recommendations on asbestos cement siding shingles and asbestos cement pipes, joints and fittings for sewage and drainage were circulated to ISO member-bodies for approval as ISO Recommendation. Further, draft proposals for ISO Recommendations on asbestos cement pressure pipes, thermal insulating asbestos boards and sampling and inspection of asbestos-cement products were circulated for adoption as ISO Recommendations.

ISO/TC 79 Light Metals and Their Alloys — (Sectt : France) — Meetings of working groups, WG 1 Terminology; WG 2 Pure Aluminium Ingots; WG 3 Magnesium and Its Alloys; WG 4 Aluminium Alloys for Welding; WG 5 Mechanical Properties of Cast Pieces in Aluminium and Alloyed Magnesium, and WG 7 Symbolization of the Technical Committee ISO/TC 79 Light Metals and Their Alloys were held on 4-7 October 1965 at Paris. ISO Drafts concerning mechanical properties and chemical composition of aluminium, magnesium and its alloys were considered.

ISO/TC 81 Common Names for Pesticides — (Sectt : UK) — Sixth meeting, 14-17 September 1965, Paris. India was represented by Major B. R. Sarna and Shri W. L. Roberts from the Indian High Commission in UK.

ISO/TC 89 Derived Timber Products — (Sectt : Germany) — Eleven draft ISO Recommendations circulated to the member-bodies for approval as ISO Recommendations related to fibre building boards (6) and particle boards (5).

ISO/TC 91 Surface Active Agents — (Sectt : France) — Fourth meeting, 9-12 June 1965, Seville (Spain). Draft ISO Recommendations on the classification of surface active agents; determination of moisture and volatile matter, foreign matter of low solubility (in ethanol), total alkali and total free alkali in soaps; preparation of a reduced sample of surface active agents in powder form; and vocabulary (second list) and glossary (third list) of surface active agents were received for approval.

ISO/TC 92 Fire Tests on Building Materials and Structures — (Sectt : UK) — Fourth plenary meeting, 25-29 October 1965, Brussels. Draft ISO Recommendation on the fire-resistance test of structures was approved as ISO Recommendation.

ISO/TC 93 Starch (Including Derivatives and By-Products) — (Sectt : Germany) — Third meeting, 22 October 1965, London. The Committee approved the reports of its ten working groups, the meetings of which had preceded that of ISO/TC 93.

ISO/TC 99 Semi-manufactures of Timber — (Sectt : Romania) — A draft ISO Recommendation on general manufacturing characteristics of solid wood parquets for ships with rectangular face was adopted and submitted to ISO member-bodies for approval as an ISO Recommendation.

ISO/TC 100 Chains and Chain Wheels for Power Transmission and Conveyors — (Sectt : UK) — Third plenary meeting, 23-26 March 1965, London. India was represented. Draft ISO Proposals on extended pitch transmission precision roller chains and chain wheels, and short pitch transmission precision bush chains and chain wheels were considered. An amendment to the draft recommendation on short pitch transmission precision roller chains and chain wheels was issued.

A new working group, ISO/TC 100/WG 4 Conveyor Chains Attachment and Chain Wheels, was set up to develop ISO Proposals for chains, chain wheels and chain attachment plates for horizontal and inclined conveying and vertically elevating. This working group met in Prague on 18-20 October 1965 to proceed with further development of the proposal for conveyor roller chains.

ISO/TC 102/SC 1 Sampling of Iron Ores — (Sectt : Japan) — On the basis of the questionnaire received from Japan, India conveyed her agreement to the proposal for establishing a working group on Hammer and Shovel Method of Sampling. Four draft ISO Proposals for sampling and preparation of samples of iron ore were received for comments.

ISO/TC 102/WG 1 Physical Tests — (Sectt : USA) — First meeting, 7-11 March 1966, Washington. A tentative method of tumbler test for iron ore pellets and sinter and other tentative methods of test for

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particle size or screen analysis at No. 4 Sieve and finer for metal bearing ores and related materials were discussed. Besides, Japanese draft proposal methods for determining the shatter strength of sinter, tumbler strength of pellets and reducibility of iron ore lumps (two different methods) were dealt with.

ISO/TC 104 Freight Containers — (Sectt : Belgium) — Draft proposal on terminology relating to freight containers was circulated to member-bodies.

ISO/TC 107/WG 1 Terminology — (Sectt : Switzerland) — First meeting, 19-20 May 1965, Zurich. Draft ISO Proposals for glossary of terms relating to electroplating and general classification of terms relating to surface treatment and metallic coatings were considered.

ISO/TC 107/WG 2 Methods of Inspection and Co-ordination of Test Methods — (Sectt : Italy) — First meeting, 3-4 June 1965, Turin (Italy). Draft ISO Proposals for metal coating and oxide layer, thickness determination by microscopic method, measurement of metallic or non-conductive coating thickness of metallic bases by eddy current methods and electrolytic coating adherence test by the grid method were considered.

ISO/TC 107/WG 3 Electrodeposited Coatings — (Sectt : UK) — Second meeting, 5-7 May 1965, London. Draft ISO Proposals for electroplated coatings of nickel plus chromium and electroplated coatings of nickel were considered.

ISO/TC 107/WG 4 Hot-Dip Coatings (Galvanizing, etc) — (Sectt : Germany) — First meeting, 25-26 May 1965, Overath (Germany). ISO Proposals with regard to guiding principles for protection against corrosion by hot-dip galvanizing requirements for hot-dip galvanized coatings on fabricated ferrous products and gravimetric determination of weight per unit area of hot-dip galvanized coatings on ferrous materials by chemical dissolution of the coating were considered.

ISO/TC 113 Measurement of Liquid Flow in Open Channels — (Sectt : India) — First meeting, 2-4 June 1965, London. Meetings (not first) of Working Groups 1, 2, 3 and 4 were also held on 27 May-3 June 1965. Six drafts were approved for circulation to ISO member-bodies as draft ISO Recommendations. Of these, four related to the measurement of liquid flow in open channels (a) by velocity area method; (b) by slope area method; (c) by establishing the stage discharge relationship; and (d) by using notches, weirs and flumes. The remaining two drafts related to the instructions for collecting data for analysing errors and glossary of terms and symbols.

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2. INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

2.1 As on 31 March 1966, there were 58 IEC technical committees, 69 subcommittees, 4 expert committees and 141 working groups. India took part in the work of all technical committees and subcommittees and in a few working groups, besides holding the Secretariat and chairmanship of the technical committee on electric fans.

2.2 A brief report on the work of the several IEC committees which met during this period is given below:

XXX ANNUAL GROUP MEETINGS AT TOKYO (JAPAN)

About 40 technical committees, subcommittees, working groups, advisory committees and the Committee of Action met at Tokyo from 10-23 October 1965. Besides Shri Jehangir J. Ghandy, Vice-President of ISI and President of ISO, Dr B. H. Wadia of Semiconductors Ltd, Poona (Chairman of Semiconductor Devices Sectional Committee, ETDC 40) and Shri P. Sathiapalan of the Indian Embassy in Tokyo represented India at some of these meetings.

Committee of Action (15 and 23 October 1965) — During his address to the members, Shri Jehangir J. Ghandy, who attended the meeting of the Committee of Action in his capacity as ISO President, referred to the rapid development in the field of automation, computers, nuclear engineering, etc, and called upon both ISO and IEC to work in close liaison with each other. More than 160 documents processed by different technical committees were approved for circulation under the six months' rule, according to which a period of six months is given to the national committees for sending their comments and voting on the documents. In addition, the following important decisions were taken by the Committee of Action.

- a) *Appointment of Chairmen* — The following were appointed as Chairmen of technical committees indicated against each:

<i>Chairman</i>	<i>Technical Committee</i>
Shri D.D. Stephen (UK)	TC 2 Rotating Machinery
Shri Ph. Olmer (France)	TC 10 Liquid and Gaseous Dielectrics
Shri V.I. Popkov (USSR)	TC 42 High-Voltage Testing Techniques
Shri L. Elfstrom (Sweden)	TC 59 Performance of Electro-Domestic Appliances

The Secretariat of TC 58 methods of Measurement of Resistivity of High-Conductivity Materials was entrusted to the US National Committee.

