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Picture on Cover — Part of the dais at the inauguration of the Twenty-fifth Group Meetings of IEC in New Delhi by Dr. S. Radhakrishnan, Vice-President of India (*see* p. 1).

Sitting (from *r* to *l*) are: Dr. I. Herlitz (President IEC), Shri Lal Bahadur Shastri (Union Minister for Commerce & Industry), Dr. S. Radhakrishnan, Dr. H. S. Osborne (Past President IEC), Prof. G. de Zoeten (President Netherlands National Committee of IEC), Dr. K. L. Moudgill (Member ISI General Council), Gen E. E. Wiener (Hon President IEC), Mr. S. Zwerling (Founding President Standards Engineers Society, USA) and Shri M. Hayath (Chairman Indian National Committee of IEC).

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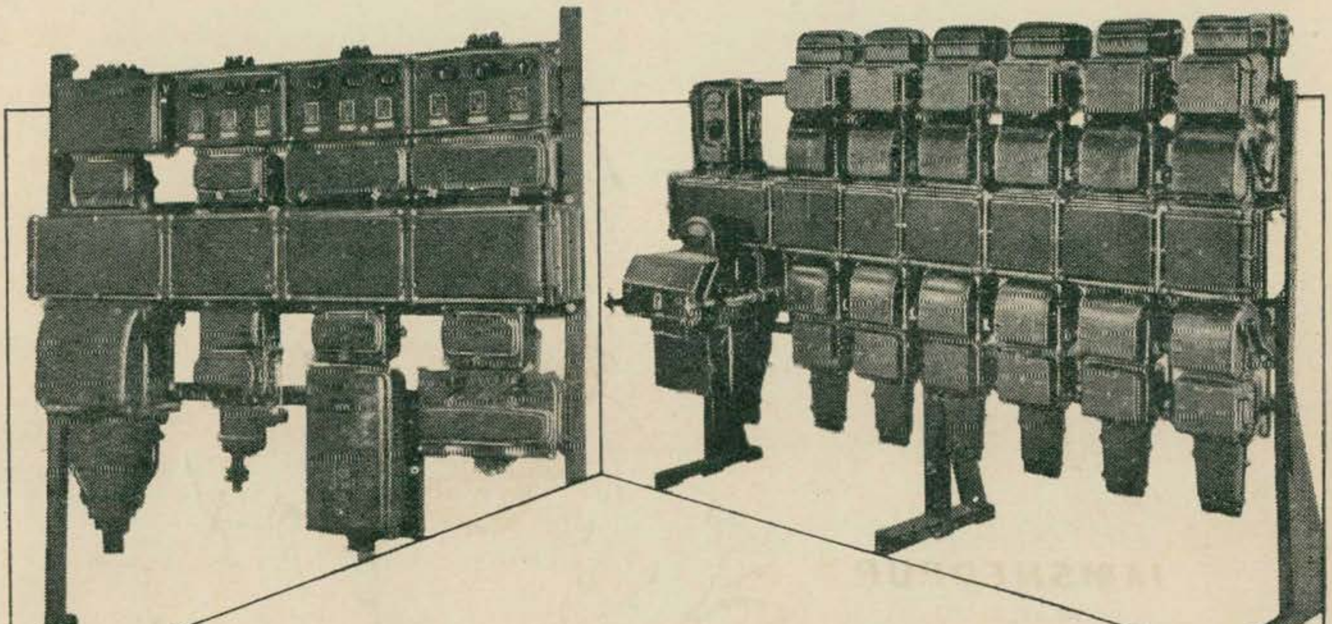

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This handbook, which is intended to serve as a source for basic data on the various disciplines required by the students of the first degree course in Science, Engineering and Technology, has been prepared at the request of the Association of Principals of Technical Institutions who felt the need for such a work, in view of the changeover to metric system of weights and measures.

The handbook is divided into the following three sections :

Section A	Quantities, Units and Conversion Factors;
Section B	Physical and Chemical Constants; and
Section C	Mathematical Formulae and Tables.

In the compilation of tables of physical and chemical constants given in Section B, the choice of the appropriate source was based on the consideration of authenticity and availability of up-to-date data. Only metric values are given in these tables.

The Handbook, priced Rs 7.59 a copy (postage extra), is available for sale at the Headquarters and Branch Offices of the Indian Standards Institution.

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SI BULLETIN

Vol 13 JAN-FEB 1961 No. 1

IEC in New Delhi

Twentyfifth General Meeting Inaugurated by Vice-President of India

THE 56-year old International Electrotechnical Commission held its Annual Group Meetings for the first time on the Continent of Asia from 31 October to 12 November 1960. The Indian Standards Institution had the privilege and pleasure of playing host on this epoch-making event when over 400 electrical experts from 27 countries, including India, participated in a score of technical meetings at Vigyan Bhavan, New Delhi.

For the representatives of the youthful Indian electrical and electronic industries, research bodies and other Indian organizations concerned, who participated in these meetings, the occasion provided unique opportunities for absorbing the inspiring traditions of IEC in which disagreements are minimized by emphasizing agreements and disputed points resolved with the determined helpfulness to find acceptable solutions. And, for the IEC, this most significant event in its history and that of the whole international standardization movement served to emphasize the spreading of the movement and the world-wide importance of the work with which it is concerned.

It was the first occasion also for ISI to arrange for the holding of an international conference of this magnitude, and it was such a help to find so much understanding and consideration on the part of delegates, whether at the registration counter, or in the meetings, or during visits to places of technical and cultural interest. The Indian Standards Institution did its bit, but what was most touching was the earnest and repeated appreciation, verbal or in writing, from those who themselves were contributing not a little to the success of the occasion. To quote the General Secretary IEC, Mr. L. Ruppert, 'It is my feeling which I know is shared by all those who participated in the meeting, that, thanks to the unparalleled efficiency of your local organization, the New Delhi meeting has in every respect been one of the most successful in the IEC history, this opinion being fully supported by the numerous and valuable technical results which have been achieved'.

The inauguration of the group meetings by Dr. Sarvapalli Radhakrishnan, Vice-President of India, on 31 October 1960 and the visit to Prime Minister Nehru by IEC Officers and some Leaders of Delegations were acclaimed as a great honour and a source of inspiration, demonstrating as they did the importance which India attaches to the IEC work and her determination to give it ever-increasing co-operation.

The invitation by the IEC to Shri M. Hayath, Chairman of the Indian National Committee for IEC and Chairman Central Water & Power Commission, Government of India, to deliver the seventh Charles le Maistre Memorial Lecture during the 1961 Annual General Meeting at Interlaken in Switzerland was recognized as a fitting appreciation of the contribution which India is making to the work of IEC as also a fitting tribute to the personal eminence of Shri Hayath in the electrotechnical field. Similarly, the appointment of Shri S. N. Mukerji, Director, Government Test House, Calcutta, as the Chairman of IEC/TC 43 Fans, was looked upon as a recognition of his acknowledged leadership in the field of testing of electrical equipment, in particular electric fans, in the manufacture of which India holds a leading position in the world.

The technical work disposed of during the New Delhi meetings, reviewed elsewhere in this issue (*see* p. 4) shows that substantial progress was made in finalizing several disputed aspects of electrical problems faced by the committees. For several years past, the need for special consideration in respect of performance and testing of electrical equipment in tropical countries had been stressed by Indian delegates at IEC meetings. The holding of these meetings in New Delhi this year, which enabled India to put forward adequate representation of Indian viewpoint, resulted in the IEC Committees appreciating fully the nature of the problems involved. Indian contribution was in the interest of making IEC Recommendations truly international and not in any narrow sense of trying to get something out of IEC. Dr. Herlitz's reference in his broadcast talk to the contribution that India is making (*see* p. 16) was significant of the spirit in which IEC work is carried on.

INAUGURATION

The inaugural address by Dr. S. Radhakrishnan was followed by a speech by Dr. I. Herlitz, President IEC. The concluding speech of the

Two ISI Officers (Extreme Left and Extreme Right) on Duty at Palam Airport with a Group of IEC Delegates on Arrival

inaugural function was made by Shri Lal Bahadur Shastri, President ISI and Union Minister for Commerce and Industry.

Inaugural Address

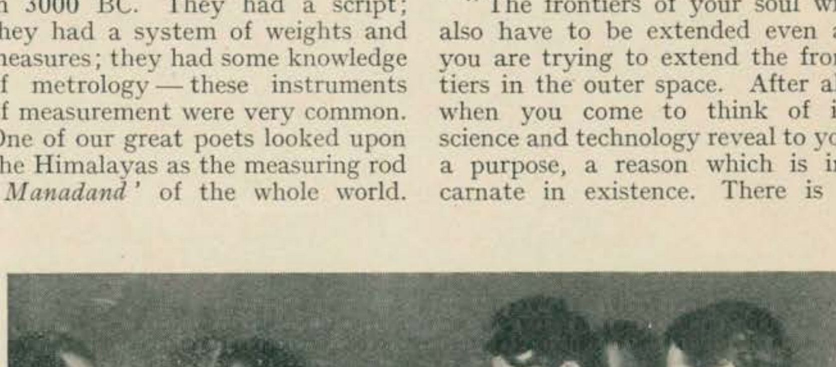
Extending a very warm welcome to IEC delegates on behalf of the Government and the people of India, the Vice-President of India said:

" There is no doubt that we need to have some kind of standardization not merely with regard to scientific things, but even with regard to words. A great Chinese thinker Confucius said: If you want to make any progress in human thought you should first define words; determine their meanings. We now talk about cold war. One man means by it co-existence, another competitive co-existence. Socialism — it is defined in many ways by Soviet Union, the Scandinavian countries, Great Britain, People's Republics, India. Democracy, is it basic? Is it guided? Is it controlled? Is it licensed, as it was in Germany after the war when the occupation powers defined democracy in many ways? We had a resolution passed recently in the United Nations Assembly, demanding the ending of colonialism. Ask them to define what is meant by colonialism? You will get a large number of definitions of it. In other words, the cynical and tempestuous discussions which took place in the United Nations Assembly may all be traced to this one fundamental fact of the ambiguity of words, lack of standardization so far as meanings of expressions are concerned. So, if we want to make any kind of progress in any subject, the first thing necessary is to define and determine what exactly we mean by the terms which we employ. Now, so also in electrical technology and electrical industry — the subjects with which you are specially concerned — it is necessary for us to have some standard definitions, standard meanings, standard instruments, etc."

"In this country, we had a pre-Aryan civilization which prevailed in 3000 BC. They had a script; they had a system of weights and measures; they had some knowledge of metrology — these instruments of measurement were very common. One of our great poets looked upon the Himalayas as the measuring rod '*Manadand*' of the whole world. We have had these instruments for quite a long time, but the most important thing now is: *precision, exactness*. We use the watch, we use the thermometer, cardiogram, blood testing instruments. All these things, unless they are uniformly understood in different parts of the world, they will not be of much use to us. It is, therefore, essential that we should define our commodities, instruments, processes, etc, so as to develop what may be regarded as an international language in electro-technology."

"So many things have happened bringing the world nearer. Many peoples are getting together today. The locomotives, steamships, aeroplanes, electrical machines: all these things are bringing the whole world into a single neighbourhood. But how are we to make that neighbourhood into a community, into a fellowship? It is there that man is failing. You find, man is abasing himself and diverting from proper use of these great inventions, etc, which he has employed. You have to ask a question. Where does the fault lie? It does not lie in machines; it does not lie in technology; it lies in the soul of man. A new direction will have to be given to the human soul. It is not enough to make conquest of outer space. It is necessary to make conquest of your inner soul also."

" The frontiers of your soul will also have to be extended even as you are trying to extend the frontiers in the outer space. After all, when you come to think of it, science and technology reveal to you a purpose, a reason which is incarnate in existence. There is a



Delegates Being Registered at the Reception Counter

At the Press Conference on the Eve of Inauguration

Dr. I. Herlitz, President IEC (*r*), Consulting the Past President Dr. Percy Dunsheath

Shri M. Hayath, Chairman Indian National Committee, Being Introduced to Gen E. E. Wiener, Hon President IEC, By Dr. Lal C. Verman, Director ISI

mystery there, and unless the human being is able to recognize that mystery which lies behind all this, and is able to assume an attitude of humility, he will not feel that he is called upon in this new age to bring about a new World, and, therefore, new men, new kinds of insight are required to be developed. Man has to grow in his humanity and greatness. It is only then that the great work which you are all doing in the field of electro technology will be utilized for the benefit of man."

"Many of you who are present here have made great contributions to this science, and now I am told that this is the first time that this Commission is meeting in Asian soil. It only shows that even Asian countries are now emerging into the modern period. I have no doubt that your deliberations will be of great use to us in our own country and will also be of great use to the world, and this will contribute to the building up of one world which is the dream of all of us today."

Dr. Herlitz's Speech

Responding to the inaugural address by Dr. Radhakrishnan, Dr. Ivar Herlitz, President IEC said, "It is a source of great satisfaction to the IEC to meet this year for the first time in its history in the East, in a country whose culture dates further back in history than that of most living nations, a culture of such a power and standard that it has in one way or another influenced that of most nations today participating in the development and betterment of human life."

"Your participation, Mr. Vice-President, in the government of this

Dr. Verman Escorting Dr. S. Radhakrishnan at the Inaugural Session country, is to me a token of how deeply India is still engaged in and dominated by human culture. We feel greatly honoured by having you inaugurate our meeting."

"A meeting in this part of the world is a natural consequence of the continuous expansion of the IEC. Our growth into a truly international organization has, no doubt, been felt by everyone participating in our work, but it may be a surprise to many of you to hear that we have now reached a stage where our 35 member countries represent more than three quarters of the population of the earth. I also believe that IEC is one of the oldest international organizations existing, having survived two world wars with constantly improving health."

"How has it been possible to bring and keep together such a number of nations with widely different outlooks on how the world should be guided and developed? I shall not attempt to analyze to what extent technical development may be able to influence ideologies and cultural life. Nor do I pretend that our organization is more philanthropic than others. As in most other organizations, we must accept the fact that the first concern of our members is probably their own interests. I do believe, however, that there is something in our activities that inherently works towards strength and power."

"How easy does it not appear to unite people or peoples against a common enemy under the slogan 'death to the other means bread for me'? But how easily is not such a unity lost unless you can either constantly find or invent new enemies making people forget the bread that should come, or else maintain it by brutal force?"

"Without the common enemy, the unity for a common goal is not as easily attained because the goal has to be described more in detail to become sufficiently attractive. When once grasped, however, it may become a more stable ground for unity than the common enemy could ever be."