- b) *TC 59 Performance of Electrodomeestic Appliances* — It was agreed that the scope of work of this committee would concern the characteristics to be employed in determining the performance of domestic electrical appliances and evolving up standard methods of measuring these characteristics. It was also agreed that the national committees would be consulted with regard to safety aspects of domestic electrical appliances for determining whether a new technical committee should be formed.
- c) The Swiss National Committee was invited to draw up a report with regard to IEC taking up work on conduits for electrical wiring.
- d) *TC 54 Domestic Refrigerators* — The Committee was requested to prepare recommendations for electrical safety in respect of air-conditioners.

TC 2 Rotating Machinery — (Sectt : UK) — Besides receiving reports from its various subcommittees, it approved for circulation, under the six months' rule, the draft revision of IEC Pub 34-1 'Recommendations for electrical machinery' and a report on the measurement of temperature rise by the method of super-position. In addition, several working groups were set up to examine the following subjects:

- a) Resketching table on limits of temperature rise of machines indirectly cooled by hydrogen,
- b) Vibration of machines,
- c) Noise limits based on the work of ISO/TC 43, and
- d) Earth terminals.

It was also agreed that the national committees should be consulted with regard to the manner in which the revision of IEC Pub 85 should be proceeded with.

SC 2A Turbine-Type Generators — (Sectt : UK) — It was recommended that the draft revision of Pub 34-3, Part 3 'Ratings and characteristics of three-phase 40 Hz (c/s) turbine-type generators' may be circulated under the six months' rule.

SC 2D Losses and Efficiencies — (Sectt : UK) — After discussing the French proposal and comments from national committees on Pub 34-2, Part 2 'Determination of efficiency of rotating electrical machinery', it was decided to circulate to the national committees a revised draft of its revision.

SC 2F Dimensions of Carbon Brushes, Brush-Holders, Commutators and Slip-Rings — (Sectt : Germany) — The Subcommittee agreed to transfer to TC 15 the subject regarding micanite for commutator-separators covered by Doc : 2F (Sweden) 26. Also,

it was decided to circulate a revised and simplified questionnaire on brushes to the national committees.

SC 2G Synchronous Machine Quantities — (Sectt : USSR) — It was agreed to prepare revised drafts on methods for determining synchronous machine quantities as well as choice of phase diagram for further consideration by the Committee.

TC 9 Electric Traction Equipment — (Sectt : France) — The document on draft rules applicable to electrical equipment used on power vehicles was recommended for issue under the six months' rule. A working group was set up to prepare a revised draft on the rules for ohmic resistors used in the power circuits of electrically powered vehicles as well as a unified document on the rules for various traction motors and generators, etc. Shri P. Sathiapalan of the Indian Embassy at Tokyo represented India at this meeting.

TC 12 Radio-Communication — (Sectt : Netherlands) — As a result of discussions by several subcommittees, ten documents were recommended for circulation under the six months' rule. The subjects covered were radio frequency and audio frequency measurements on receiver for A.M. transmissions, interference susceptibility measurements for F.M. and A.M. receivers, input arrangement for magnetic aerials, power at out-of-band frequencies, power at non-essential frequencies of radio transmitters and rules regarding hazards in dealing with electronic equipment, particularly transmitters.

TC 17 Switchgear and Controlgear — (Sectt : Sweden) — It was agreed to put high-voltage non-metal enclosed switchgears also under SC 17C. Besides, it was decided to consult the national committees about the manner of handling the subjects regarding low-voltage metal or non-metal enclosed switchgears.

SC 17A High-Voltage Switchgear and Controlgear — (Sectt : Sweden) — Three documents recommended for circulation under the six months' rule included a guide to the testing of circuit breakers and a specification for switches and switch isolators. A working group was set up to examine the question of combining fuses and switches. Besides, Working Group 5 was entrusted with the task of submitting in consultation with the national committees, a proposal for co-ordinating rated voltages, rated breaking capacities and rated currents.

SC 17B Low-Voltage Switchgear and Controlgear — (Sectt : France) — With a view to avoiding any conflicting recommendations made by SC 17B and TC 23, it was decided that they should exchange documents between them. In addition to agreeing to the preparation of a new specification for low voltage starters, the Subcommittee asked Working Group 4 to prepare a more general document on the temperature rise of terminals and associated conductors in the light of the comments received and the discussions held in the Committee.

SC 17C Metal-Enclosed Switchgear and Controlgear — (Sectt : Germany) — A revised document on the specification for high-voltage metal-enclosed switchgears and controlgears will be circulated to the national committees after the working group, now appointed, makes more definite proposals on certain items.

TC 32 Fuses — (Sectt : France) — A working group was set up for nomenclature and definitions of all types of fuses.

SC 32A High-Voltage Fuses — (Sectt : France) — It was agreed to draft two recommendations, one on current limiting fuses and the other on expulsion and similar fuses. It was also decided to request TC 32 that it should itself handle the work on nomenclature and definitions.

SC 32B Low-Voltage Fuses — (Sectt : Germany) — A new draft on general rules for low voltage fuses will be prepared in the light of the comments from the various national committees.

TC 34 Lamps and Related Equipment — (Sectt : UK) — This Committee accepted reports from its various subcommittees.

SC 34A Lamps — (Sectt : UK) — A number of documents relating to the method of measurement of the red-ratio of high-pressure mercury vapour lamps, recommendations for high-pressure mercury vapour lamps, standard sheets for tungsten halogen projector lamps, standard method for the measurement of lamp cap temperatures, limiting temperature rise for lamp caps, electrical characteristics of miniature tubular fluorescent lamps and basic system for dimensioning tubular tungsten halogen lamps for inclusion in Pub 64 were recommended for circulation under the six months' rule.

SC 34B Lamps' Caps and Holders — (Sectt : UK) — Five standard sheets for bayonet automobile lamp holders were recommended for circulation under the six months' rule. It was decided that the work undertaken by the Working Group EPC would include in future a study of creepage distances and clearances for caps and holders.

SC 34C Auxiliaries for Discharge Lamps — (Sectt : UK) — The Subcommittee recommended for circulation under the six months' rule the amendment relating to the heating and endurance test for ballasts for 105 V lamps. Working Group COMEX will study the question of issuing the third edition of Pub 82.

SC 34D Luminaires — (Sectt : UK) — Discussions generally centred round the publication of second edition of Pub 162 and also the new work about the standardization of spigot size for street lighting lanterns, performance tests for screwless connectors and recommendations for fittings for street lighting.

TC 36 Insulators — (Sectt : Italy) — The document on the dimensions of indoor and outdoor 1 000 V post insulators was recommended for circulation under the six months' rule. Revised documents on insulators for ceramic materials and glass for overhead lines of nominal voltage greater than 1 000 V and the dimensions of the cap and pin types of string insulator units will be prepared for further consideration.

SC 36A Insulated Bushings — (Sectt : Italy) — A working group was set up to prepare the draft revision of Pub 137 'Bushings for alternating voltages above 1 000 V'.

SC 36B Ball and Socket Fittings for Suspension Insulators — (Sectt : Sweden) — A revised draft on locking devices for ball and socket couplings of swing insulator units will be prepared for circulation under the six months' rule.

TC 37 Lightning Arresters — (Sectt : USA) — The revision of the Publication 99-1 'Recommendations for lightning arresters, Part I Non-linear resistor-type arresters' was recommended for circulation under the six months' rule.

TC 39 Electronic Tubes and Valves — (Sectt : Netherlands) — The seven documents recommended for circulation under the six months' rule included those pertaining to measurement methods of gas-filled tubes, noise measurement due to mechanical or acoustic excitations in electronic tubes, measurement of direct inter-electrode capacitances, disk seal tubes, valves and corona stabilizers and specification for all glass base and corresponding gauge.