"In the IEC, we have no common enemy other than possibly the chaos that would develop without our work. Nor have we any direct means to enforce the results of our work upon our members, not to speak of other people."

"We have had to realize that our only way is to produce work of such a quality that it benefits all and harms none."

"Our efforts to this end and our lack of formal power and force have produced an inner strength giving the best possible foundation for lasting success and long life."

"May you all feel and be guided in your work by this spirit of friendship and co-operation to the good of the world."

ISI President's Concluding Remarks

Concluding the inaugural proceedings, Shri Lal Bahadur Shastri, Minister for Commerce & Industry, Government of India, and President ISI, said that because India is now free, the expectations of the people are very high. Whatever is achieved does not satisfy them fully. "There is therefore", the Minister said, "no alternative left for us but to draw up a sizable plan and programme for the rapid advancement of our country. The heavy imports naturally require a large amount of foreign exchange".

Although India is receiving substantial loans and assistance in other forms from friendly countries this can and should be only for a short period. Ultimately, countries have to, and should, depend on their own resources. Therefore, Shri Lal Bahadur said that 'along with the imports, we have simultaneously to make every effort for increase in exports'.

Continuing, he said "The question of quality of goods exported naturally assumes great importance, as we have to face a very severe competition in foreign markets. It is, therefore, essential that in order to obtain foreign exchange we should be able through international standardization to promote exports which will also lead to economy and efficiency in our industries".

Elaborating on the role of international standards in the economic life of India, the President said that international standards must conform to the peculiar circumstances under which Indian industries have to operate. For example, the peculiar climatic conditions of different areas, in which the material and equipment have to serve, will have to be kept in mind. Besides this, we are also faced with the intricate problem of conversion of inch-pound system to the metric one. If we are able to do it successfully, we might be of some help in the international field also, where controversies between the inch-pound and metric system countries often arise'.

Inviting the delegates to visit some of the Indian engineering and industrial concerns, the Minister said, "You will get some idea of what we are trying to do in spite of enormous handicaps and, I am sure, as experts you will be able to give us very sound advice on different aspects. You can certainly criticize our shortcomings and give us constructive suggestions which would be most welcome indeed".

All Smiles at the Inauguration. (From *l* to *r*) Dr. P. Dunsheath, Gen P. Salmon, Dr. S. Radhakrishnan and Dr. I. Herlitz

COMMITTEE MEETINGS

Eight technical committees and twelve subcommittees met at Vigyan Bhavan between 31 Oct and 12 Nov 1960 (*see* Table I on p. 5). In addition, the Committee of Action, six working groups and the Advisory

TABLE I DELEGATES AND OBSERVERS AT NEW DELHI MEETINGS OF IEC COMMITTEES

COMMITTEE	No.	SECRETARIAT	CHAIRMAN	SECRETARY	DELEGATES	OBSERVERS
Committee of Action	CA	IEC Central Office	Dr. I. Herlitz (Sweden)	Mr. L. Ruppert (IEC Central Office)	21 from 8 countries	28 from 16 countries
Dimensions of Motors	2B	Sweden	Prof. Fredrik Dahlgran (Sweden)	Mr. Jan Ollner (Sweden)	41 from 16 countries	—
Dimensions of Carbon Brushes	2F	Germany	Mr. C. Ehrensperger (Switzerland)	Mr. N. B. L. Strepp (Germany)	24 from 11 countries	—
Synchronous Machine Constants	2G	USSR	Mr. L. G. Mamikonianz (USSR)	Mr. L. S. Lindorf (USSR)	23 from 12 countries	4 from 2 countries
Radio Communication	12	Netherlands	Mr. F. Dumat (France)	Mr. H. Lels (Netherlands)	29 from 15 countries	—
Radio Receiving Equipment	12-1	Netherlands	Mr. P. A. C. Pedersen (Denmark)	Mr. W. Werner (Netherlands)	24 from 11 countries	4 from 2 countries
Safety	12-2	Netherlands	Mr. P. D. Pope (Norway)	Mr. F. Dumat (Netherlands)	20 from 13 countries	5 from India and one from International Radio and Television Organization
Climatic & Durability Tests for Radio-Communication Equipment	12-7	Netherlands	Mr. P. D. Canning (UK)	Mr. J. C. Buis (Netherlands)	42 from 16 countries	6 from 2 countries
Insulating Materials	15	Italy	Dr. E. F. Richter (Germany)	Dr. A. Ruelle (Italy)	38 from 18 countries	4 from India and 5 from ISO
Switchgear and Controlgear	17	Sweden	Prof. G. de Zoeten (Netherlands)	Mr. L. R. Bergstrom (Sweden)	35 from 15 countries	—
High-Voltage Switchgear & Controlgear	17A	Sweden	do	do	50 from 16 countries	—
Low-Voltage Switchgear & Controlgear	17B	France	Mr. D. E. Lambert (UK)	Mr. R. de Maistre (France)	43 from 18 countries	8 from India
Primary Cells & Batteries	35	France	Mr. F. Aufenast (UK)	Mr. A. Gibert (France)	26 from 13 countries	3 from India
Insulators	36	Italy	Mr. O. D. Zetterholm (Sweden)	Mr. F. Barozzi (Italy)	25 from 11 countries	One from India
Sockets & Accessories for Electronic Tubes and Valves	39/40	Netherlands	Mr. F. Dumat (France)	Mr. A. T. Potjer (Netherlands)	19 from 9 countries	One from India
Components for Electronic Equipment	40	Netherlands	Mr. L. Podolsky (USA)	Mr. L. van Rooij (Netherlands)	28 from 11 countries	One from UK
Piezo-electric Crystals	40-3	Netherlands	Mr. W. J. Young (UK)	Mr. A. T. Potjer (Netherlands)	15 from 8 countries	One from India
Connectors & Switches	40-4	Netherlands	Mr. H. Mayr (Italy)	Mr. L. van Rooij (Netherlands)	29 from 15 countries	—
Basic Testing Procedure	40-5	United Kingdom	Mr. H. J. Geisler (USA)	Mr. P. D. Canning (UK) Mr. D. A. Weale (UK)	40 from 16 countries	4 from India
Electric Fans	43	India	Shri S. N. Mukerji (India)	Shri Y. S. Venkateswaran (India)	17 from 8 countries	2 from India
Electrical Measuring Instruments Used in Connection with Ionizing Radiation	45	Germany	Mr. W. H. Hamilton (USA)	Mr. J. Troger (Germany)	18 from 8 countries	2 from India

Delegates and Observers Attending the Second Session of the Committee of Action

Panel for Safety Matters also held their meetings during the period. In all, twentyeight different organs of IEC held their deliberations in New Delhi during the two-week session.

A brief outline of the major items discussed at the committee and subcommittee meetings is given below.

Committee of Action

The Committee of Action (CA), on which 9 of the 35 IEC member countries are represented, met under the chairmanship of its President, Dr. I. Herlitz. The Committee held two sessions: first on 5 November and the second on 12 November 1960.

The administrative part of the Committee's work consisted of passing the annual budget and discussing the possible increase in the contribution of member countries to meet the added demands on the services of the Central Office in Geneva.

On the basis of the recommendations of the Advisory Committee for Electronics and Telecommunications (ACET), the Committee of Action re-organized all the technical committees and subcommittees dealing with these subjects, resulting in the formation of a few new technical committees and raising the status of some subcommittees to technical committees. As a result of this re-organization, the following technical committees will in future deal with subjects devoted to electronics and telecommunication:

- TC 12 Radio Communication
- TC 29 Electro-acoustics
- TC 39 Electronic Tubes and Valves
- TC 40 Resistors and Capacitors
- TC 46 Cables, Wires and Wave Guides
- TC 47 Semiconductor Devices
- TC 48 Electromechanical Components
- TC 49 Crystals
- TC 50 Environmental Tests
- TC 51 Ferromagnetic Materials
- TC 52 Printed Wiring

Besides this, the Committee of Action also created the following two new technical committees. These will work in liaison with the corresponding ISO Committees:

- TC 53 Computers and Data Processing Machines
- TC 54 Domestic Refrigerators

It was decided that all subcommittees of IEC should, in future, be identified by letters instead of numbers, for example, SC 12A, 12B instead of 12-1, 12-2, etc.

A matter of significance to India was the appointment of Shri S. N. Mukerji, Director, Government

Shri G. D. Joglekar (India), Mr. T. H. Cook and Mr. G. M. McIlwrick (UK) at the Meeting of SC 2F Dimensions of Carbon Brushes

to deliver the next Charles le Maistre Memorial Lecture during the 1961 Annual General Meeting at Interlaken (Switzerland). The 1962 and 1963 series of meetings will be held at Bucharest (Rumania) and Venice (Italy).

The Committee of Action also received and approved reports from the Technical Committees which had met in Europe since the March meeting of the CA and also from the Technical Committees which had met in New Delhi. Arising out of these reports, some 14 documents were approved for publication as IEC Recommendations; 22 were approved for circulation under the Six Months Rule and 7 under the Two Months Rule.

The Indian delegation to this meeting of CA consisted of Shri M. Hayath (Leader), Dr. Lal C. Verman and Shri Y. S. Venkateswaran.

Test House, Calcutta, as Chairman of the IEC/TC 43 Fans. Dr. M. Mazur of Poland was appointed as Chairman of IEC/TC 27 Electroheating.

The Committee considered and adopted the recommendations of the Working Group on Coding and Marking which pointed out: 'It is undesirable for the name of the Commission or its abbreviation (IEC or CEI) to become interpreted in the public mind as a mark of quality. Inevitably, many would come to regard this as connoting some approval of the article by the IEC'. As a result, the following paragraph will be included in the preface of relevant IEC Recommendations:

"The International Electrotechnical Commission has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its Recommendations."

The Committee reviewed the present state of work on the preparation of an encyclopædia of insulating materials. It may be recalled that the decision to commence work on this encyclopædia was taken by IEC/TC 15 at its 1953 meeting. In 1958, Part I of the encyclopædia, dealing with classification and synoptic tables and tabular summary, was issued. The work remaining to be done consists in preparing some 300 monographs for the different insulating materials of the groups listed in Part I. It is estimated that this work will take from 2 to 4 years. The preparation of all the monographs in a given group will be entrusted to experts from one country to ensure uniformity.

An important and welcome decision of the President of CA concerning India was the invitation extended to the Chairman of the Indian National Committee, Shri M. Hayath

Technical Committees and Subcommittees

SC 2B — The Subcommittee discussed Recommendations for the Dimensions and Output Ratings of Electric Motors and decided to extend the scope of its Part I Foot Mounted Induction Motors (IEC Pub 72-1) and Part II Flange Mounted Motors (IEC Pub 72-2) to cover output ratings up to 250 kW (350 hp). The extent of adoption

(From r to l) Mr. T. Nadas, Mrs. I. Antal (Hungary); Mr. Karl L. H. Wilhelm, Mr. U. Schrock (Germany); and Mr. J. Blouet, Mr. M. Perolini (France), at the Meeting of SC 12-1 Radio Receiving Equipment

Shri S. Thiruvenkatachari (with Turban), Leader of Indian Delegation, Speaking at the Meeting of SC 12-2 Safety. Others in the Picture are (*l* to *r*) S/s S. Srinivasan, T. V. Ramamurti and H. K. L. Arora

of these publications in national specifications and letter symbols for all dimensions of motors were also discussed.

SC 2F — Various details of standardizing chamfers, bevel angles, terminals, flexible connections, radial dimension of abrasion and pressure figures of carbon brushes were discussed. In addition, proposals from Sweden regarding nomenclature for brushes and related subjects, and from India regarding testing of brushes were examined.

SC 2G — Standard tests for determining synchronous machine quantities, essential for the study of electrical machines, were discussed. The Subcommittee decided to change its title to 'Synchronous Machine Quantities' from 'Synchronous Machine Constants'.

TC 12 — Reports from SC 12-1 and SC 12-2 were scrutinized and approved.

SC 12-1 — The important items considered related to:

a) Methods of measurement of susceptibility of frequency modulated receivers to impulse type interference;
b) Methods of measurement of the susceptibility of receivers to interference in the frequency range 150 kc/s to 1 605 kc/s;
c) Indoor analytical methods of measuring radiation; and
d) Revision of IEC Pub 69 Recommended Methods of Measurement of Receivers for Amplitude — Modulated Broadcast Transmission.

SC 12-2 — Indian proposals on leakage current and temperature-rise of insulating materials, and the draft revision of IEC Pub 65 Safety Requirements of Electric Mains Operated Radio Receivers Apparatus were the two items discussed by this Subcommittee. The Indian proposal to specify a lower limit of leakage current for tropical region supported in the experimental investigation in the country was accepted.

SC 12-7 — The Subcommittee discussed in detail preliminary draft International Recommendations for a number of climatic and mechanical tests to assess the durability of electronic and telecommunication equipment in extremes of environmental conditions of use and storage. India is particularly interested in this work as special attention has to be paid to meet the requirements of tropics.

TC 15 The important subjects discussed were:

a) Test procedure for the evaluation of the thermal endurance of enamelled wire;
b) Guide for the preparation of test procedure for evaluating the thermal endurance of electrical insulating materials; and
c) Standard methods of test for the determination of insulation resistance of solid insulating materials.

The following two new working groups were set up:

WG 9: External Liaison, and
WG 10: Electrolytic Corrosion.

TC 17 — Reports of SC 17A and SC 17B along with definitions proposed by one of its working groups were discussed.

SC 17A — Several documents dealing with high voltage switchgear were discussed; the specification for AC isolators (disconnectors) and earthing switches, and Amendment to IEC Pub 56 were approved for publication; and documents relating to testing of circuit breakers under different switching conditions, permissible switching over voltages and test voltage for 420 kV, and isolators were examined for circulation to member nations.

SC 17B — The draft Recommendations for Low-Voltage Distribution Circuit Breakers and draft Recommendations for Low-Voltage Contactors were approved for circulation. In addition, a document on Clearance and Creepage Distances was discussed and the Working Group was asked to prepare a new draft on decision taken. The other subjects discussed were the preparation of a document on Heavy Duty Circuit

The Meeting of SC 39/40 Sockets and Accessories for Electronic Tubes & Valves under the Chairmanship of Mr. F. Dumat (Extreme Left) in Progress

Shri S. N. Mukerji (Chairman) and Shri Y. S. Venkateswaran (Secretary) at the Meeting of TC 43 Fans, for which India Holds the Secretariat

Breakers and a Specification for Push Buttons.