TC 40 Capacitors and Resistors for Electronic Equipment — (Sectt : Netherlands) — Seven documents were recommended for circulation under the six months' rule covering among other components, such as tantalum electrolytic capacitors, aluminium electrolytic capacitors, polystyrene film dielectric capacitors, wirewound resistors and non-wirewound resistors.

TC 42 High-Voltage Testing Techniques — (Sectt : Sweden) — The revised version of the draft specification for the measurement of partial discharges on high-voltage apparatus was recommended for circulation under the six months' rule.

TC 47 Semiconductor Devices — (Sectt : France) — Dr B. H. Wadia (Chairman of Semiconductor Devices Sectional Committee, ETDC 40), was the Indian delegate at the meeting. The drafts recommended for circulation under the six months' rule related to terms, definitions and letter symbols for a number of semiconductor devices; essential ratings and characteristics for avalanche rectifier diodes and multiple semiconductor devices having common encapsulation; and measuring methods for thermal impedances of thyristors and avalanche rectifier diodes. A document about guidance for reference methods of

measurement concerning mechanical standardization was also recommended for circulation under the six months' rule.

TC 50 Environmental Testings — (Sectt : UK) — Fourteen documents covering different aspects of environmental testing of electronic components and equipment were recommended for circulation under the six months' rule. More important of these covered philosophy and preferred severities of vibration test, guidance on damp heat testing, shock test, bump test, immersion test and driving rain test for electronic equipment.

SC 50A Shock and Vibration Tests — (Sectt : UK) — Documents on shock test, bump test, vibration test and vibration preferred severities, primarily for components, were recommended for circulation under the six months' rule.

SC 50B Climatic Tests — (Sectt : Netherlands) — Seven documents were discussed and recommended for circulation under the six months' rule.

TC 56 Reliability of Electronic Components and Equipment — (Sectt : USA) — This newly set up technical committee met for the first time. Besides discussing a number of basic questions relating to reliability, it recommended for circulation under the six months' rule documents covering preliminary list of terms and definitions on reliability and guidance for the assessment of reliability.

MEETINGS AT OTHER PLACES

SC 13C Electronic Measuring Instruments — (Sectt : Hungary) — 14-18 June 1965, The Hague. Reports from various working groups were reviewed and a document on instruction book was recommended for circulation under the six months' rule.

SC 14C Reactors — (Sectt : Belgium) — 26-27 April 1965, Brussels. The draft on reactors was considered and recommended for circulation under the six months' rule.

TC 21 Accumulators — (Sectt : Czechoslovakia) — and **SC 21A Alkaline Accumulators** — (Sectt : Germany) — 7-10 June 1965, Ankara. A revised draft on the specification on cadmium nickel cylindrical rechargeable cells was recommended for circulation under the six months' rule. Preliminary discussions on various items, including identification systems for different types of batteries, modifications to life test, fastening methods for starter batteries and standardization of traction battery cells, were also held.

SC 29A Sound Recording — (Sectt : UK) — 20-25 September 1965, Prague. Documents on the dimensions and characteristics of

processed disk and reproducing equipment, magnetic tape recording and reproducing systems, were recommended for circulation under the 6 months' rule. The work of this subcommittee will now be transferred to TC 60 Recording.

TC 35 Primary Cells and Batteries— (Sectt : France) — 1-3 June 1965, the Hague. Nine documents, out of which eight covered proposed modifications to Pub 86 'Primary cells and batteries', were recommended for circulation under the six months' rule.

TC 41 Electrical Relays— (Sectt : France) — 21-24 June 1965, Stockholm. A document on instantaneous all-or-nothing relays was recommended for circulation under the six months' rule. Working groups were appointed to deal with vocabulary, contacts, statistical methods for assessment of relay performance and static relays.

TC 43 Electric Fans— (Sectt : India) — The meeting scheduled to take place at Tokyo from 19-21 October 1965 had to be cancelled owing to emergency created by the conflict on the subcontinent. The next meeting was proposed to be held in Tel-Aviv in October 1966 as part of the XXXI Annual Group Meetings.

TC 44 Electrical Equipment of Machine Tools— (Sectt : Switzerland) — 14-17 June 1965, Coventry (UK). Drafts concerning electronic equipment of machine tools, colours of push-buttons and signalling lamps used in machine tools, and minimum cross-section and insulation of conductors were recommended for circulation under the six months' rule.

SC 46B Waveguides and Their Accessories— (Sectt : USA) — 23-27 June 1965, Baden-Baden (Germany) and **SC 46C L. F. Cables and Wires**— (Sectt : Belgium) — 28-30 June 1965, Baden-Baden. A number of documents relating to L.F. cables and waveguides, including revision of Pub 78 was approved for circulation under the six months' rule.

TC 51 Ferromagnetic Materials— (Sectt : Netherlands) — 22-25 June and 1 July 1965, Baden-Baden (Germany). Draft proposals for additions and amendments to Section A of Pub 125 as well as the document on the calculation of the effective parameters of cross cores were recommended for circulation under the six months' rule.

TC 59 Performance of Electrodomeestic Appliances— (Sectt : France) — July 1965, Paris. This was the first meeting of the Committee. The draft methods of measurement for performance characteristics of electric blankets were recommended for circulation under the six months' rule.

3. COMMONWEALTH STANDARDS CONFERENCE

3.1 The sixth session of the Commonwealth Standards Conference, in which 23 delegates representing 14 countries of the Commonwealth participated, was held in London from 20-27 July 1965. The Indian delegation consisted of Shri Jehangir J. Ghandy, Dr Lal C. Verma, Director General, ISI; and Shri K. N. P. Rao and Shri H. Hodgkinson, both of the Tatas. Shri Jehangir J. Ghandy was the leader of the delegation. India contributed six papers for discussion at the Conference.

3.2 The discussion on the introduction of metric system in the United Kingdom attracted a great deal of attention of the delegates. It was unanimously agreed that the adoption of the metric system by an increasing number of countries would stimulate international agreements on standards. In response to an anxiety shown by many delegates, particularly the UK, in respect of the extent to which ISI could assist them in the detailed tasks involved in the introduction of metric system in their countries and in re-writing their standards in metric terms, an open offer was made by India that she would be prepared to receive any number of specialists from the overseas countries and to assist them in any studies or tours they might like to undertake on the spot and contacts they might like to establish with corresponding sectors of activity in India. If need be, ISI could also spare a limited number of its specialists for limited periods of assignments in other countries.

PART IV
APPENDICES

APPENDIX A

(see page 6)

**INDIAN STANDARDS PUBLISHED AND IN PRESS
DURING 1965-66**

(This list gives the new Indian Standards published during 1965-66 and those which were under print on 31 March 1966. It does not include standards which were under print on 31 March 1965 and printed during the year under report. The latter were included in a similar list published as Appendix A in last year's Annual Report.)

Sl No.	Rs
AGRICULTURAL AND FOOD PRODUCTS	
Animal Feeds	
1. IS : 3160-1965 <i>TUR CHUNI</i>	1-50
2. IS : 3161-1965 Gram <i>CHUNI</i>	1-50
3. IS : 3162-1965 Gram husk	1-50
4. IS : 3163-1965 Rice polish	1-00
5. IS : 3198-1965 Fodder yeast	5-00
6. IS : 3440-1966 Solvent extracted linseed oilcake (meal) as livestock feed	1-50
7. IS : 3441-1966 Solvent extracted groundnut oilcake (meal) as livestock feed	1-50
Cereals and Pulses Products	
8. IS : 3137-1965 Indian multipurpose food flour	6-00
Coffee Products	
9. IS : 3077-1965 Roasted and ground coffee	4-50
10. IS : 3309-1965 Soluble French coffee powder	1-00

ANNUAL REPORT 1965-66

Sl. No.		Rs
Dairy Equipment		
11.	IS : 3382-1965 Stainless steel milk pipes and fittings	6-00
Dairy Laboratory Apparatus		
12.	IS : 1183-1965 Density hydrometers for use in milk (<i>revised</i>)	3-00
Dairy Products		
13.	IS : 1167-1965 Casein (edible quality) (<i>revised</i>)	5-00
Edible Starch and Starchy Products		
14.	IS : 3155-1965 <i>MAKHANNA</i> products	3-50
Farm Implements and Machinery		
15.	IS : 3092-1965 Rubber draining and tapping knife	1-50
16.	IS : 3093-1965 Dah, jungle cutting... ..	1-50
17.	IS : 3094-1965 Bill-hook	2-00
18.	IS : 3108-1965 Pruning saw, straight and curved	1-50
19.	IS : 3122-1965 Budding and grafting knife, combined	1-50
20.	IS : 3153-1965 Thresher, <i>OLPAD</i> type	1-50
21.	IS : 3185-1965 'V' blade hand hoe... ..	2-00
22.	IS : 3292-1965 Three-tined hand hoe, fixed type	1-50
23.	IS : 3293-1965 Levelling <i>KARAH</i> (<i>KENI</i>), animal drawn	2-00
24.	IS : 3301-1965 Green manure trampler, animal drawn	2-50
25.	IS : 3310-1965 Single row cotton seed drill, animal drawn	2-00
26.	IS : 3327-1965 Paddy thresher, pedal operated	2-50
27.	IS : 3342-1965 <i>TRIPHALI</i> (three-tined cultivator), animal drawn	2-00
28.	IS : 3350-1965 Three-tined cultivator with seeding attachment, animal drawn	2-00
29.	IS : 3360-1965 Soil scoop... ..	1-50
30.	IS : 3363-1965 Harrow <i>PATELA</i>	2-00
31.	IS : 3369-1965 Puddler, animal drawn	2-00
32.	IS : 3372-1965 Bund former	2-00
33.	IS : 3467-1966 Wheel hand hoe	2-00
34.	IS : 3494-1966 Pruning scateur	2-00
Fish and Fishery Products		
35.	IS : 3336-1995 Shark liver oil for veterinary use	5-00
Food Grain Handling and Storage		
36.	IS : 3453-1966 Code of practice for construction of hexagonal type concrete-cum-masonry bins for bulk storage of food grains	3-50
Fruits and Vegetables		
37.	IS : 3197-1965 Onions	2-00
38.	IS : 3240-1965 Garlic	1-50
39.	IS : 3245-1965 Canned pea	3-50
40.	IS : 3246-1965 Canned okra (<i>BHINDI</i>)	3-50
41.	IS : 3247-1965 Canned bitter gourd (<i>KARELA</i>)	3-50
42.	IS : 3248-1965 Canned tomatoes	3-50
43.	IS : 3500-1966 Mango chutney	3-00
44.	IS : 3501-1966 Pickles	2-50
Pest Control Equipment		
45.	IS : 1970-1965 Hand compression sprayer (<i>revised</i>)	4-50
46.	IS : 1971-1965 Single-barrel stirrup-pump (<i>revised</i>)	3-50

Sl. No.		Rs
Pesticidal Formulations		
47.	IS : 3284-1965 Organo mercurial dry seed-dressing formulations ...	3.00
48.	IS : 3383-1965 Wettable sulphur powder	3.50
Pesticides		
49.	IS : 634-1965 Ethylene dichloride-carbon tetrachloride mixture (3 : 1 v/v) (revised)	4.50
Processed Cereals and Pulses Products		
50.	IS : 1155-1965 Wheat ATTA (revised)	4.00
Propagation Materials		
51.	IS : 3125-1965 Seeds of capsicum	1.00
52.	IS : 3126-1965 Seeds of cucumber	1.00
53.	IS : 3127-1965 Seeds of onion	1.00
54.	IS : 3128-1965 Seeds of lettuce	1.00
55.	IS : 3376-1965 Groundnut seeds	1.00
56.	IS : 3377-1965 Sesamum seeds	1.00
57.	IS : 3378-1965 Castor seeds	1.00
58.	IS : 3379-1965 Safflower seeds	1.00
59.	IS : 3380-1965 Tobacco seeds	1.50
Starch Derived Products		
60.	IS : 874-1965 Dextrose monohydrate (revised)	4.50
Transport of Live Animals		
61.	IS : 3059-1965 Code for the transport of monkeys by air	2.50
CHEMICAL		
Adhesives		
62.	IS : 3116-1965 Sealing compound for lead-acid batteries	2.00
63.	IS : 3447-1965 Shellac jointing or gasket compound	2.50
Brushware		
64.	IS : 3387-1965 Toothbrush	2.00
65.	IS : 3451 (Part I)-1966 Code of practice for care and maintenance of brushes : Part I Pan set brushes	2.00
Ceramicware, Enamelware and Laboratory Porcelain		
66.	IS : 2840-1965 China clay for ceramic industry	4.00
67.	IS : 3149-1965 Enamelware for home use	1.50
68.	IS : 3432-1965 Clay pipe triangles	1.50
Chemicals, Inorganic (Miscellaneous)		
69.	IS : 566-1965 Disodium phosphate, dodecahydrate	3.00
70.	IS : 1290-1965 Mineral gypsum (revised)	1.50
71.	IS : 3204-1965 Limestone for chemical industries	2.00
72.	IS : 3205-1965 Precipitated barium carbonate, technical	3.50
Chemicals, Organic (Miscellaneous)		
73.	IS : 436 (Part II)-1965 Methods for sampling of coal and coke: Part II Sampling of coke (revised)	2.50
74.	IS : 437-1965 Size grading of coal and coke for marketing (second revision)	2.00

ANNUAL REPORT 1965-66

Sr. No.				Rs
75.	IS : 439-1965	Hard coke for marketing (revised)	...	1:00
76.	IS : 770-1964	General classification of coal (revised)	...	4:00
77.	IS : 1354-1964	Methods of test for coke—special test (revised)	...	4:50
78.	IS : 3321-1965	Formaldehyde solution	...	2:00
Coal Carbonization Products				
79.	IS : 534-1965	Benzene (revised)	...	6:00
80.	IS : 539-1965	Naphthalene (revised)	...	4:50
Dye Intermediates				
81.	IS : 3229-1965	Naphthionic acid (sodium salt)	...	2:50
82.	IS : 3242-1965	β -oxynaphthoic acid (bon acid)	...	3:00
Glass and Glassware				
83.	IS : 1108-1965	Medicinal round glass bottles, narrow mouth (revised)	...	2:00
84.	IS : 2835-1965	Transparent sheet glass (selected quality)	...	2:50
85.	IS : 3423-1965	Glass containers for transfusion fluids	...	2:50
86.	IS : 3438-1965	Silvered glass mirrors for general purposes	...	2:00
Industrial Gases				
87.	IS : 309-1965	Compressed oxygen gas (revised)	...	2:00
88.	IS : 1090-1965	Compressed hydrogen (revised)	...	4:50
Inks and Allied Products				
89.	IS : 3450-1966	Carbon papers, handwriting	...	2:00
Laboratory Glassware Thermometers and Related Apparatus				
90.	IS : 3104-1965	Density hydrometers	...	4:00
Leather, Leather Goods and Leather Dressings				
91.	IS : 3297-1965	Water-resistant vegetable tanned sole leather	...	1:50
Lubricants				
92.	IS : 3098-1965	Oil, hydraulic, mineral oil type	...	5:50
Metal Containers and Closures				
93.	IS : 3101-1965	Collapsible tubes	...	2:00
94.	IS : 3286-1965	Round grease tins	...	1:50
Oils and Fats, Oleaginous Seeds and Fruits				
95.	IS : 3448-1965	Rice bran oil	...	1:00
96.	IS : 3490-1965	Nigerseed oil	...	1:00
97.	IS : 3401-1965	Safflower oil	...	1:00
98.	IS : 3492-1965	KARANJA oil	...	1:00
Painters' Materials (Miscellaneous)				
99.	IS : 424-1965	Plastic asphalt (revised)	...	1:50
100.	IS : 427-1965	Distemper, dry colour as required (revised)	...	2:00
Paper and Allied Products				
101.	IS : 3302-1965	Backing sheet for stencil	...	1:00
102.	IS : 3303-1965	Paper for match boxes	...	1:00