TC 35 — Amendments and additions to IEC Pub 86 Primary Cells and Batteries were discussed along with the Indian proposal on the storage of dry batteries under 'extreme conditions' of temperature and humidity. A Working Group was appointed to deal with the definition of the internal resistance of batteries in connection with their use for various types of electronic equipment and to establish suitable test methods.

TC 36 — The document on draft Specification for post insulator with the rated voltage of 1 000 V and above was approved for circulation to national committees; and the preliminary proposals on dimensions of post insulators, and a draft specification for large porcelain insulators were discussed.

A Working Group for preparing IEC Recommendations for insulators for overhead electric traction lines was set up.

SC 39/40 — Among various other items, the article sheets for octal, noval and seven pin (miniature) sockets, shields for valves and tubes were considered in detail.

TC 40 — Reports received from SC 39/40, 40-3, 40-4 and 40-5 were approved. Some documents were approved for circulation whereas others were approved for publication.

SC 40-3 — Among other things, article sheets for oscillator crystal units, measuring methods for filter crystal units and standard for crystal ovens were considered.

SC 40-4 — Some of the important items discussed were toggle switches, wafer switches and the relevant articles; connectors for radio and sound equipment; multiple connectors; sensitive switches and connectors for small portable radio sets.

SC 40-5 — The Subcommittee discussed amendments and additions to Parts I and II of IEC Pub 68 Basic Climatic and Mechanical Robustness Testing Procedure for Components for Electronic Equipment, particularly those relating to corrosion, mould growth, hermetic sealing, vibration (resistance), dust, solar radiation, change of temperature, etc.

TC 43 — During its sittings lasting 9 half-day sessions, the Committee examined the draft Recommendations on ceiling fans, table fans and pedestal fans. There were many aspects which were common to all these three types of fans and decisions on several outstanding points were taken at this meeting. An important suggestion made by India was concerning the permissible temperature-rise for all the fans. India had proposed that, instead of having two separate sets of temperature-rise values for tropical and temperate climates, a common table would suffice, based on a reference ambient temperature of 40°C. This was accepted by the Committee.

Another aspect of the performance of ceiling fans which was discussed at very great length was the criterion for discontinuing the air velocity readings for the air delivery test. The two points of view presented were (i) to base it on the

A View of the Meeting of TC 45 Electrical Measuring Instruments Used in Connection with Ionizing Radiation with Mr. W. H. Hamilton in the Chair blade sweep, or (ii) to base it on a definite air velocity value. Since no agreement could be reached on this, a third suggestion was put forward by India where the air delivery would be determined by continuing the air velocity values up to a radial distance of 7/8th blade sweep and add to the resulting air delivery an additional quantity utilizing the air velocity curve. The Committee decided that several National Committees should conduct tests on the basis of all the three suggestions to see which of them gave the most consistent results.

An important agreement reached at this meeting was regarding the air delivery and service value figures for ceiling fans. The performance figures for table and pedestal fans, however, could not be decided since the Committee agreed to a new proposal from UK regarding the distances between the plane of the fan blades and the plane of the anemometer. The National Committees are expected to conduct tests on this basis and IEC/TC 43 would examine and decide the performance values at its next meeting.

During these discussions the Committee gave very great consideration to the safety aspect and modified several clauses with a view to ensuring safety.

Other subjects included in the programme of work of this Committee are:

a) Exhaust fans for domestic use, and

b) Fans for use on board ships.

The Committee is expected to meet again in Europe during the autumn of 1961.

Dr. and Mrs. A. Roth Listening with Interest to Dr. A. N. Ghosh, Joint Director ISI, at the Banquet at Ashoka Hotel

TC 45 — The exact scope of the work of this Committee was decided. The Committee will now deal with the safety requirements and functional performance of electrical instruments and associated apparatus for the measurement of ionizing radiation and the behaviour of all types of electrical measuring instruments in the fields of ionizing radiation.

The Committee set up the following four working groups:

WG 1 Classification — Terminology,
WG 2 Safety Requirements,
WG 3 Interchangeability, and
WG 4 Reactor Instrumentation.

The Lure of Bangles is No Less with Overseas Ladies than with Indians

SOCIAL FUNCTIONS, VISITS, RADIO PROGRAMMES, EXCURSIONS AND TOURS

The presence in India of so many distinguished engineers and specialists from almost all the industrially advanced countries of the world furnished a valuable opportunity for them to observe on the spot the actual conditions under which electrical equipment is manufactured, used and maintained in this country. It was also an opportunity for Indian engineers and technologists to meet the overseas experts in large numbers to exchange experiences and views on various intricate technical problems. To take full advantage of these opportunities, the programme of the Conference was so arranged that the overseas delegates had many occasions to meet one another and Indian delegates informally outside the meeting rooms as also to visit many centres of technical and industrial activity in the country.

To give to the intelligentsia in the country an opportunity to listen to some of the leading lights in the IEC, a radio symposium and broadcast talks were arranged with the co-operation of All India Radio.

Delegates were also taken round to several places of historical and cultural interest. Appreciation of the historical background and cultural heritage of other countries helps towards international understanding and co-operation. Since this was the first time for IEC to meet in the East, the need for emphasis on this aspect of international relationship was appropriately recognized.

For the ladies accompanying delegates, a separate programme was drawn up by the Ladies Committee under Mrs. Lal C. Verman's Chairmanship, so that when men were busy at the Committee meetings, ladies were able to go on special visits, excursions and shopping of interest to them.

Social Functions

These included the following besides the Get-Together Reception on the registration day:

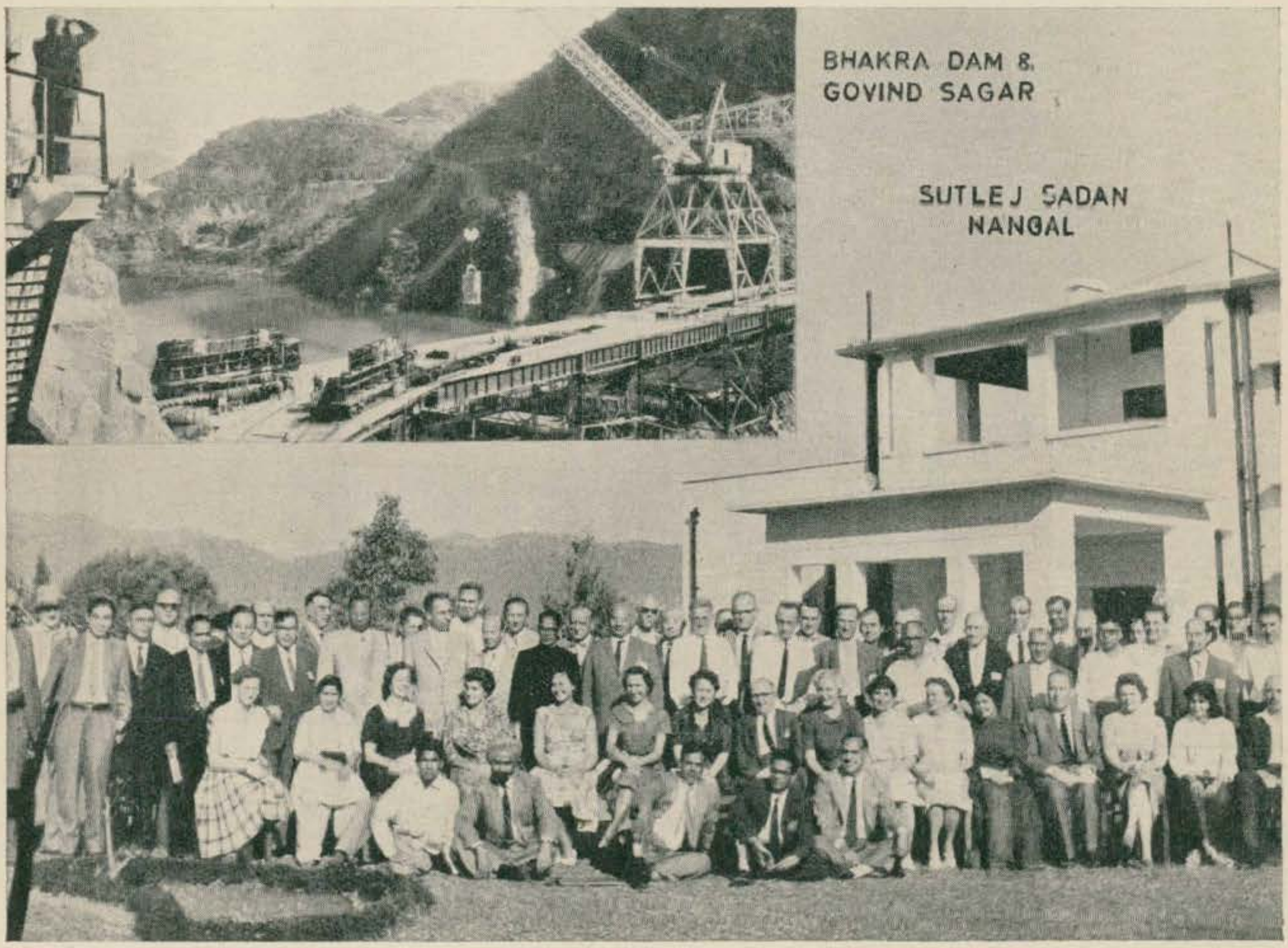
a) A Film Show at which four documentaries, namely, Made in India, Standards and Industry, Khajuraho and Metric System were exhibited;
b) A Soirée of Indian Dance and Music in which the great Indian artists Kumari Kamala of Bharatha Natyalaya, Ravi Shanker and many others participated;
c) Panchatantra dance drama by the Little Ballet Troupe which had just returned from a highly successful tour of Europe, Latin America, Morocco and Tunisia, sponsored by the Government of India as a part of cultural exchange programme;
d) Reception by Shri Lal Bahadur Shastri, President ISI, at Rashtrapati Bhavan which was graced by Dr. S. Radhakrishnan;
e) Banquet at Ashoka Hotel; and
f) Farewell Reception by Indian Electrical Manufacturers' Association at Delhi Gymkhana.

Local Visits

These were of general, historical and technical interest. Each visit was arranged on two different dates, separated by not less than three days, so that delegates who might be busy in committee meetings on one of the dates could, if desired, avail of the second fixture.

a) *General and historical*
   1) Ferozshah Kotla, Red Fort and Jama Masjid;
   2) National Gallery of Modern Arts and Rajghat;
   3) Qutb Minar and Hauz Khas; and
   4) Humayun's Tomb and Jantar Mantar.

M. & Mme. P. Ailleret After Being Garlanded at a Tea Party when a Group of IEC Delegates Visited ISI Headquarters



IEC Delegates Visit Bhakra Nangal

b) *Technical*

1) Broadcasting House,
2) International Monitoring Centre and Standard Frequency Transmission Centre,
3) Central Water & Power Commission Museum,
4) National Physical Laboratory, and
5) Manak Bhavan.

DELEGATES AT IEC GENERAL MEETING 1960

Over 400 delegates from 26 overseas countries listed below and India participated in the New Delhi IEC Meetings. The list gives the number of delegates sent by each oversea country. It also gives the numbers of ISO observers, IEC officers and central office staff, Indian delegates and observers, Reception Committee members and ladies who were registered.

SI No.	Country	No. of Delegates Registered
1.	Argentina	1
2.	Australia	1
3.	Belgium	4
4.	Bulgaria	3
5.	Canada	3
6.	China	9
7.	Czechoslovakia	6
8.	Denmark	4
9.	France	24
10.	Germany	37
11.	Hungary	5
12.	Italy	13
13.	Japan	14
14.	Netherlands	14
15.	Norway	2
16.	Poland	7
17.	Pakistan	2
18.	Rumania	3
19.	Spain	1
20.	Sweden	20
21.	Switzerland	11
22.	Turkey	1
23.	UK	38
24.	USA	26
25.	USSR	8
26.	Yugoslavia	3
	IEC Officers & Central Office	6
	ISO Observers	3
	Indian Delegates	97
	Indian Observers	39
	Reception Committee Members	15
	Total	420

Ladies

Delegates	2
Central Office	1
Accompanying Overseas Delegates	42
Accompanying Indian Delegates	26
Total	71

Radio Programme

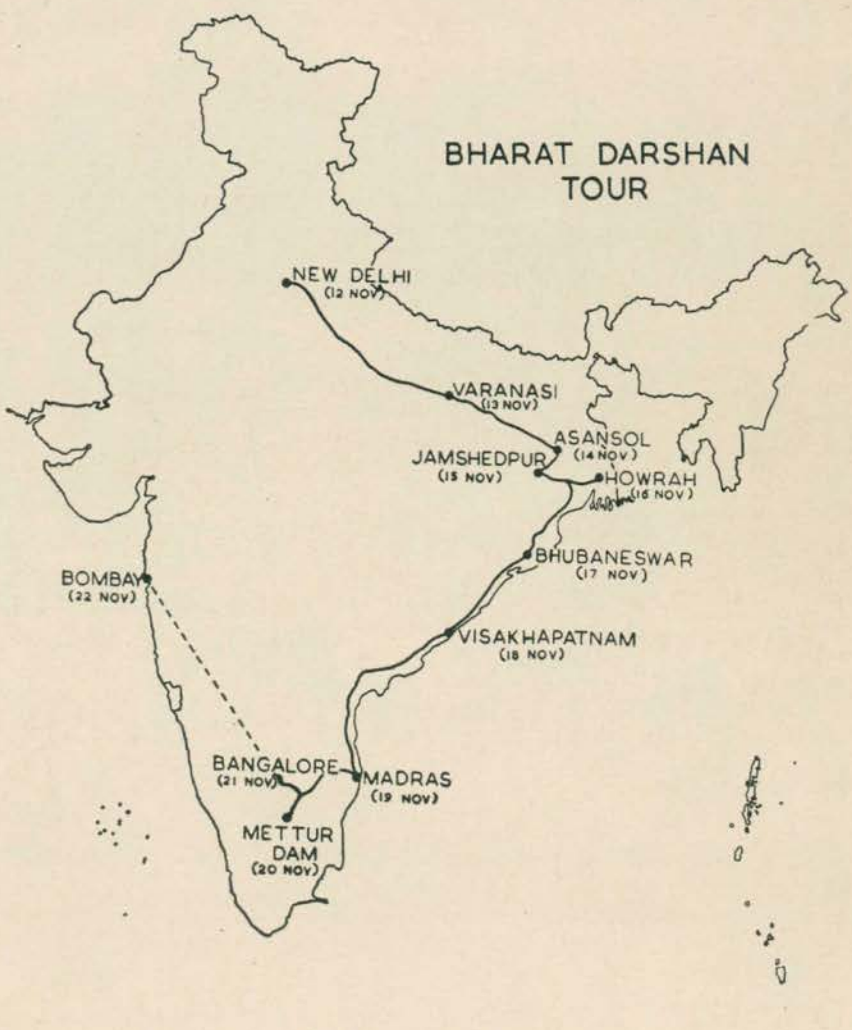
Besides the curtain raiser broadcast on 'IEC Meets in Delhi' by Director ISI, there were two other broadcast talks — one by Dr. Herlitz, President IEC (*see* p. 16) and another by Mr. H. A. R. Binney; and a symposium on international standardization. While Dr. Herlitz spoke on the IEC Organization and how it functions, Mr. Binney's talk covered the subject of standardization in general and its usefulness for the average citizen.