Sl. No.		Rs
103.	IS : 3338-1965 Sizes of correspondence envelopes	1-00
104.	IS : 3352-1965 Varnished cotton cloth and tape for electrical purposes	5-00
Paper Products and Packing Materials		
105.	IS : 2771-1965 Corrugated fibreboard boxes	1-50
106.	IS : 3263-1965 Waxed paper for confectionery	1-50
Perfumery Materials, Natural and Synthetic		
107.	IS : 3123-1965 Hydroxycitronellal	1-00
108.	IS : 3124-1965 Terpineol	2-00
109.	IS : 3131-1965 Musk ambrette	1-50
110.	IS : 3134-1965 Menthol	2-00
111.	IS : 3145-1965 Musk xylol	1-50
112.	IS : 3146-1965 Oil of celery seed	1-00
113.	IS : 3147-1965 Oil of dill	1-00
114.	IS : 3180-1965 Linalyl acetate	1-50
115.	IS : 3226-1965 Oil of bergamot	1-50
116.	IS : 3227-1965 Oil of bois de rose	1-50
117.	IS : 3228-1965 Musk ketone	1-50
118.	IS : 3241-1965 Geranyl acetate	1-00
119.	IS : 3249-1965 Oil of rosemary	1-00
120.	IS : 3250-1965 Methyl ionone	1-00
121.	IS : 3349-1965 Resinoid benzoin, pure	2-00
122.	IS : 3398-1965 Oil of patchouly	1-50
Petroleum and Petroleum Products		
123.	IS : 3433-1965 Oil, mineral colza	1-00
Pigments and Extenders		
124.	IS : 57-1965 Red lead for paints and jointing purposes (<i>revised</i>)	2-00
Plastics		
125.	IS : 1465-1964 Methods of test for plastic buttons (<i>thermosetting</i>) (<i>revised</i>)	1-50
126.	IS : 3371-1965 Di- <i>n</i> -butyl phthalate	3-00
127.	IS : 3389-1965 Urea-formaldehyde moulding materials	1-50
128.	IS : 3395-1965 Low density polyethylene materials for moulding and extrusion	2-00
Ready Mixed Paints and Enamels		
129.	IS : 131-1965 Ready mixed paint, spraying, finishing, for railway under-frames, black (<i>revised</i>)	1-50
130.	IS : 133-1965 Enamel, interior, (a) undercoating, (b) finishing, colour as required (<i>revised</i>)	1-50
131.	IS : 137-1965 Ready mixed paint, brushing, matt or egg-shell flat, finishing, interior, to Indian Standard colour, as required (<i>revised</i>)	1-50
132.	IS : 158-1965 Ready mixed paints, brushing, bituminous, black, lead-free, acid, alkali, water and heat resisting, for general purposes (<i>revised</i>)	2-00
133.	IS : 168-1965 Ready mixed paint, quick drying, matt, for general purposes to Indian Standard colours (<i>revised</i>)	1-50
Rubber and Rubber Products		
134.	IS : 637-1965 Rubber tubings for general purposes (<i>revised</i>)	2-00

ANNUAL REPORT 1965-66

Sl. No.		Rs
135.	IS : 638-1965 Sheet rubber jointing and rubber insertion jointing (revised)	2-50
136.	IS : 3399-1965 Zinc oxide for rubber industry	5-00
137.	IS : 3418-1965 Braided oil and solvent resisting hose of rubber	1-50
Thermal Insulation Materials		
138.	IS : 3069-1965 Glossary of terms, symbols and units relating of thermal insulation materials	3-50
139.	IS : 3144-1965 Methods of test for mineral wool thermal insulation materials	6-00
Treated Fabrics		
140.	IS : 2244-1965 Glossary of terms relating to treated fabrics	2-50
141.	IS : 3322-1965 PVC-coated fabrics for foul weather clothing	4-50
Water and Water Treatment		
142.	IS : 3306-1965 Tolerance limits for industrial effluents discharged into public sewers	1-00
143.	IS : 3307-1965 Tolerance limits for industrial effluents discharged on land for irrigation purposes	1-00
144.	IS : 3328-1965 Quality tolerances for water for swimming pools	1-50
Unclassified		
145.	IS : 3225-1965 Methods for preparation of buffer solutions	3-50
CIVIL ENGINEERING		
Aggregates		
146.	IS : 2116-1965 Sand for masonry mortars	1-50
147.	IS : 3068-1965 Broken brick (burnt clay) coarse aggregate for use in lime concrete	2-00
Boards and Sheets		
148.	IS : 1658-1966 Fibre hardboards (revised)	3-00
149.	IS : 3087-1965 Wood particle boards (medium density) for general purposes	4-00
150.	IS : 3097-1965 Veneered particle boards	2-50
151.	IS : 3129-1965 Particle boards for insulation purposes	2-00
152.	IS : 3348-1965 Fibre insulation boards	4-00
153.	IS : 3478-1966 High density wood particle boards	2-00
Bricks and Blocks		
154.	IS : 3102-1965 Classification of burnt clay bricks	1-00
155.	IS : 3115-1965 Lime-cement-cinder solid blocks	2-00
Builders' Hardware		
156.	IS : 208-1965 Door handles (revised)	2-00
Cement		
157.	IS : 3466E-1966 Masonry cement	4-50
Codes of Practice		
158.	IS : 2250-1965 Code of practice for preparation and use of masonry mortars	4-50
159.	IS : 2394-1965 Code of practice for application of lime plaster finish	4-50

Sl No.		Rs
160.	IS : 2541-1965 Code of practice for use of lime concrete in buildings	4-50
161.	IS : 2911 (Part II)-1965 Code of practice for design and construction of pile foundations : Part II Timber piles	2-50
162.	IS : 2950-1965 Code of practice for design and construction of raft foundations	3-50
163.	IS : 3007 (Part II)-1965 Code of practice for laying of asbestos cement sheets : Part II Semi-corrugated sheets	5-00
164.	IS : 3103-1965 Code of practice for industrial ventilation	4-00
165.	IS : 3114-1965 Code of practice for laying of cast iron pipes	4-00
166.	IS : 3140-1965 Code of practice for painting asbestos cement building products	1-50
167.	IS : 3362-1965 Code of practice for natural ventilation of residential buildings	2-00
168.	IS : 3370 (Part I)-1965 Code of practice for concrete structures for the storage of liquids : Part I General requirements	5-00
169.	IS : 3370 (Part II)-1965 Code of practice for concrete structures for the storage of liquids : Part II Reinforced concrete structures	3-00
170.	IS : 3385 (Part I)-1965 Code of practice for measurement of civil engineering works : Part I Pile foundations	2-00

Construction Plant and Equipment

171.	IS : 3251-1965 Asphalt paver finisher	2-00
172.	IS : 3365-1965 Floor polishing machines	1-50
173.	IS : 3366-1965 Pan vibrators	2-00

Fire Fighting Equipment and Accessories

174.	IS : 901-1965 Couplings, double male and double female, instantaneous pattern for fire fighting purposes (revised)	1-50
175.	IS : 902-1965 Suction hose couplings for fire fighting purposes (revised)	3-00
176.	IS : 903-1965 Fire hose delivery couplings, branch pipe, nozzles and nozzle spanner (revised)	3-00
177.	IS : 904-1965 2-way and 3-way suction collecting heads for fire fighting purposes (revised)	2-00
178.	IS : 905-1965 Delivery breechings, dividing and collecting, instantaneous pattern, for fire fighting purposes (revised)	2-00
179.	IS : 906-1965 Branch with revolving head for fire fighting purposes (revised)	1-50
180.	IS : 907-1965 Suction strainers, cylindrical and shoe types for fire fighting purposes (revised)	2-00
181.	IS : 908-1965 Fire hydrant, stand post type (revised)	2-00
182.	IS : 909-1965 Underground fire hydrant, sluice valve type (revised)	2-00
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184.	IS : 937-1965 Washers for water fittings for fire fighting purposes (revised)	1-00
185.	IS : 1941-1965 Electric motor sirens (revised)	1-50