The symposium was led by Shri M. Hayath, Chairman of the Indian National Committee of the IEC. He introduced the other speakers, each of whom spoke on a different aspect of the subject. Dr. Richard Vieweg, Chairman of the German National Committee for IEC and the Leader of German Delegation, who was the first speaker, discussed international standardization in general and described the international organizations engaged in this task. The next three speakers were: Monsieur P. Ailleret, President of the French Electrotechnical Committee and Leader of the French Delegation; Dr. P. Dunsheath, Past President IEC (1955-58); and Prof. G. de Zoeten, Chairman of the Netherlands Electrotechnical Committee of IEC and Leader of Netherlands Delegation. They covered respectively the benefits of international standardization through electric supply industry, electric manufacturing industry and in the home.

Speaking for the second time, Dr. P. Dunsheath described how international standardization is achieved in the IEC. Mr. L. S. Lindorf, Laboratory Chief of Research Institute of Energetics, Moscow, then dealt with the application of international standards in different countries through national committees. Dr. H. S. Osborne, Past President IEC (1952-55), concluded the symposium by surveying the achievements of IEC.

Excursions

Four excursions were organized; one of which, namely, the one-day trip to Jaipur by air, was exclusively for ladies. The three other excursions covered the Seven Cities of



IEC Officers and Leaders of Some Delegations with Prime Minister Nehru at His Residence

Sitting (from *l* to *r*) : Gen P. Salmon (ISO); Gen E. E. Wiener (Hon President IEC) ; Prime Minister ; Dr. I. Herlitz (President IEC) ; and Dr. Arnold Roth (Treasurer IEC)

Standing (from *l* to *r*) : Dr. L. G. Mamikonianz (USSR); Dr. Lal C. Verman (Director ISI); L. Ruppert (General Secretary IEC) ; Dr. Harold S. Osborne (Past President IEC) ; P. Ailleret (France) ; Hendley Blackmon (USA) ; Paul Henri Waldvogel (Switzerland) ; Dr. Percy Dunsheath (Past President IEC) ; Prof. G. de Zoeten (Netherlands) ; Ion Miletineanu (Rumania) ; G. Someda (Italy) ; J. O. Knowles (UK) ; and Dr. Richard Vieweg (Germany)

Delhi, Agra and Bhakra Nangal. The excursion to Bhakra Nangal, a description of which was published in the last issue of this Bulletin*, included visit to the Bhakra Dam, the power station at its foot, Govind Sagar Reservoir, the Nangal Hydel Canal and Ganguwal Power Station on the canal.

Tours

Two tours — Bharat Darshan, conducted directly by ISI, and Ajanta-Ellora — were organized. In the former, which lasted ten days, a special air-conditioned train, starting from New Delhi and taking the route as indicated in the map, carried 104 delegates and ladies to Bangalore on 21 November; then two chartered planes, a super-constellation and a viscount, took them to Bombay the following day where the tour terminated.

The tour was designed to enable delegates to get a glimpse of the fast developing network of industrial, power and river-valley projects as also of the cultural heritage of the country. In planning the tour, care was taken to see that besides visiting works and industrial installations, delegates would have a number of opportunities of going through areas and centres of definite tourist interest.

The visits to industrial establishments at different places during the tour were as follows:

At Durgapur, the fractional distillation of coal; at Jamshedpur, plants of steel, automobile, locomotive and cable industries; at Calcutta, electric fan, radio, insulator and pottery works; at Visakhapatnam, shipbuilding; at Madras, production of switch and fusegear, transformers and integral railway coaches; at Mettur, units of chemical and sandalwood oil industries; at Bangalore, aircraft, telephone, electronic components, transformer electric motor, insulator and switchgear manufacturing concerns, and testing of electronic equipment by Defence Inspectorate; and at Bombay, the atomic energy installations and electric motor producing units.

The irrigation and hydroelectric projects covered in the tour were a sector of the Damodar Valley Project† and the Cauvery-Mettur system. Of the former, the delegates visited Maithon Dam, the Maithon Underground Hydel Station and Durgapur Barrage; and of the latter, the Mettur Dam, the hydel station at the dam, and the crossing of the canal over the river, some six miles downstream from the hydel station.

At all the places visited by the delegates, the authorities concerned as also the elite received them cordially. A special mention in this connection deserves to be made of the perfect organization of Indian Railways and the receptions by the Mayor of Varanasi, Governors of Madras and Orissa, and the All-India manufacturers' Organization at Bombay, as also the receptions by each industrial unit visited by the delegates.

*See ISI Bull. Vol 12, No. 6, p. 311-313 (1960).

†See ISI Bull. Vol 12, No. 6, p. 313 (1960).

Sixth Charles Le Maistre Memorial Lecture

GIJSBERTUS DE ZOETEN
PRESIDENT, NETHERLANDS ELECTROTECHNICAL COMMITTEE

We reproduce here extracts from the Sixth Charles le Maistre Memorial Lecture delivered at New Delhi on 31 October 1960 by Prof. G. de Zoeten, President Netherlands Electrotechnical Committee. Extracts from the previous five lectures were published in the last issue of this Bulletin*.

Prof. de Zoeten has held the title of Extra-Ordinary Professor at the Technical University of Delft since 1947. In addition to his multiple national activities, he has been Chairman of the IEC Technical Committee on Switchgear and Controlgear from 1938 onwards, and Honorary Secretary of the CEE (International Commission on Rules for Approval of Electrical Equipment) from 1927.

The Charles le Maistre Memorial Lecture was instituted in 1953 by the Committee of Action of the International Electrotechnical Commission to perpetuate the memory of the outstanding services given to IEC by le Maistre in the course of 49 years, during which he held office as General Secretary. An eminent person in the electrical field is invited each year to deliver this lecture — *Ed.*

*See ISI Bull. Vol 12, No. 6, p. 303 (1960).

EXPLAINING the choice of his subject, 'The IEC in an Expanding Electrical Technology and a Contracting World' Professor de Zoeten said:

"Electrical engineers and scientists belong to a privileged group of people because they serve a technology that, though it started more than a century ago, is still as dynamic as if it were in its prime. Moreover, we live in a world which, from year to year, becomes smaller and smaller, due to the development of the means of transportation of men, information and goods, a development to which electrical technology has made and is making such an important contribution. So the theme for this Sixth Memorial Lecture was born."

Contracting World

Dwelling upon the fast means of telecommunication and transportation of people and goods, Prof. de Zoeten compared the situation in 1904 and that of today. He said, "In 1904, the only fast means of world-wide telecommunication was telegraphy using cables which already crossed oceans. Telephony did exist, but was only of local importance; large distances could not be spanned. Marconi had already made his experiments demonstrating the possibility of bridging considerable distances by means of electromagnetic waves, but the development of radio was only just starting."

"Today, telegraphy by cable or radio covers the whole world and communication by teleprinter between subscribers has been developed. Communication by telephone between subscribers over whole continents is possible. Radiotelephony spans the globe and the first telephone cables between North America and Europe are in operation. The one-way means of mass communication which we call broadcasting exists in all countries, many of which know its sister service, television, as well."

"As to the transportation of men and goods, 1904 knew the railway and the steamship. Today, trains and ships are much faster, but, what is more important, is that we have the aeroplane, not only with propellers but also with jet engines as the means of propulsion. Let me quote a few practical figures to demonstrate the difference. In 1904, it took about 10 days to sail from the continent of Europe to North America and about 40 days from the continent of Europe to Japan. To-day, the jet-propelled aeroplane crosses the Atlantic in 8 hours and flies in less than 20 hours from the European continent to Japan."

Expanding Electrical Technology

"At present, world consumption of energy is about equivalent to 4 milliard (billion) tons of coal, of which approximately 24 percent is used for the production of electrical energy; for the highly developed countries this percentage is even larger. Moreover, all predictions on the future development of energy consumption show a considerable increase for the fraction of the total energy consumption which will be used for the production of electrical energy. It is expected that in the next two decades world energy consumption will increase at a rate of about $2\frac{1}{2}$ percent per annum; for the production of electrical energy the estimated rate of growth is 6 to 7 percent. This implies that probably in 1970 about 30 percent of the

Prof. G. de Zoeten Receiving a Tanjore Bowl from Dr. S. Radhakrishnan as a Memento of the Sixth Charles le Maistre Memorial Lecture Delivered by Him experience at their disposal. This work was started at this meeting and I understand that it has been progressing very nicely under the directorship of Mr. S. N. Mukerji, the Director of Government Test House at Calcutta.

Let me conclude with a few words of more general nature. The character of our work and our attitude towards it, as I have described it before, make it natural that we must and do part after our meeting shaking hands as good friends, instead of shaking fists as enemies. It cannot be avoided, however, that the host country can help greatly in creating a good atmosphere for mutual understanding. In this respect, our Indian hosts have been beyond praise. You have not only shown us fascinating examples of your old culture. The delegates have felt as if their wishes were fulfilled before they had been expressed. Your ladies have done everything conceivable to please our wives and even generously opened their houses to them. In this way, you have created a good will which in our torn and divided world goes far beyond the narrow field of electrotechnical standardization. We leave your country with feelings of gratitude mixed with the sadness involved in parting with good friends you may perhaps not see so soon again.

ALL-INDIA RECEPTION COMMITTEE FOR IEC NEW DELHI MEETINGS

The success of the IEC meetings was not in a small measure due to the generous support and co-operation, which ISI received from leading electrical manufacturing units, electricity supply undertakings, associations of merchants and manufacturers of electrical and electronic equipment and allied industries. They joined the Reception Committee organized for the purpose under the presidentship of Shri M. Hayath, Chairman Indian National Committee. The following is the list of the organizations, 18 of which joined as Vice-Presidents and 64 as members:

President : **M. Hayath**

Vice-Presidents

Ahmedabad Electricity Co. Ltd., Bombay
Aluminium Industries Ltd., Kundara
Amco Batteries (Private) Ltd., Bangalore City
Andhra Valley Power Supply Co. Ltd., Bombay ; Tata Hydro-Electric Power Supply Co. Ltd., Bombay ; and Tata Power Co. Ltd., Bombay
Crompton Parkinson (Works) Private Ltd., Bombay
Electrical Machines Corporation Private Ltd., Calcutta ; and Electrical Manufacturing Co. Ltd., Calcutta
Fort Gloster Industries Ltd., Calcutta
Heavy Electricals Ltd., Bhopal
Hindustan Electric Co. Ltd., Bombay ; and Power Cables Private Ltd., Bombay
I.A.E.C. (Bombay) Private Ltd., Bombay ; Mysore Electrical Industries Ltd., Bangalore ; and Standard Batteries Ltd., Bombay
Indian Cable Co. Ltd., Calcutta
Indian Electrical Manufacturers Association, Calcutta
Jay Engineering Works Ltd., Calcutta
National Insulated Cable Co. of India Ltd., Calcutta
P.S.G. Industrial Institute, Pelamedu, Coimbatore (S. India)
Radio Manufacturers' Association of India, Calcutta
Siemens Engineering & Manufacturing Co. of India Private Ltd., Bombay ; Cable Corporation of India Ltd., Bombay ; and Jaipur Metals and Electricals Ltd., Jaipur
Union Carbide India Ltd., Calcutta

Members

Alembic Chemical Works Co. Ltd., Baroda
Alembic Glass Industries, Baroda
All India Radio Merchants Association, Bombay
Amalgamated Electricity Co. Ltd., Bombay
Associated Electrical Industries (India) Private Ltd., Calcutta
Automatic Electric Device Co., Bombay
Dr. Beck & Co. (India) Private Ltd., Bombay
Bengal Potteries Ltd., Calcutta
Beni Engineering Works Limited, Calcutta
Bhagalpur Electric Supply Co. Ltd., Calcutta
Bharat Bijlee Ltd., Bombay
Bharat Electrical Industries Ltd., Calcutta
Bihar State Electricity Board, Patna
Blue Star Engineering Co. (Bombay) Private Ltd., Bombay
Bombay Suburban Electric Supply Ltd., Bombay
Calcutta Electric Supply Corporation Ltd., Calcutta
Chloride & Oxide Batteries (Eastern) Private Ltd., Calcutta
Damodar Valley Corporation, Calcutta
Delhi Electric Supply Undertakings, Delhi
Devidayal Cable Industries Private Ltd., Bombay
Dodsal Private Ltd., Bombay
E. Ruttonsha Private Ltd., Bombay
Easun Engineering Co. Ltd., Madras
Electrical Industries Corporation, Calcutta
English Electric Co. Ltd., Calcutta
Escorts Ltd., New Delhi
Estrela Batteries Ltd., Bombay
General Electric Co. of India Private Ltd., Calcutta
General Radio & Appliances Private Ltd., Bombay
Hackbridge-Hewittic & Easun Private Ltd., Madras
Hind Rectifiers Private Ltd., Bombay
Hindustan Clockner Switchgear Private Ltd., Bombay
Hyderabad Laminated Products Ltd., Secunderabad
Indian Chamber of Commerce, Calcutta
Indian Engineering Association, Calcutta
Indian Plastics Ltd., Bombay
Indian Telephone Industries Private Ltd., Bangalore
J. Stone & Co. (India) Private Ltd., Calcutta
Jyoti Ltd., Baroda
Kamani Engineering Corporation Ltd., Bombay
Kanpur Electricity Supply Administration, Kanpur
Kersons Manufacturing Co. of India Private Ltd., Bombay
Kirloskar Electric Co., Bangalore
Koolaire Private Ltd., New Delhi
Larsen & Toubro Ltd., Bombay
M. N. Dastur & Co. Private Ltd., Calcutta
Machine Tools (India) Private Ltd., Calcutta
Matchwel Electricals (India) Ltd., New Delhi
Motor & Machinery Manufacturers Ltd., Calcutta
Motwane Private Ltd., Bombay
Mozufferpore Electric Supply Co. Ltd., Calcutta
National Ekco Radio & Engineering Co. Ltd., Bombay
National Electrical Industries, Bombay
Orient General Industries, Calcutta
Oriental Metal Pressing Works Private Ltd., Bombay
Patna Electric Supply Co. Ltd., Calcutta
Philips India Ltd., Calcutta
Pradip Lamp Works, Patna
Radio & Electricals Manufacturing Co. Ltd., Bangalore
Radio Lamp Works Ltd., Bombay
Rohtas Industries Ltd., Dalmianagar
Sankey Electrical Stampings Private Ltd., Bombay
South Madras Electric Supply Corporation Ltd., Tiruchirapalli
Surat Electricity Co. Ltd., Bombay
Voltas Ltd., Bombay
Wheel & Rim Co. of India Private Ltd., Madras

NO POLITICS IN IEC

The true international character of IEC and importance of its technical decisions in which political considerations do not play any part are reflected by the following.

At New Delhi meeting of IEC, there was only one German delegation which represented the whole of Germany, and there were nine delegates from Red China.

Presumably, this led Dr. I. Herlitz, President of IEC, to remark that the International Electrotechnical Commission is probably the only international organization in the world on which 75 percent population of the world is represented.

G. D. Joglekar Awarded K. L. Moudgill Prize, 1960

THE third K.L. Moudgill Prize was awarded to Shri G. D. Joglekar of National Physical Laboratory by Dr. S. Radhakrishnan, Vice-President of India, at Vigyan Bhavan on the occasion of the inaugural function of IEC Meetings on 31 October 1960. He has been described in the citation reproduced here as an ' outstanding applied physicist and research engineer of over 25 years experience '. Dr. Lal C. Verman, Director ISI, and Lala Shri Ram, Chairman of the ISI Executive Committee, have been the first and second recipients of the award respectively.

Rajyasevapravina Dr. Kishori Lal Moudgill, whose valuable services to ISI the prize commemorates, was one of the authors of a resolution adopted at the 12th Indian Industries Conference held at Lucknow in 1940 recommending to the Government of India to set up a full-fledged national standards organization. A year after the formation of ISI in 1947, Dr. Moudgill was called upon to take charge of its Chemical Division, and in the next nine years, he built it up with his vast administrative experience, judicious planning and capable organization. During this period, he also set the pace for co-operative and collaborative effort, which has been the corner stone for building the entire superstructure of ISI work. In recognition of these valuable services, the Executive Committee of the Institution decided in 1957, the year of Dr. Moudgill's retirement, to establish an annual cash prize of Rs 500·00 known as ' K.L. Moudgill Prize '.

The contributions that are considered for the purpose of selecting the prize winner by the Awards Committee appointed by the ISI Executive Committee are:

a) Preparation of original draft Indian Standard of basic importance to Indian economy, which represents an original piece of work involving breaking of new and difficult ground;
b) An original piece of research work, investigation or survey comprising basic data of importance, which may be considered essential for the formulation of a new Indian Standard or standards of significant importance to Indian industry and/or commerce; and
c) Any concrete idea proposed or a specific service rendered which significantly advances the cause of standardization in the country nationally or internationally.

The selection of Shri Joglekar has been largely due to his original research work in the fields of lead pencil industry, primary and secondary cells and batteries, carbon brushes for electrical machines and methods for dry sieving, which has provided the basic data for several Indian Standards. Besides, he is one of the most successful committee chairmen of ISI.

Indian Standards Institution

भारतीय मानक संस्था

K. L. Moudgill Prize

Award for 1960 to

Shri Gajanan Damodar Joglekar

Citation: *Outstanding applied physicist and research engineer of over 25 years experience, Shri Gajanan Damodar Joglekar has distinguished himself by his genius in solving intricate problems in many branches of technology. His researches have provided the basic data required for the development of Indian Standard Specifications for primary and secondary cells and batteries, carbon brushes for electrical machines, black lead pencils, graphite for pencil slips and methods for dry sieving. His technical talent, amiable disposition and capacity to control and guide deliberations have made him one of the most successful committee chairmen of ISI.*

The earliest connection of Shri Joglekar with the Indian Standards Institution began in the year 1948 when he accepted the membership of the Electrical Accessories Sectional Committee. When the following year ISI initiated its work on electrical batteries, the choice of chairmanship of the Sectional Committee naturally fell on Shri Joglekar, because of the valuable contribution he had made over a number of years to the development of production techniques and testing methods in this field. When this Committee was bifurcated in 1957, he became Chairman of both the Primary Cells and Batteries, and the Secondary Cells and Batteries Sectional Committees.

His work on the manufacture of carbon brushes with indigenous raw materials, equipment and technical know-how carried out in the National Physical Laboratory (India) has been responsible for the establishment of a new industry in the country.

In the field of lead pencil industry, Shri Joglekar has developed the equipment and methods for testing pencils. As such, he guided the Pencils Sectional Committee as its Chairman, in fixing criteria for the evaluation of pencil quality.

His published paper on "Standardization of Methods of Sieving Powders" has furnished the basis for Indian Standard Method for Dry Sieving now being processed. As an Indian proposal, this paper has also been accepted by the International Organization for Standardization (ISO) as basis for discussion.

The extent of Shri Joglekar's participation in ISI work may be judged from the fact that today he is chairman of three sectional committees; convener of two subcommittees; and member of two sectional committees, two subcommittees and one panel.

For these and other outstanding contributions involving original work, essential for the preparation of a number of Indian Standards, the Indian Standards Institution presents the 1960 K. L. Moudgill Prize to

Shri Gajanan Damodar Joglekar

INDIAN STANDARDS INSTITUTION

[illegible]
President, ISI

[illegible]
Member of General Council

Awarded 31st October 1960

A Modified Gerber Cryoscope

S. N. MITRA

CENTRAL FOOD LABORATORY, CALCUTTA

A simple modification of the Gerber Cryoscope for determining the adulteration of milk with water is described. The results of tests on a number of samples show closer agreement when the modified technique is used than they do when the apparatus is used without the modification.

The instrument can be advantageously employed as routine apparatus in public health laboratories for accurate determination of freezing point of milk — *Ed.*

0. INTRODUCTION

0.1 Importance of determining freezing point of milk, particularly in those cases where other tests do not categorically confirm whether the same is adulterated with water or not, is too well known to be emphasized. The usual apparatus is the Hortvet Cryoscope[1] which is by far a complicated apparatus requiring a number of careful operations. This is one of the reasons why its adoption as a routine apparatus in Public Health Laboratories in this country has been so long hampered. Recently, a simpler apparatus, Gerber Cryoscope, has been made available. In order to get reproducible results from this apparatus, certain modifications have been introduced which will be discussed in the present paper.

1. GERBER CRYOSCOPE

1.1 Description — The apparatus consists of a 2-litre cylindrical thermostatic metal vessel (230 mm × 115 mm). It has a metallic cover through which passes a long metallic stirrer; in another hole in the cover, a thermometer is inserted to note the temperature of the cooling media. Into a large central opening the glass test tube, containing the milk sample, is introduced to be placed in the cooling medium. This wide test tube, of course, has a rubber stopper through which pass the Hortvet thermometer, stirrer and a metallic rod for introducing ice at the suitable super-cooled stage. The cooling medium is a mixture of ice and common salt mixed with suitable quantity of water.

1.2 Difficulty in Use — While working with the apparatus, it has been observed that the cooling bath usually attains a temperature of −5° to −8°C. It has further been noticed that sometimes super-cooling is attained with the result that there may be appreciable variation in duplicate results of freezing point, thereby making the determination unreliable.

2. MODIFICATIONS

2.1 Instead of putting the sample of milk directly in the wide test tube, it was put in a glass test tube of slightly lesser diameter which just fits into the wider tube leaving a space of about 10 mm at the bottom. This second test tube (the narrower one) carried the stirrer, Hortvet thermometer and the metal rod for ice introduction. In the larger test tube, a little alcohol is poured just as in the Hortvet technique so that the level of alcohol, when the narrower tube containing the sample is introduced, is not lower than that of the sample. The necks of the two test tubes should be at about the same level at the top. The measurements of the two tubes are — wider tube, 205 mm × 35 mm and narrower tube, 195 mm × 30 mm (*see* Fig. 1).

2.2 Determination with the Modified Gerber Cryoscope — The method of determining freezing point of milk is described here in brief. A layer of crushed ice is put in the metal thermostatic vessel; it is covered with a thin layer of common salt. Again, a layer of crushed ice is

(*Continued on p.* 27)

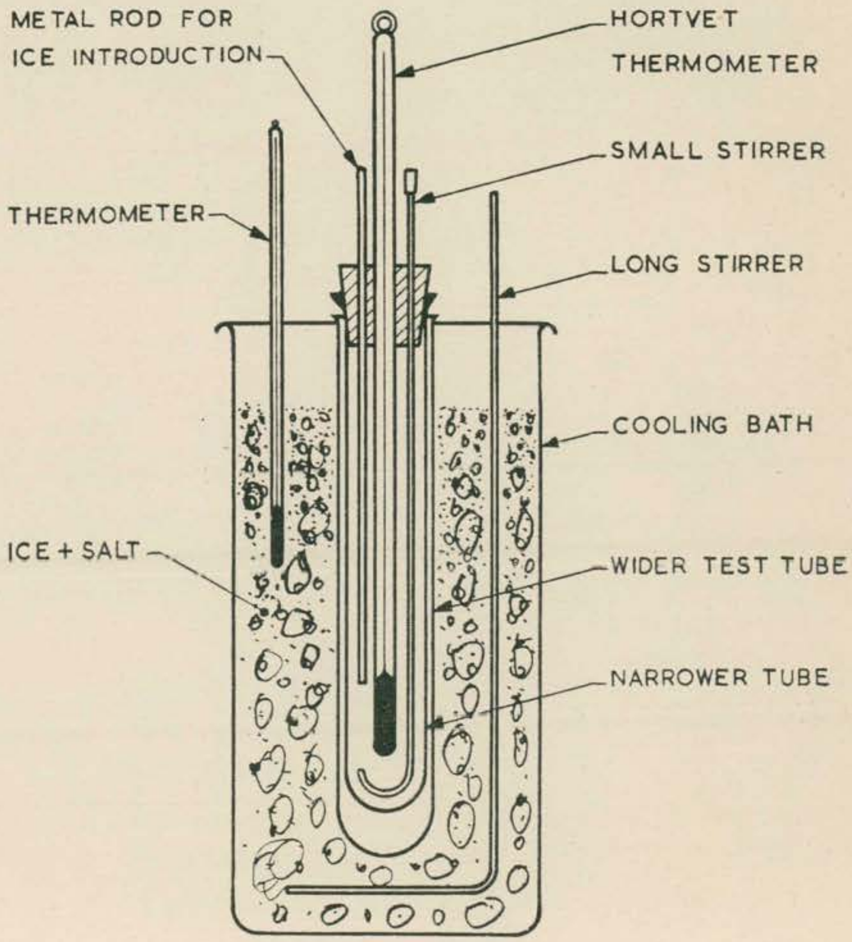


Fig. 1 Modified Gerber Cryoscope

Fourth Meeting of ISO/TC 38—Textiles

SOME 100 delegates representing 23 countries attended the fourth meeting of the Technical Committee 38 — Textiles of the International Organization for Standardization (ISO), held in London on 19, 20 and 27 May 1960. The following subcommittees and working groups of ISO/TC 38 also met during the week:

SC 5 Yarn testing,
SC 6 Fibre tests,
WG 2 Cloth strength tests,
WG 6 Standard layout for methods of test, and
SC6/WG1 Cotton fibre tests.

Some of the important items discussed and decisions arrived at the meeting are given below:

1) **Universal Count System** — It was pointed out that most member countries of ISO had agreed to adopt the universal count system based on the tex units (tex = number of grams per kilometre of material) for expressing the count of textile materials, such as fibre, filament, yarn, cord, rope, etc. This has also been approved by the ISO Council, and consequently, ISO Recommendation 138 on the subject is being published.

2) **Terminology** — It was formally agreed that secretariats of working groups and subcommittees should be responsible for establishing what terms required definition in order to clarify draft test methods being prepared. Having done this, the secretariats should attempt to secure agreement to suitable definitions. The technical committee secretariat was asked to keep a central register of all such definitions and to circulate this from time to time for the information of all mebmers. At an appropriate stage, this central register could be examined as the basis of an ISO Recommendation on textile terminology.

3) **Designation of Yarn Structure** — Several proposals for the designation of yarn structure, submitted by some of the member countries were considered at the meeting. There was considerable discussion whether the description should begin with single yarn or with resultant yarn. It was finally agreed that a draft proposal on designation of yarn structure be prepared, such designation beginning with a description of the single yarn, and proceeding, when necessary, through subsequent steps.

4) **Proprietary Instruments** — In the field of textile testing, many quick methods of test based on patented proprietary instruments have come into use. With regard to these, it was agreed that testing methods based on the use of one or more specific instruments should be arranged so that the mandatory clauses relating to such instruments prescribe only the principles of operation and performance requirements governing the accuracy. Names, sources and description of instruments with relevant operating instructions may be given in appendices. Also, it was agreed that a ' disclaimer ' clause should be inserted in such ISO test methods to indicate that the mention of a specific or proprietary instrument is not intended to give preference to any instrument.

5) **Standard Atmosphere for Testing** — In draft ISO Recommendation 113, standard atmosphere was given as $20° \pm 2°C$ and 65 ± 2 percent RH, whereas $27° \pm 2°C$ and 65 ± 2 percent RH was stated as supplementary standard atmosphere. The Indian delegation pointed out that 20°C was not a suitable standard temperature for use in large areas in the world. Hence the second temperature should be just as valid for testing for conformity to ISO Recommendations as the first. In other words, the two standard atmospheres should be of equal status. After discussion, most members agreed to substitute the adjective ' supplementary ' by ' optional ' thereby making $27° \pm 2°C$ and 65 ± 2 percent RH as optional standard atmosphere. Though it is an improvement, it did not meet India's case fully. The Technical Committee Secretariat was requested to prepare a draft resolution in collaboration with India for the postal ballot, dealing with the status of two temperatures of 20° and 27°C.