Fire Safety

186.	IS : 3079-1965 Code of practice for fire safety of industrial buildings : Cotton textile mills	3-00
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Flooring and Roofing Materials

187.	IS : 3462-1966 Flexible PVC flooring	2-50
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Sl No.		Rs
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188.	IS : 3312-1965 Metal shelving cabinets (adjustable type) ...	2-00
189.	IS : 3313-1965 Metal filing cabinet for general office purposes ...	1-50
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191.	IS : 3497-1966 Metal wardrobes (adjustable type) ...	1-50
192.	IS : 3498-1966 Metal tables (office type) ...	1-50
193.	IS : 3499-1966 Metal chairs (office type) ...	1-00
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194.	IS : 2951 (Part I)-1965 Recommendation for estimation of flow of liquids in closed conduits : Part I Head loss in straight pipes due to frictional resistance ...	5-00
195.	IS : 2951 (Part II)-1965 Recommendation for estimation of flow of liquids in closed conduits : Part II Head loss in valves and fittings ...	3-00
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196.	IS : 2720 (Part IV)-1965 Methods of test for soils : Part IV Grain size analysis ...	6-00
197.	IS : 2720 (Part V)-1965 Methods of test for soils : Part V Determination of liquid and plastic limits ...	3-00
198.	IS : 2720 (Part XIII)-1965 Methods of test for soils : Part XIII Direct shear test ...	2-50
199.	IS : 2720 (Part XV)-1965 Methods of test for soils : Part XV Determination of consolidation properties ...	3-50
200.	IS : 2720 (Part XVI)-1965 Methods of test for soils : Part XVI Laboratory determination of CBR ...	4-00
201.	IS : 2720 (Part XXI)-1965 Methods of test for soils : Part XXI Determination of total soluble solids ...	1-50
202.	IS : 2720 (Part XXII)-1965 Methods of test for soils : Part XXII Determination of organic matter ...	1-50
203.	IS : 3085-1965 Methods of test for permeability of cement mortar and concrete ...	2-00
204.	IS : 3316-1965 Method of sampling and grading structural granite ...	1-00
205.	IS : 3495-1966 Method of sampling and testing clay building bricks ...	2-00
Poles		
206.	IS : 3386-1965 Wooden fence posts ...	2-50
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207.	IS : 3315-1965 Evaporative air coolers (desert coolers) ...	2-00
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208.	IS : 334-1965 Glossary of terms relating to bitumen and tar (revised) ...	1-50
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209.	IS : 3201-1965 Criteria for the design and construction of precast concrete trusses ...	3-00
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210.	IS : 3117-1965 Bitumen emulsion for roads (anionic type) ...	4-50
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211.	IS : 3367-1965 Burnt clay tiles for use in lining irrigation and drainage works ...	2-00

Sl. No.				Rs
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213.	IS : 3463-1966	Polystyrene wall tiles	2-00
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214.	IS : 620-1965	General requirements for wooden tool handles (<i>second revision</i>)	2-50
215.	IS : 2894-1965	Wooden handles for wood working chisels and gouges	2-00
216.	IS : 2895-1965	Wooden handles for engineers' files	1-00
217.	IS : 2896-1965	Wooden handles for carpenters' augers	1-00
218.	IS : 2897-1965	Wooden handles for shovels	1-00
219.	IS : 3071-1965	Wooden crates	4-00
220.	IS : 3084-1965	Pencil slats	1-00
221.	IS : 3337-1965	<i>BALLIES</i> for general purposes...	1-50
222.	IS : 3364-1965	Methods of measurement and evaluation of defects in timber	3-00
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223.	IS : 3384-1965	Bitumen primer for use in waterproofing and damp-proofing	1-00
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224.	IS : 651-1965	Salt-glazed stoneware pipes and fittings (<i>second revision</i>)	6-00
225.	IS : 779E-1966	Water meters (domestic type) [<i>third (emergency) revision</i>]	4-50
226.	IS : 3076 (Part I)-1965	Low density polythene pipes for cold water services : Part I Up to 50 mm size	2-00
227.	IS : 3311-1965	Waste plug and its accessories for sinks and wash-basins	1-00
228.	IS : 3489-1966	Enamelled steel bath tubs	2-50
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229.	IS : 3150-1965	Galvanized wire netting (Recognition of B.S. 1485 : 1948 as an Indian Standard)	3-60
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232.	IS : 922-1965	Cook's knives (<i>revised</i>)	2-00
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234.	IS : 924-1965	Bread knives (<i>revised</i>)	2-00
235.	IS : 989-1965	Scissors for general purposes (<i>revised</i>)	5-50
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236.	IS : 3148-1965	Metallic slide fasteners (Recognition of B.S. 3084 : 1963 as an Indian Standard)	6-30
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239.	IS : 3120-1965	Baby incubators	2-00
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ANNUAL REPORT 1965-66

Sl. No.		Rs
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248.	IS : 3320-1965 Surgical scalpels ...	1.00
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Sl No.	Rs
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ANNUAL REPORT 1965-66

Sl No.		Rs
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450.	IS : 737-1965 Wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (<i>revised</i>)	6.00
451.	IS : 1253-1965 Aluminium for use in iron and steel manufacture (<i>revised</i>)	1.00
452.	IS : 1254-1965 Corrugated aluminium sheet (<i>revised</i>)	1.00
453.	IS : 3436-1966 Aluminium-clad aluminium alloy sheet, strip and coil for aircraft purposes	1.50
Metallic Finishes		
454.	IS : 3194-1965 Code of recommended practice for cleaning of metals prior to electroplating	2.00
455.	IS : 3203-1965 Methods of testing local thickness of electroplated coatings	4.00
456.	IS : 3266-1965 Electroplated coatings of gold for general engineering purposes	1.50
Metallography and Heat-Treatment		
457.	IS : 2756-1965 Method for estimating the average grain size of wrought copper and copper-base alloys	1.50
Methods of Chemical Analysis		
458.	IS : 1047-1965 Methods of chemical analysis of antimony (<i>revised</i>)	5.00
459.	IS : 3186-1965 Methods of chemical analysis of cadmium copper	1.50
460.	IS : 3187-1965 Methods of chemical analysis of copper-nickel-zinc alloys	3.50
461.	IS : 3200-1965 Methods of chemical analysis of cryolite	3.50

Sl. No.	Rs
Methods of Physical Tests	
462. IS : 2866-1965 Method for Vickers hardness test for copper and copper alloys	1-00
463. IS : 3054-1965 Method for Brinell hardness test for copper and copper alloys	1-00
464. IS : 3260-1965 Method for bend test for copper and copper alloys	1-00
465. IS : 3388-1965 Method for wrapping test for copper and copper alloy wire	1-00
466. IS : 3394-1965 Method for accelerated life test of electrical resistance alloys for heating elements	2-00
467. IS : 3407-1965 Method for interrupted creep testing of steel at elevated temperatures (load and temperature interrupted)	2-00
468. IS : 3408-1965 Method for non-interrupted creep testing of steel at elevated temperatures	2-00
469. IS : 3409-1965 Method for creep stress rupture testing of steel at elevated temperatures	2-00
470. IS : 3410-1965 Method of test for determining coefficient of linear expansion of metals at different temperature ranges	1-50
Methods of Sampling	
471. IS : 2500 (Part II)-1965 Sampling inspection tables : Part II Inspection by variables for percent defective	6-50
Non-destructive Testing	
472. IS : 3415-1966 Glossary of terms used in magnetic particle flaw detection	1-50
Fig Iron	
473. IS : 224-1965 Foundry pig iron (coke) for general purposes (<i>second revision</i>)	2-00
Precious Metals	
474. IS : 639-1965 Gold leaf (<i>revised</i>)	1-00
475. IS : 3095-1965 Solders for use in goldware	1-00
476. IS : 3096-1965 Fine grade palladium	1-00
477. IS : 3110-1965 Silver leaf	1-00
478. IS : 3111-1965 Silver thread	1-50
479. IS : 3112-1965 Gold and silver embroidery materials	1-50
Refractories	
480. IS : 3304-1965 Burnt magnesite-chrome refractories for general purposes	1-00
481. IS : 3305-1965 Burnt chrome-magnesite refractories for general purposes	1-00
Steel Castings	
482. IS : 3444-1966 Corrosion resistant steel castings	2-50
Steel Forgings	
483. IS : 3445-1966 Forged steel rolls	1-50
484. IS : 3479-1966 General requirements for steel drop, upset and press forgings	1-50
Steel Tubes, Pipes and Fittings	
485. IS : 3074-1965 Steel tubes for automotive purposes	2-00