6) **Cloth Strength Testing** — The main principles of strip test with the use of constant-rate-of-loading, constant-rate-of-transverse and constant-rate-of-specimen extension, were settled. It was suggested that a time of break of 30^{+15}_{-10} seconds would be quite satisfactory except for fabrics having high extensibilities (for example of the order of 100-200 percent). Regarding the specimen size, a large majority had re-affirmed the dimensions of 8 in. (or 20 cm) by 2 in. (or 5 cm) except for highly extensible fabrics for which the favoured dimension was 4 in. (or 10 cm) by 2 in. (or 5 cm).

7) **New Subcommittees and Working Groups** — Work on cloth strength testing and measurement of cloth dimensions was handled by two working groups functioning directly under ISO/TC 38. It was decided that the work on testing of crease resistance of cloth and crease recovery should also be initiated. Further, it was agreed that a new subcommittee (ISO/TC 38/SC 8) with UK as secretariat should be set up and the following working groups should function under it:

   WG 1 Cloth strength testing,
   WG 2 Crease resistance of cloth,
   WG 3 Cloth dimensions and weight, and
   WG 4 Fabric and weave testing.

A new working group ISO/TC 38/SC 6/WG2 Quality of Bast Fibres was set up and its secretariat was allotted to Belgium.

Japan had proposed that the work of formulation of simple names for man-made fibres should be started.

(*Continued on p.* 54)

STANDARDS NEWS

Himachal Pradesh Conference on Implementation of Indian Standards

A conference of secretaries and heads of various departments of the Himachal Pradesh Administration was held at Simla on 10 July 1960 for bringing home to the organized purchasers the usefulness of Indian Standards in production and purchase operations, and the need for giving them greater recognition and making their use more widespread. The Conference was inaugurated and presided over by Raja Bajrang Bahadur, Lt Governor, Himachal Pradesh. It may be recalled that such conferences have already been held in Kerala, Orissa, Punjab and West Bengal*, and attempts are being made to convene them in other states.

The Conference recommended to all departments of the Himachal Pradesh Administration, municipal committees, and other local self-government bodies that:

a) All Indian Standards should be formally adopted as soon as they are published by ISI, for purchase of stores and for guiding design and construction work in the public sector;
b) Due recognition may be accorded to the ISI mark by preferring to purchase only such goods as carry this Mark and wherever such goods are not available by demanding goods that could be similarly certified; and
c) The Institution should be supported by becoming sustaining members and by active participation in its deliberations for the establishment of Indian Standards.

Before adopting the second recommendation, it was pointed out that purchase organizations often found themselves confronted with a difficult situation in accepting goods bearing the ISI Certification Mark, since they had to pay more for them. On behalf of ISI, it was explained that purchase organizations had first to lay down the basis of quality with which price had to be related. Having based the quality on Indian Standards, they had to choose between ISI certified goods and others. In giving preference to certified goods, the purchase organizations should take into account the savings which would be effected by avoiding duplicate inspection. The very fact that by the purchase of certified goods, the consumer would be assured of the quality of the entire supplies, should be sufficient inducement for the purchaser to give preference to such goods only. Besides, if the demand for certified goods became widespread, more and more manufacturers would obtain ISI licences and there would be an automatic levelling down of prices due to competition amongst the licensees. In support of this contention, the example of pesticides was cited for which 25 manufacturers in the country had obtained ISI licences and the price had reached the normal level.

Fire-Fighting Equipment and Indian Standards

The Indian manufacturers of fire-fighting equipment are finding it difficult to comply with the exact requirements of the existing Indian Standard Specifications for these items, and it has been suggested that they might be permitted to supply equipment according to these specifications generally. Commenting on this, Shri L. G. Mirchandani, Deputy Secretary, Ministry of Home Affairs and Chairman of the Fire-Fighting Equipment Sectional Committee (BDC 22) of ISI, said at the last meeting of the Committee that if the manufacturers had any difficulty, they should have brought it forward at the time of the preparation of Indian Standard Specifications; even now they are at liberty to point out defects, if any, so that relevant Indian Standards may be amended or revised, if necessary. Explaining further, he said that no government could permit purchase of non-standard equipment and that it was in the interest of Indian manufacturers to make suggestions for the improvement of Indian Standards, when necessary. He felt that it was not proper for them to manufacture non-standard equipment necessitating import of equipment from foreign countries.

It may be recalled that the formulation of Indian Standard Specifications for fire-fighting equipment was taken up by ISI at the instance of the Ministry of Home Affairs, since the organization of a national fire-fighting service having similar equipment all over the country was felt necessary. Indian Standards have so far been prepared for 30 items of fire-fighting equipment and the work regarding the preparation of standards for another 30 items is in different stages of progress.

It was clarified by Shri Mirchandani that the Government of India, as a matter of policy, were assisting the State Governments liberally by way of grants for the purchase of fire-fighting equipment with a view to modernizing the fire services. Consequently, the demand for fire-fighting equipment is very large at present particularly in view of the fact that there are 308 districts in the country, and not even one district can claim to be fully equipped.

Hindi Version of Indian Standards

Many a standard issued by ISI deals with small trades and industries carried on by people who either do not know English or have only a little knowledge. It has, therefore, been felt necessary that Hindi translations of such Indian Standards, as will prove much more useful if they were in Hindi, should also be made available. Consequently, the Hindi versions of the following five Indian Standards have been recently published by ISI:

- IS: 600-1955 Code of Practice for Construction of *Bukhari* Type Rural Foodgrain Storage Structure
- IS: 601-1955 Code of Practice for Construction of *Kothar* Type Rural Foodgrain Storage Structure
- IS : 602-1955 Code of Practice for Construction of *Morai* Type Rural Foodgrain Storage Structure
- IS: 1221-1957 Specification for Dye Based Fountain Pen Inks (Blue, Green, Violet, Black and Red)
- IS: 1260-1958 Code of Symbols for Labelling of Dangerous Goods

Furthermore, the Hindi version of IS: 609-1955 Code of Practice for Improvement of Existing Structures Used or Intended to be Used for Foodgrain Storage is under print and of the following

*See ISI Bull., Vol 12, No. 4, p. 167 (1960).

three Indian Standards is being processed:

IS : 745-1955 Specification for Handloom Cotton Bed Sheets, Grey, Bleached, Dyed or Striped

IS : 1286-1958 Pictorial Markings for Handling Instructions for Non-Dangerous Goods

ISI Handbook for Manual Metal Arc Welding for Welders

While preparing Hindi versions, equivalents of technical terms published by the Ministry of Education, wherever available, have been used; otherwise, equivalents have been coined giving due consideration to the prevalent usages and nomenclatures in the field concerned.

Standards Activity in Ceylon

Information received from the Director, Department of Industries, Government of Ceylon, shows that the Standards Advisory Council, established within the Department for prescribing standards in Ceylon for use in the manufacture and sale of particular articles, completed, during 1959-60, work on six products. These cover safety matches, french polish, varnishes, paints, wire nails and asbestos cement sheets. To assist the Council in the formulation of standards, Committees and Subcommittees were set up consisting partly of members of the Council and with *ad hoc* representation from the trade and manufacturing interests. The committees set up have also concluded their studies of four other specifications for writing ink, sealing wax, aluminium ware and desiccated coconut; these will be formally submitted to the Council for ratification. Six specifications approved by the Council are to be published shortly. Five other specifications for doors and windows, plywood, edible salt, dry cell batteries and cotton textiles were pending before the Council.

It may be recalled that the Standards Advisory Council was established in 1949. The Council is not a statutory body, and its Chairman is the Director of Industries; other members of the Council are:

a) Directors of Public Works, Agriculture, and Commerce;
b) The Government Analyst;
c) The Director of the Ceylon Institute of Scientific & Industrial Research;
d) Representatives of the Low Country Products Association, Ceylon Association for the Advancement of Science, Ceylon Engineering Association and Ceylon Chamber of Commerce; and
e) Three nominated members.

Standards in Ceylon continue to be a voluntary effort of a group of responsible people; they do not constitute a legal basis unless the buyer separately contracts for his supply on standard specifications. The adoption of standards in legislation is left for the Government to decide. Once, standards are so adopted, they become subject to the usual sanctions prescribed by law. For instance, in the asbestos cement industry, the relevant British Standard Specification has been prescribed as a legal basis for the sale and marketing of these products. Similarly, the match Ordinance is proposed to be amended to recognize standards to be prepared for splints, veneers, and boxes used in the match industry. When standards prepared by the Council are published, they will replace the British Standard Specifications.

ISO Recommendations for Seedlac, Shellac and Bleached Lac

The International Organization for Standardization (ISO) has recently published three Recommendations covering Seedlac (ISO/R 55), Shellac (ISO/R 56) and Bleached Lac (ISO/R 57), which were processed through the ISO Technical Committee, ISO/TC 50 Lac, for which India holds the Secretariat.

These ISO Recommendations are based on the decisions arrived at in three meetings of ISO/TC 50 held in New Delhi, New York and London during 1950, 1952 and 1954 respectively. A considerable amount of spade work had been done by the Governmental and trade organizations of various countries before ISO/TC 50 took up this work; their experiences have now been pooled together in these recommendations in the interest of world trade.

The usual trade description of seedlac and shellac is based on the Indian names of host trees, or the seasons of cropping, or visual differences, or a combination of any of these. Obviously, this form of specification is inadequate as well as unreliable because of natural exigencies. Furthermore, lac sold as 'Kusmilac' may not in fact contain lac from 'Kusum' and new names may be introduced to describe slight variations of the commercially known varieties. With a view to providing a scientific basis for specifications in the trade of lac, a definite number of grades has been given in these Recommendations, and trade designations, independent of the names of host trees and seasons, have been adopted, in the hope that gradually they will replace the old grade designations. These Recommendations also include requirements divided into essential and optional categories; some of the latter are being studied further among the interested countries including India.

It should be added that CDC 9 Lac Sectional Committee of ISI has already brought out at the national level three Indian Standards covering Seedlac (IS : 15-1956), Shellac (IS : 16-1956) and Bleached Lac (IS : 17-1956). The Specifications at the national level and Recommendations at the international level are practically in line with one another.

India produces a very large percentage of the world output of lac and lac products, of which a part is consumed within the country for various industrial purposes and the bulk worth about Rs 10 crores is exported to China, France, Russia, UK, USA and West Germany. Hence the manufacture and export of Shellac are a matter of great interest to India and to various other consumer nations of the world. At present, concerted attempts are being made in India to improve the export of lac both in quality and in quantity with a view to earning foreign exchange. Early adoption of ISO Recommendations by various nations will have a far-reaching effect in promoting international trade on an organized basis.

Contractual Clauses in ISO Recommendations

The Council of International Organization for Standardization (ISO) during its last meeting held in Geneva from 27 to 30 June 1960 adopted the following Resolution:

"ISO Recommendations concerned with specifications of materials, products, apparatus, equipment, etc, should in the main cover technical requirements of the material, product, etc, designed to guide the preparation of national standards which, in turn, may be used as a basis for contracts. Normally, ISO Recommendations should not include in the main text clauses pertaining to contractual obligations of the parties involved in the purchase and sale of materials or products, which operations are normally guided by national laws and practices, or by mutual agreement if the parties concerned happen to belong to different nations."

" As a matter of clarification, it may be mentioned that clauses dealing with purely technical aspects of contractual obligations, such as methods of test, acceptance procedures for determining compliance, sampling, quality control, etc, should not be regarded as contractual clauses in the context of this Resolution. "

The need for such a Resolution had been pointed out by India in a note which was considered by the ISO Council at its meeting held in 1959; as a result of this, the Council had entrusted the ISO Planning Committee (PLACO) with the study of this note. The Resolution quoted above is based on the relevant Resolution submitted by PLACO to the Council in its meeting held in 1960.

The note submitted by India had pointed out that clauses dealing with such matters as inspection procedures, place and time of inspection, liability and responsibility of manufacturer, obligation and duties of purchaser, etc, should not be included in the ISO Recommendations because of the following considerations:

1) According to the ISO Constitution, ISO Recommendations are intended to serve as a basis for formulation of national standards, and they are not expected to be as comprehensive as national specifications which are regarded as the only valid standards of that country.
2) International contracts for exchange of goods and services can only be placed on the basis of the national standards of one or the other country involved in the transaction, whichever may be agreed between the parties.
3) Since the national laws differ from country to country, they do not permit contractual clauses as mentioned above to be so devised as to satisfy the needs of all ISO member bodies.
4) In certain countries, as also in India, it is the policy of national bodies to avoid inclusion of contractual clauses in national specifications. The reason for this is that the practice for placing contracts by various individuals and public authorities within the country differs a great deal.

It was, therefore, submitted that if the tendency is to avoid contractual type of clauses in national standards, they should certainly not be permitted in ISO Recommendations.

SES Fellowship For Dr. Verman

THE Standards Engineers Society* has conferred its fellowship on Dr. Lal C. Verman, Director ISI. The Society, which has its headquarters at Washington, USA, is dedicated to furthering standardization as a means of enhancing general welfare, and to developing a knowledge of the techniques, and promoting the application of standards established by regularly constituted standardizing bodies.

The Certificate of Fellowship of this Society, which is awarded by invitation of the Board of Directors of SES to people who have achieved an unusual professional distinction, was given to Dr Verman by Dr. S. Radhakrishnan, Vice-President of India, at the inaugural function of IEC Meetings.

At another function, Mr. Stanley Zwerling, Founding President of SES, handed over the citation to Dr. Verman which reads as follows:

" Bringing to the standards problems of the rapidly expanding industries of his native India, his engineering and scientific training and his natural talents for technical achievements and for persuasion, he has been the guiding genius and the driving force which together have brought the Indian Standards Institution to its present highly effective and respected standing in its own country and among national standards bodies of the world. Further, both as a delegate to the Council of the International Organization for Standardization and for two terms as the Organization's Vice President, he has brought his talents to bear on the administrative and procedural problems requiring solution in the Council. An effective co-operator and an enthusiastic worker, he has made outstanding contributions in spreading the gospel of standards engineering.

In recognition of his important accomplishments in Standardization, the Standards Engineers Society confers the grade of FELLOW on Lal C. Verman."

Dr. Lal C. Verman Receiving the SES Fellowship Citation From Mr. Stanley Zwerling, Founding President SES

*See ISI Bull., Vol 9, p. 117 (1957).

Implementation of Indian Standards

The following Government purchasing or consuming departments adopted the Indian Standards listed under them during the period 16 June to 15 September 1960. Up to 15 September 1960, as many as 1 461 Indian Standards were in force, of which 1 216 had been adopted by various Government departments.

Directorate General of Supplies & Disposals

IS: 531-1959 Leaded Brass Strip for Use in the Manufacture of Parts for Instruments
IS: 554-1955 Pipe Threads for Gas List Tubes and Screwed Fittings
IS: 771-1958 White Glazed Earthenware Sanitary Appliances
IS: 781-1959 Sand-Cast Brass Screw-Down Bib Taps and Stop Taps for Water Services
IS: 915-1959 One-Mark Graduated Flasks
IS: 919-1959 Recommendations for Limits and Fits for Engineering
IS: 996-1959 Small AC and Universal Electric Motors with Class 'A' Insulation
IS: 999-1959 Methods of Chemical Analysis of Brazing Solder
IS: 1018-1957 M Type Brass Padlocks
IS: 1067-1958 Commercial Silver Plating
IS: 1068-1958 Copper, Nickel & Chromium Electroplated Coatings
IS: 1090-1959 Compressed Hydrogen
IS: 1108-1957 Tincture Glass Bottles
IS: 1117-1958 One-Mark Pipettes
IS: 1160-1957 Metric Dispensing Measures
IS: 1239-1958 Mild Steel Tubes and Tubulars
IS: 1255-1958 Code of Practice for Installation and Maintenance of Paper-Insulated Power Cables (Up to and Including 33 kV)
IS: 1284-1958 Wrought Aluminium Alloys, Bolt and Screw Stock (for General Engineering Purposes)
IS: 1305-1958 Graphite for Use as Foundry Facing Material
IS: 1347-1959 Code for Inland Packaging of Cotton Cloth and Yarn
IS: 1348-1959 Method for Determination of Kemp Content of Raw Wool
IS: 1359-1959 Electro-Tin Plating
IS: 1360-1959 Engineers' Pattern Tee Squares
IS: 1378-1959 Oxidized-Copper Finishes
IS: 1384-1959 Oils Pressure Lanterns
IS: 1394-1959 Glossary of Terms Relating to Metal Containers Trade
IS: 1426-1959 Rayon Half Crepe Sari Cloth
IS: 1446-1959 Classification of Dangerous Goods
IS: 1463-1959 Kaolin for Cosmetic Industry
IS: 1491-1959 Metric Scales for Architectural Purposes
IS: 1502-1959 Rayon Linen
IS: 1516-1959 Milk Strainers, Mild Steel, Tinned
IS: 1517-1959 Milking Pails (Hooded Type), Mild Steel, Tinned

Research Designs and Standards Organization, Ministry of Railways

IS: 722 (Part III)-1958 AC Electricity Meters: Part III Three-Phase Whole-Current and Transformer-Operated Meters, and Single-Phase Two-Wire Transformer-Operated Meters
IS: 813-1956 Scheme of Symbols for Welding
IS: 958-1958 Temporary Corrosion Preventive, Grease, Soft Film, Cold Application
IS: 959-1958 Electric Soldering Irons
IS: 985-1958 Lead-Acid Storage Batteries (Heavy Duty) for Motor Vehicles
IS: 1182-1957 General Recommendations for Radiographic Examination of Fusion Welded Joints

Directorate of Technical Development, Ministry of Defence

IS: 232-1958 Glossary of Textile Terms
IS: 422-1959 Brass Sheet and Strip for the Manufacture of Utensils
IS: 904-1959 2-Way and 3-Way Suction Collecting Heads for Fire Fighting Purposes
IS: 907-1959 Suction Strainers, Cylindrical and Shoe Types for Fire Fighting Purposes
IS: 926-1959 Fireman's Axe
IS: 937-1959 Washers for Water Fittings for Fire Fighting Purposes
IS: 943-1959 680-l/min (or 150-gal/min) Trailer Pump for Fire Brigade Use
IS: 944-1959 1 800-l/min (or 400-gal/min) Trailer Pump for Fire Brigade Use
IS: 1091-1958 Cellulose Nitrate for Use in Manufacture of Lacquers
IS: 1239-1958 Mild Steel Tubes and Tubulars
IS: 1261-1959 Code of Practice for Seam Welding in Mild Steel
IS: 1313-1958 Methods for Determining Shrinkage of Knitted Goods Containing Wool
IS: 1316-1958 Method for Detection and Estimation of Damage in Cotton Fabrics Due to Micro-Organisms
IS: 1327-1959 Methods of Testing Tin Coating on Tin-Plate
IS: 1335-1959 Methods for the Direct Determination of Alumina in Refractory Materials (*Tentative*)
IS: 1337-1959 Hard Chromium Plating on Steel
IS: 1338-1959 Certified Samples for Metallurgical Analysis
IS: 1340-1959 Code of Practice for Protective Coating of Zinc Base Alloys
IS: 1342-1959 Oil Pressure Stoves
IS: 1348-1959 Method for Determination of Kemp Content of Raw Wool
IS: 1349-1959 Method for Determination of Clean Wool Yield of Raw Wool
IS: 1357-1959 Printing Metal
IS: 1378-1959 Oxidized-Copper Finishes
IS: 1385-1959 Phosphor Bronze Rods and Bars, Sheet and Strip, and Wire
IS: 1386-1959 Methods for Testing Cotton Cordages for Resistance to Attack by Micro-Organisms.

ISI Certification Marks

New and Renewed Licences

During the three months ending 15 September 1960, ISI specified standard marks and prescribed marking fees in respect of 5 products, granted 18 new licences and renewed another 18 for the use of standard marks; particulars of all of these are given below:

STANDARD MARKS AND MARKING FEES

Product/Class of Product	Design of Standard Marks	Number and Title of Relevant Indian Standard	Unit	Marking Fee per Unit
Tea-Chest Metal Fittings	IS:10 METAL FITTINGS PLY WOOD IS:10	IS:10-1953 Specification for Plywood Tea-Chests	One set (consisting of 12 pieces)	0·5 nP per unit with a minimum of Rs 1 000 for production during a calendar year
Tubes for Bicycle Handle Bars	IS:625	IS:625-1955 Specification for Bicycle Handle Bars	One ton	Rs 3·00 with a minimum of Rs 1 000 for production during a calendar year
18-Litre Square Tin	IS:916 IS:916 TIN ONLY	IS:916-1958 Specification for 18-Litre Square Tins	One tin	0·5 nP per unit for the first 200 000 units with a minimum of Rs 1 000 for production during a calendar year 0·25 nP per unit for the next 300 000 units 1/6 nP per unit for 500 001st unit and over
Aerated Water Glass Bottles	IS:1107	IS:1107-1957 Specification for Aerated Water Glass Bottles	One gross	25 nP with a minimum of Rs 1 500 for production during a calendar year
Milk Powder (Whole and Skim)	SKIM MILK POWDER-IS:1165 WHOLE MILK POWDER-IS:1165	IS:1165-1957 Specification for Milk Powder (Whole and Skim)	One ton	Rs 5·00 with a minimum of Rs 3 000 for production during a calendar year

NEW LICENCES GRANTED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-204 28-6-1960	15-7-1960	14-7-1961	M/s Jaipur Metals and Electricals Ltd., Jaipur	Copper Rods for Boiler Stays (IS:288-1951)
CM/L-205 20-7-1960	1-8-1960	31-7-1961	M/s Kaira District Co-operative Milk Producers' Union Ltd., Gujerat State	Milk Powder (Whole and Skim) (IS: 1165-1957)
CM/L-206 20-7-1960	20-7-1960	19-7-1961	Imperial Chemical Industries (India) Pvt. Ltd., Bombay	BHC Dusting Powders (IS:561-1958)
CM/L-207 20-7-1960	1-8-1960	31-7-1961	The Renown Biscuit Co., Bombay	Biscuit (Excluding Water Biscuits) (IS: 1011-1957)
CM/L-208 29-7-1960	15-8-1960	14-8-1961	M/s Bengal Chemical & Pharmaceutical Works Ltd., Calcutta	Naphthalene (IS:539-1955)
CM/L-209 29-7-1960	15-8-1960	14-8-1961	M/s Thaker Engineering Corporation, Cannanore, Kerala State	Threephase Induction Motors from 1 H.P. to 5 H.P. (IS:325-1959)
CM/L-210 29-7-1960	1-9-1960	31-8-1961	Amritlal Harjivandas & Co., Bombay	Bare Annealed Copper Wire (IS:396-1953)
CM/L-211 25-8-1960	1-9-1960	31-8-1961	The Indian Tube Company (1953) Ltd., Calcutta	Steel Tubes for Bicycle Handle Bars (IS:625-1955)
CM/L-212 25-8-1960	1-9-1960	31-8-1961	M/s Cassava (India), Calcutta	Tea-Chest Metal Fittings (IS:10-1953)
CM/L-213 25-8-1960	1-9-1960	31-8-1961	M/s Plywood Manufacturers Co-operative Society Ltd., Calcutta	Tea-Chest Plywood Panels (IS:10-1953)
CM/L-214 25-8-1960	1-9-1960	31-8-1961	The Albion Plywood Limited, Calcutta	Commercial (Common) and Moisture-Proof Plywood (IS:303-1951)
CM/L-215 25-8-1960	15-9-1960	14-9-1961	M/s Tata-Fison Private Limited, Agra	BHC Dusting Powders (IS:561-1958)
CM/L-216 25-8-1960	1-9-1960	31-8-1961	M/s Fort Gloster Industries Ltd., Calcutta	Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting (250 and 660 volts Grade only) (IS:434-1953)
CM/L-217 31-8-1960	15-9-1960	14-9-1961	M/s Tata-Fison Pvt. Ltd., Calcutta	DDT Water Dispersible Powder Concentrates (IS:565-1955)
CM/L-218 31-8-1960	15-9-1960	14-9-1961	M/s Dalmia Cement (Bharat) Ltd., P.O. Dalmiapuram, Madras	Ordinary Portland Cement (IS:269-1958)
CM/L-219 31-8-1960	15-9-1960	14-9-1961	M/s Motor & Machinery Manufacturers Ltd., Calcutta	Threephase Induction Motors from 1 H.P. to 15 H.P. (IS: 325-1959)
CM/L-220 31-8-1960	15-9-1960	14-9-1961	M/s Warden & Co. Pvt. Limited, Bombay	Waterproof Packing Paper Made from 60 g to 70 g Kraft Paper (IS:293-1951)
CM/L-221 31-8-1960	15-9-1960	14-9-1961	M/s Hind Tin Industries, Calcutta	18-Litre Square Tins (IS: 916-1958)

LICENCES RENEWED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-12 24-7-1956	1-8-1960	31-7-1963	M/s Jayant Metal Manufacturing Company, Bombay	Hard-Drawn Copper Solid and Stranded Circular Conductors for Overhead Power Transmission Purposes (IS:282-1951)
CM/L-13 3-9-1956	6-9-1960	5-9-1961	M/s Lallubhai Amichand Private Ltd., Bombay	Wrought Aluminium & Aluminium Alloy Utensils (IS:21-1959)
CM/L-14 3-9-1956	10-9-1960	9-9-1961	The Metal Rolling Works Private Limited, Bombay	Wrought Aluminium and Aluminium Alloy Sheets, Strips and Circles (IS:21-1959)
CM/L-28 26-6-1957	16-7-1960	15-7-1961	M/s Amco Batteries Pvt. Ltd., Bangalore	Lead Acid Storage Batteries for Motor Vehicles, Light Duty (IS:395-1952)
CM/L-29 1-7-1957	16-7-1960	15-7-1961	M/s Tata-Fison Private Ltd., Bombay	1) DDT Dusting Powders (IS:564-1955) 2) DDT Water Dispersible Powder Concentrates (IS:565-1955)
CM/L-31 4-9-1957	16-9-1960	15-9-1961	M/s Tata-Fison Private Limited, Bombay	1) BHC Dusting Powders (IS:561-1958) 2) BHC Water Dispersible Powder Concentrates (IS:562-1958)
CM/L-90 20-6-1958	1-7-1960	30-6-1961	The National Screw and Wire Products Limited, Calcutta	Hard-Drawn Copper Solid and Stranded Circular Conductors for Overhead Power Transmission Purposes (IS:282-1951)

LICENCES RENEWED — *Contd*

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-92 8-7-1958	16-7-1960	15-7-1961	M/s Assam Bengal Saw Mills Private Ltd., Calcutta	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-117 13-2-1959	1-7-1960	30-6-1961	M/s Metallica Works Private Ltd., Bombay	Antifriction Bearing Alloys (IS:25-1950)
CM/L-129 23-6-1959	1-7-1960	30-6-1961	The Alkali and Chemical Corpn. of India Ltd., Calcutta	BHC Emulsifiable Concentrates (IS:632-1958)
CM/L-131 24-6-1959	1-7-1960	30-6-1961	M/s East India Distilleries and Sugar Factories Limited, Madras	BHC Dusting Powders (IS: 561-1958)
CM/L-132 24-6-1959	1-7-1960	30-6-1961	M/s East India Distilleries and Sugar Factories Limited, Madras	DDT Dusting Powders (IS:564-1955)
CM/L-133 15-7-1959	1-8-1960	31-7-1961	The Travancore Sugars and Chemicals Ltd., Tiruvalla, Kerala	Rectified Spirit, Grade 'A' (IS:323-1959)
CM/L-134 15-7-1959	1-8-1960	31-7-1961	M/s Motor Industries Co. Ltd., Bangalore	14 mm Sparking Plugs (IS: 1063-1957)
CM/L-135 15-7-1959	1-8-1960	31-7-1961	M/s Sarda Plywood Industries (Private) Ltd., P.O. Jeypore, Assam	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-137 3-8-1959	17-8-1960	16-8-1961	The Assam Railways and Trading Co. Ltd., Margherita, Assam	do
CM/L-139 26-8-1959	16-9-1960	15-9-1961	M/s Tata-Fison Private Limited, Palluruthy, Cochin, Kerala State	DDT Water Dispersible Powder Concentrates (IS: 565-1955)
CM/L-140 28-8-1959	16-9-1960	15-9-1961	M/s Tata-Fison Private Limited, Palluruthy, Cochin	BHC Water Dispersible Powder Concentrates (IS: 562-1958)

A MODIFIED GERBER CRYOSCOPE — *Continued from p. 19*

put and it is covered with salt. The vessel is filled with alternate layers of ice and salt in this manner till it is a little more than half full. Some cold water is added leaving some space at the top. The metallic cover is then put with the thermometer and stirrer in position. The temperature of the cooling bath is noted and it should soon fall to −5°C or a little below. The sample is introduced in the narrower test tube with the stirrer and the Hortvet thermometer in position; this tube is put in the wider test tube containing a little alcohol. Both the tubes are then immersed into the cooling bath through the wide opening on the metal cover. The cooling bath as well as the sample is alternately stirred continuously and the freezing point is determined just as in the Hortvet technique.