Sl No.		Rs
Structural Shapes		
486.	IS : 811-1965 Cold formed light gauge structural steel sections (revised)	7-00
487.	IS : 3443-1966 Crane rail sections	2-00
Welding, General		
488.	IS : 817-1966 Code of practice for training and testing of metal arc welders (revised)	8-00
Wrought Steel Products		
489.	IS : 2385-1965 Hot-rolled mild steel strip for cold reduced tinplate	1-00
490.	IS : 3195-1965 Steel for the manufacture of volute and helical springs (for railway rolling stock)	1-00
491.	IS : 3298-1965 Mild steel rivet bars for shipbuilding	1-50
492.	IS : 3422-1966 Code of practice for packaging of steel and steel pro- ducts for export purposes	2-00
493.	IS : 3431-1965 Steel for volute, helical and laminated springs for auto- motive suspension	1-50
494.	IS : 3502-1966 Steel chequered plates	1-50
495.	IS : 3503-1966 Steel for marine boilers, pressure vessels and welded machinery structures	3-50
TEXTILE		
Aircraft Materials		
496.	IS : 3243-1965 Nylon fabric for man-dropping parachutes ...	2-00
497.	IS : 3244-1965 Cotton webbing, statichute	2-00
498.	IS : 3254-1965 Silk sewing thread for parachutes	3-50
499.	IS : 3255-1965 Cotton tapes for parachutes	2-00
500.	IS : 3449-1966 Web, cotton, olive green for man-dropping parachutes	1-50
Carpets and Druggets		
501.	IS : 3184-1965 Kelim (woollen drugget) for export	2-00
Chemical Test Methods		
502.	IS : 647-1965 Methods for determining the desizing efficiency and the relative efficiency of amylolytic enzymes (revised)	2-00
503.	IS : 3416-1966 Method for quantitative chemical analysis of mixtures of polyester fibres with cotton or regenerated cellulose	1-50
504.	IS : 3421-1966 Method for quantitative chemical analysis of binary mixtures of acrylic and certain other fibres	1-50
505.	IS : 3429-1966 Method for determination of solubility of wool in alkali	1-50
506.	IS : 3430-1966 Method for determination of solubility of wool in uria- bisulphite solution	1-50
Colour Fastness of Textile Materials, Determination of		
507.	IS : 765-1966 Method for determination of colour fastness of textile materials to washing : Test 4 (revised)	1-00
508.	IS : 3361-1965 Method for determination of colour fastness of textile materials to washing : Test 2	1-00
509.	IS : 3417-1966 Method for determination of colour fastness of textile materials to washing : Test 5	1-00
510.	IS : 3425-1966 Method for determination of colour fastness of textile materials to acid-felting : severe	1-00

Sr. No.				Rs
511.	IS : 3426-1966	Methods for determination of colour fastness of textile materials to rubbing with organic solvents	...	1-00
Cotton Fabrics, Mill-Made				
512.	IS : 174-1965	Flannelettes (<i>revised</i>)	...	1-50
513.	IS : 175-1965	Cotton bed sheets (<i>revised</i>)	...	1-50
514.	IS : 176-1965	Bedtickings (<i>revised</i>)	...	2-00
515.	IS : 177-1965	Cotton drills (<i>revised</i>)	...	2-50
516.	IS : 178-1965	Cotton twills (<i>revised</i>)	...	2-00
517.	IS : 179-1965	DOSUTI (<i>revised</i>)	...	2-00
518.	IS : 180-1965	Cotton sheetings (<i>revised</i>)	...	2-00
519.	IS : 181-1965	Leopard cloth (<i>revised</i>)	...	1-50
520.	IS : 182-1965	Mazri (<i>revised</i>)	...	2-00
521.	IS : 186-1965	Mulls (<i>revised</i>)	...	2-00
522.	IS : 187-1965	Long cloth (<i>revised</i>)	...	2-00
523.	IS : 188-1965	Cotton poplins (<i>revised</i>)	...	2-00
524.	IS : 3192-1965	Cotton calico for electric cables	...	1-50
Cotton Hosiery and Knitted Garments				
525.	IS : 3326-1965	Cotton stockinette	...	2-00
526.	IS : 3329-1965	Gents' cotton socks (made on hand-driven machines)	...	4-00
Jute Bags				
527.	IS : 2580-1965	Jute bags for packing cement (<i>revised</i>)	...	3-00
528.	IS : 3344-1965	D. W. tarpauling jute bags for packing (mint) coins	...	2-50
Jute Mill Accessories				
529.	IS : 3189-1965	High speed jute bobbins	...	1-50
Packaging				
530.	IS : 3086-1965	Code for seaworthy packaging of cotton hosiery yarn and goods	...	2-00
531.	IS : 3256-1965	Code for inland packaging of ropes and cordages	...	1-00
532.	IS : 3325-1965	Code for inland packaging of cotton hosiery yarn and goods	...	1-50
Physical Test Methods				
533.	IS : 2702-1965	Method for determination of thermal resistance of textile fabrics, guarded hot-plate method	...	1-50
534.	IS : 2899-1965	Method for determination of percentage of medullated fibres in wool	...	1-50
535.	IS : 3442-1966	Method for determination of crimp and count of yarn removed from fabrics	...	2-00
Ropes and Cordages				
536.	IS : 3252-1965	Shroud-laid cotton line	...	3-00
537.	IS : 3253-1965	Hawser-laid nylon rope for mountaineering purposes	...	2-50
538.	IS : 3262-1965	Pilot lead line	...	2-00
Silk and Rayon Fabrics, Handloom and KHADI				
539.	IS : 3356-1965	Jhoot silk coating	...	1-50
540.	IS : 3357-1965	Matka silk fabric	...	1-50
541.	IS : 3358-1965	Dupion silk fabric	...	1-50
542.	IS : 3359-1965	Silk coating	...	1-50

Sl No.		Rs
Spinning Machinery Components		
543.	IS : 3056-1965 Lap rods	1-50
544.	IS : 3078-1965 Rings for spinning frame	1-50
545.	IS : 3158-1965 Aluminium cylindrical sliver cans for spinning mills ...	1-50
546.	IS : 3176-1965 Top rollers for ring spinning frame	1-00
547.	IS : 3183-1965 Saw-toothed wire for licker-in cylinder	1-00
548.	IS : 3190-1965 Designation of sides and hand of spinning preparatory, spinning and doubling machinery	1-00

Textile Mill Accessories

549.	IS : 3265-1965 Weft pirns (taper fit) for use in shuttles for plain calico looms	4-50
550.	IS : 3340-1965 Jacquard harness	1-50
551.	IS : 3341-1965 Dobby harness	2-00
552.	IS : 3368-1965 Wooden heald frames for wire and flat steel healds ...	2-50
553.	IS : 3446-1966 Leather aprons for drafting systems	3-00
554.	IS : 3496-1966 Dobby lags and pegs	2-00

Weaving Machinery Components

555.	IS : 3165-1965 Weaver's beams for use in plain calico looms ...	1-50
556.	IS : 3166-1965 Working widths and reed spaces of plain calico looms	1-00
557.	IS : 3199-1965 Definition of side (left or right) of weaving preparatory machines and weaving looms	1-00

Wool Hosiery and Knitted Garments

558.	IS : 3100-1965 Men's wool-cotton short drawers	3-50
559.	IS : 3330-1965 Wool-cotton vests	3-00

Yarn and Similar Structure

560.	IS : 1539-1965 Cotton yarn, grey, for handlooms (revised) ...	2-00
561.	IS : 3193-1965 Cotton yarn for braiding for electric cables ...	1-50

EC

562.	IS : 3130-1965 Code of practice for storage and use of microfilms of permanent value	1-00
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HINDI TRANSLATION OF INDIAN STANDARDS

1.	IS : 732-1963 Code of practice for electrical wiring installations (system voltage not exceeding 650 volts) (revised)	10-00
2.	IS : 1653-1964 Specification for rigid steel conduits for electrical wiring (revised)	3-00

INDIAN STANDARDS WITHDRAWN DURING 1965-66

1.	IS : 24-1956 Brazing solder (revised)
2.	IS : 134-1950 Enamel, spraying, interior, 1) undercoating, 2) finishing, colour as required
3.	IS : 169-1950 Ready mixed paint, spraying, quick drying, matt, lead-free, for general purposes, to various Indian Standard colours
4.	IS : 172-1951 Plain voiles (mock) (tentative)
5.	IS : 173-1951 Cotton crepes (tentative)
6.	IS : 183-1951 Susies (tentative)
7.	IS : 184-1951 Cotton dhoties (tentative)
8.	IS : 185-1951 Cotton saris (tentative)
9.	IS : 192-1956 Silver solder (revised)
10.	IS : 194-1950 Recommendations for refractories for railways (tentative)

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No.

11. IS : 240-1951 Method for determination of ends and picks in woven cotton fabrics
12. IS : 241-1951 Method for determination of cotton fabric dimensions
13. IS : 242-1951 Method for determination of weight per square yard (or square metre) and weight per linear yard (or linear metre) of cotton fabrics
14. IS : 243-1951 Method for determination of breaking load (strength) and elongation of woven cotton fabrics (by constant-rate-of-traverse machine)
15. IS : 284-1951 Toilet soap
16. IS : 298-1951 Method for determination of bursting strength of woven and knitted cotton fabrics
17. IS : 461-1953 Method of grading raw silk (tentative)
18. IS : 462-1953 Method for visual and tactual examination of category I raw silk (tentative)
19. IS : 463-1953 Method for determining conditioned weight of category I raw silk (tentative)
20. IS : 464-1953 Method for conducting winding test for category I raw silk (tentative)
21. IS : 465-1953 Method for conducting size (denier) deviation and maximum deviation tests for category I raw silk (tentative)
22. IS : 466-1953 Method for conducting average conditioned size (denier) test for category I raw silk (tentative)
23. IS : 467-1953 Method for conducting evenness and low evenness tests for category I raw silk (tentative)
24. IS : 468-1953 Method for conducting cleanness test for category I raw silk (tentative)
25. IS : 469-1953 Method for conducting neatness test for category I raw silk (tentative)
26. IS : 470-1953 Method for conducting serigraph test for determining the tenacity and elongation of category I raw silk (tentative)
27. IS : 471-1953 Method for conducting cohesion test for category I raw silk (tentative)
28. IS : 472-1953 Method for visual and tactual examination of category II raw silk (tentative)
29. IS : 473-1953 Method for determining conditioned weight of category II raw silk (tentative)
30. IS : 474-1953 Method for conducting winding test for category II raw silk (tentative)
31. IS : 475-1953 Method for conducting size (denier) deviation and maximum deviation tests for category II raw silk (tentative)
32. IS : 476-1953 Method for conducting average conditioned size (denier) test for category II raw silk (tentative)
33. IS : 477-1953 Method for conducting evenness and low evenness tests for category II raw silk (tentative)
34. IS : 478-1953 Method for conducting cleanness test for category II raw silk (tentative)
35. IS : 479-1953 Method for conducting neatness test for category II raw silk (tentative)
36. IS : 480-1953 Method for conducting serigraph test for determining the tenacity and elongation of category II raw silk (tentative)
37. IS : 481-1953 Method for conducting cohesion test for category II raw silk (tentative)
38. IS : 520-1954 Enamel, brushing, exterior, type I (synthetic) (1) undercoating (2) finishing, colour as required (tentative)
39. IS : 521-1954 Enamel, spraying, exterior, type I (synthetic) (1) undercoating (2) finishing, colour as required (tentative)

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No.

40. IS : 522-1954 Enamel, brushing, exterior, type 2 (synthetic) (1) undercoating (2) finishing, colour as required (*tentative*)
41. IS : 523-1954 Enamel, spraying, exterior, type 2 (synthetic) (1) undercoating (2) finishing, colour as required (*tentative*)
42. IS : 572-1954 Disodium phosphate dodecahydrate, technical
43. IS : 604-1959 Code of practice for construction of food grain storage structures suitable for trade and government purposes for the northern region
44. IS : 605-1960 Code of practice for construction of food grain storage structure suitable for trade and government purposes for the central region
45. IS : 606-1955 Code of practice for construction of food grain storage structures suitable for trade and government purposes for the eastern region
46. IS : 608-1955 Code of practice for construction of food grain storage structures suitable for trade and government purposes for the coastal region
47. IS : 627-1961 Bicycle chains (*revised*)
48. IS : 793-1956 Practice for author statement in the title-page of a book (*tentative*)
49. IS : 836-1962 Lappets for cotton ring spinning frame
50. IS : 839-1956 Transparent toilet soap
51. IS : 1147-1957 Glossary of terms for secondary cells and batteries
52. IS : 2040-1962 Steel bars for stays
53. IS : 2651-1964 Cotton webbing, dyed, for aircraft safety belts and harnesses

INCOME AND EXPENDITURE ACCOUNT FOR

EXPENDITURE

Sl No.	HEADS OF EXPENDITURE	AMOUNT
		U.S.
1.	<i>Pay</i>	
	1.1 Officers	1 130 176-54
	1.2 Staff	1 381 733-90
2.	<i>Allowances</i>	
	2.1 Officers	333 390-35
	2.2 Staff	874 389-93
3.	<i>CHS and Other Medical Charges</i>	112 705-16
4.	<i>Provident Fund</i>	
	4.1 Contribution to CPF	169 472-00
	4.2 Interest to CPF	94 430-00
	4.3 Interest to GPF	5 418-00
5.	<i>Pension-cum-Gratuity Fund</i>	31 683-00
6.	<i>Staff Welfare</i>	11 703-64
7.	<i>TA</i>	
	7.1 Overseas	71 251-59
	7.2 Officers and Staff	239 457-12
	7.3 Committee Members	40 659-78
8.	<i>Subscription to International Organizations</i>	
	8.1 ISO	35 550-00
	8.2 IEC	30 005-00
9.	<i>Production</i>	
	9.1 Standards	444 125-48
	9.2 Bulletin	265 271-90
	9.3 Calculation Aids	142 383-00
	9.4 Miscellaneous	78 273-74
10.	<i>Research and Consultation</i>	31-72
11.	<i>Testing Fees</i>	49 416-12
12.	<i>Laboratory Apparatus and Stores</i>	40 456-40
13.	<i>Publicity</i>	
	13.1 Exhibitions	2 834-63
	13.2 Advertising	103 722-65
	13.3 Miscellaneous	2 228 06
14.	<i>Conferences</i>	27 234-57
15.	<i>Training Programme</i>	64 811-49
16.	<i>Library</i>	44 032-68
	CARRIED OVER	5 826 853-45

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

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