2.3 For the control of super-cooling, the following procedure may be advantageously adopted in the modified apparatus. When the mercury column has receded below −1°C, the stirrer is carefully manipulated so that the temperature falls slowly. When the temperature is −1·5° to −1·6°C, stirring is stopped. A tiny fragment of ice is introduced in the sample at this stage and the rise of the mercury column is awaited. When the mercury column is stationary, the reading is taken in the usual manner by lightly tapping the thermometer a few times with a tapping hammer.

TABLE I FREEZING POINTS IN °C AS DETERMINED BY MODIFIED GERBER APPARATUS

Test No.	Distilled Water	Milk Sample No. 1	No. 2	No. 3	No. 4	No. 5
1.	+0·050	−0·531	−0·480	−0·362	−0·541	−0·425
2.	+0·050	−0·530	−0·478	−0·363	−0·540	−0·426
3.	+0·050	−0·530	−0·478	—	−0·541	—
4.	+0·050	—	—	—	—	—

3. RESULTS

3.1 Some of the results obtained with the above modified apparatus are given in Table I. The three determinations of 5 milk samples showed that the variation was only 0·001°C in all cases except one. Without the above modification, sometimes, the duplicate results varied by more than 0·002°C which made the results at times absolutely unreliable.

3.2 It has also been observed that with a single charge of ice and salt, at least four determinations could be made in about an hour.

4. REFERENCE

1. Official Methods of Analysis. Washington. Association of Official Agricultural Chemists, 1955 (p. 250).

NEXT TRIENNIAL GENERAL ASSEMBLY OF ISO

The next triennial General Assembly and the meetings of several technical committees of the International Organization for Standardization, ISO, will be held in Helsinki, Finland, from 5 to 16 June 1961.

ISI ACTIVITIES

EXECUTIVE COMMITTEE

The sixty-fifth and sixty-sixth meetings of the ISI Executive Committee, EC, were held at Manak Bhavan on 17 June and 8 September 1960 respectively. Both the meetings were presided over by Lala Shri Ram.

At the meeting held on 17 June, the Thirteenth Annual Report of the Institution for the year 1959-60 was tabled. The Committee agreed that the Annual Report be adopted and its publication including the audited accounts be authorized as provided under Clause 31(a) of the ISI Rules and Regulations. The recommendation of the Finance Committee that Prof. B. D. Tilak be appointed on Coal Tar Food Colours Subcommittee (AFDC 19: 2) in his personal capacity was also accepted. The progress report on the investigations so far made by the National Physical Laboratory was considered and EC sanctioned a sum of Rs 20 000 as grant to NPL for 1960-61 for the experimental investigations on light gauge steel sections.

At its meeting held on 8 September, the Committee noted that the membership subscription collected up to 7 September for the year 1960 had amounted to Rs 5·48 lakhs against the budget estimate of Rs 6·50 lakhs and against the corresponding last year's figure of Rs 4·09 lakhs on the same day. Furthermore, on that date there were 1 294 sustaining members, 369 sustaining members (associates) and 255 ordinary members, making a total of 1 918.

The Committee recommended to the General Council that the Ministry of Railways be given representation on the Executive Committee of ISI. Further, EC accepted the recommendation of the Awards Committee that the K. L. Moudgill Prize for the year 1960 be awarded to Shri G. D. Joglekar of NPL. The Committee decided that the meetings of the following Technical Committees of International Organization for Standardization for which ISI holds the Secretariats, be called in New Delhi in February 1961:

a) ISO/TC 50 — Lac;
b) ISO/TC 88 — Pictorial Marking of Handling Instructions for Goods;
c) ISO/TC 30/SC 1 — Measurement of Liquid Flow in Open Channels and Some of Its Working Groups; and
d) ISO/TC 34/SC 7 — Spices and Condiments.

FIRST MEETINGS

Propagation Materials

In his welcome speech, at the **first meeting** of the Propagation Materials Sectional Committee, AFDC 22, held on 16 August 1960 Dr. D. V. Karmarkar, Deputy Director, ISI, explained that the Committee had been set up for the purpose of working in liaison with the International Organization for Standardization and also for preparing national standards for propagation materials.

The Chairman, Dr. A. B. Joshi, in his inaugural address, said that for increasing food production, some of the essential factors were: production of pure seeds of improved variety, their certification and the subsequent availability to the grower. Any programme aimed at achieving increased food production must include uniform seed legislation in all the states in the country, adequate machinery for its implementation and standardization. The first two, he said, had been under the consideration of the Government of India and it had been proposed to set up a National Seed Corporation and a number of seed testing laboratories besides the existing Central Seed Testing Laboratory at the Indian Agricultural Research Institute, New Delhi. He added that not much had been done in the country about standardization. The Committee would, therefore, have to derive assistance from the Seed laws of other countries and the work which had been carried out at the Indian Agricultural Research Institute, New Delhi.

The Committee set up a Working Group to deal with the work of ISO/TC 34/SC 1 Agricultural Products/Propagation Materials and Dr. A. B. Joshi was appointed its leader.

The Committee also set up the following two Subcommittees and appointed their conveners as indicated against each:

a) Seeds Subcommittee, AFDC 22: 1 — Dr. M. S. Pawar; and
b) Vegetatively Propagated Plants Subcommittee, AFDC 22: 2 — Dr. Pushkar Nath.

The subjects assigned to AFDC 22: 1 are given below:

a) Seeds of temperate type vegetables like cabbage, cauliflower, etc; and
b) Seeds of important crops like wheat, maize, rice, etc.

The subjects allotted to AFDC 22: 2 are as under:

a) Seed Potatoes;
b) Sugar Cane Setts;
c) Budded grafts and seedlings of ornamental flowers like rose, chrysanthemum, etc; and
d) Grafts of fruit-trees (apples, mangoes, citrus fruits, etc) and runners of bananas.

Fruits and Vegetables

In his inaugural address at the **first meeting** of the Fruits and Vegetables Sectional Committee, AFDC 23, held at Manak Bhavan on 12 September 1960, Shri N. P. Chatterji, the Chairman of AFDC 23 and Agricultural Marketing Adviser to the Government of India, briefly explained that the Committee had been set up for preparing national standards for fruits and vegetables. He added that AFDC 23 would also collaborate with ISO/TC 34/SC 3 — Agricultural Products/Fruits and Vegetables. This Subcommittee at its first meeting held at Warsaw had set up the following working groups to deal with the subjects indicated against each:

WG 1 Terminology;
WG 2 Sampling;
WG 3 Testing Methods of Fresh Fruits and Vegetables of the Temperate Zone;
WG 4 Testing Methods of Fruit and Vegetable Products Belonging to the Temperate Zone;
WG 5 Testing Methods of Tropical Fruits, Vegetables and Their Derived Products;
WG 6 Testing Methods of Fruits and Vegetables and Their Derived Products of the Mediterranean Basin;
WG 7 Packaging and Labelling of Fruits, Vegetables and Their Derived Products;
WG 8 Storage and Transport of Fruits, Vegetables and Their Derived Products.

These working groups had since started working on their assignments and questionnaires had already been received from Isræl, Czechoslovakia and Poland on (a) Testing of fruits and vegetables of the Mediterranean Region and their products; (b) Methods of stocking fruits and vegetables; and (c) Packing and labelling of fruits, vegetables and derived products respectively. The Committee considered these questionnaires and formulated its recommendations.

The Committee set up the following subcommittees and appointed their conveners as indicated against each:

a) Fresh Fruits Subcommittee, AFDC 23 : 1 — Dr. Sham Singh;
b) Fresh Vegetables Subcommittee, AFDC 23: 2 — Dr. B. Choudhry
c) Processed Fruits and Vegetables Subcommittee, AFDC 23: 3 — Shri K. U. Patel;
d) Packaging, Storage and Transport of Fruits and Vegetables Subcommittee, AFDC 23: 4 — Maj N. V. R. Iengar; and
e) Arecanuts Subcommittee, AFDC 23: 5 — The Representative of Directorate of Marketing and Inspection.

The selection of specific subjects was left to the respective subcommittees.

Rotating Machinery

The scope of the newly-formed Rotating Machinery Sectional Committee, ETDC 15, is to handle all work connected with rotating machinery such as motors, generators and turbines. Its **first meeting** was held at Calcutta on 27 June 1960 under the chairmanship of Mr. F. Wade-Cooper. The Committee set up the following subcommittees; their conveners are indicated against each:

a) Industrial Motors Subcommittee, ETDC 15: 1 — Shri S. G. Ramachandra;
b) Small Motors Subcommittee, ETDC 15: 2 — Mr. J. H. Yeadon; and
c) Carbon Brushes Subcommittee, ETDC 15: 3 — Shri G. D. Joglekar.

The Committee also decided that a stage has now been reached when India could participate in the work of IEC/TC 4 Hydraulic Turbines and IEC/TC 5 Steam Turbines. With a view to helping ETDC 15 in the examination of corresponding IEC documents, a special panel was, therefore, constituted.

The Committee also felt that work on extending the scope of the Indian Standard Specification for Three-Phase Induction Motors for Industrial Use to include class ' C ' insulation should be processed further.

Transformers

The **first meeting** of the Transformers Sectional Committee, ETDC 16, was held in Bangalore from 25 to 27 July 1960 under the chairmanship of Shri U. K. Patwardhan of Crompton Parkinson (Works) Pvt Ltd., Bombay. The Chairman emphasized that what was previously the Subcommittee for Transformers for Power and Lighting, has now been raised to the status of a sectional committee which meant greater responsibility for approval of the documents.

The Committee considered the revised preliminary draft specification for power transformers and approved it for wide circulation.

Switchgear and Controlgear

Mr. H. C. Hardy presided over the **first meeting** of the Switchgear and Controlgear Sectional Committee, ETDC 17, held on 28 and 29 June 1960 in Calcutta. It was explained that this Committee would, in future, look after the work previously done by the Switchgear Subcommittee, ETDC 4 : 1 and Motor Controlgear Subcommittee ETDC 4 : 7.

The draft specification, which was examined in detail and approved for wide circulation by the Committee, was the one concerning HRC Cartridge Fuse Links for Use in Circuits of Low and Medium Voltage Ratings. Apart from considering the clauses on requirements and testing, the Committee examined the need for including in this specification dimensions of fuses from the viewpoint of interchangeability. The members were aware of the difficulty in doing this in view of the large number and types of fuses in use in this country and also the two (present) manufacturers following different practices. It was, however, decided that an attempt should be made to bring down the sizes to at least two categories and work on collection of data on this aspect be initiated.

Insulating Materials

The Insulating Materials Sectional Committee, ETDC 18, held its **first meeting** in Bangalore on 28 July 1960 under the chairmanship of Shri S. Swayambu. Formerly, the work in this field was being done by a Subcommittee on Insulation functioning under the Electrical Plant and Switchgear Sectional Committee, ETDC 4, as a result of which IS: 1271-1958 Classification of Insulating Materials for Electrical Machinery and Apparatus in Relation to Their Thermal Stability in Service has been made available. It was stated that the subject of micanite, which was formally handled by the Mica Sectional Committee, ETDC 9, had been transferred to ETDC 18.

The Committee discussed the technical managements for the New Delhi meetings of IEC/TC 15 — Insulating Materials and IEC/TC 43 — Fans. A Tropic-Proofing Subcommittee, ETDC 18: 1, was also appointed with the following composition:

a) Central Water & Power Commission (Power Wing);
b) General Electric Company, Calcutta;
c) Kirloskar Electric Co. Ltd., Bangalore;
d) Heavy Electricals Ltd., Bhopal;
e) Government Test House, Calcutta;
f) Electronics Research & Development Establishment, Bangalore;
g) National Physical Laboratory, New Delhi; and
h) Posts & Telegraphs Department, Jabalpur.

Flame-Proof Electrical Equipment

The **first meeting** of the Flame-Proof Electrical Equipment Sectional Committee, ETDC 22, was held on 4 July 1960 at Manak Bhavan under the chairmanship of Dr. J. W. Whitaker of the Central Mining Research Station, Dhanbad. The members gave some thought as to whether the scope of this Committee should be limited to flame-proof enclosures alone or detailed specifications for flame-proof equipment also should be handled by this Committee. Although the immediate problem was to bring out a specification for flame-proof enclosures in order to assist marking of flame-proof equipment being imported in this country, the members realized that sooner or later manufacture of all types of flame-proof equipment would be started, and hence Indian Standard Specifications for all such items should become available. The Committee finally decided to start work on enclosures for flame-proof equipment in the first instance and to take up other work in due course.

A Panel with Dr. G. N. Badami as Convener, was formed to prepare the preliminary draft on flame-proof enclosures.

Standing Working Committee of the Structural and Metals Division

The **first meeting** of the Standing Working Committee of the Structural and Metals Division Council, SWCSM, was held at Calcutta on 14 September 1960. Dr. B. R. Nijhawan, Vice-Chairman of SMDC and SWCSM, presided over the meeting.

The Committee reviewed the activities of SMDC from the period 1 March to 31 August 1960. Shri Krishnamachar, Secretary of the Committee, requested the members representing the industry to write to ISI Directorate about the up-to-date position of adoption of Indian Standards in their organizations. The members present kindly agreed to furnish this information and requested the ISI Directorate to issue a circular to all the organizations calling for this information under the following two heads:

a) Which Indian Standards have been adopted for manufacturing purposes ? and
b) Which Indian Standards have been adopted for purchase purposes ?

The Committee reviewed the present compositions of the following Sectional Committees and re-constituted them for the next three years:

SMDC 1 Metal Standards;
SMDC 2 Methods of Chemical Analysis;
SMDC 3 Methods of Physical Tests;
SMDC 5 Steel;
SMDC 8 Pig Iron and Ferro Alloys;
SMDC 10 Light Metals and Their Alloys;
SMDC 11 Copper and Copper Alloys;
SMDC 12 Lead, Zinc, Tin, Antimony and Their Alloys;
SMDC 13 Precious Metals;
SMDC 14 Welding General;
SMDC 18 Refractories; and
SMDC 19 Alloy Steels and Special Steels.

The Committee also noted that the work of SMDC 5 had considerably increased and that proposals with regard to the splitting up of SMDC 5 into two or more sectional committees were under the examination of ISI Directorate.

A number of new subjects was approved for formulation of Indian Standards. The Committee also reviewed the activities of the ISO Technical Committees which are of interest to SMDC.

The urgency of metricization in the existing Indian Standards was considered by the SWCSM, and it was decided to set up suitable panels under each sectional committee to undertake the work of metricization of Indian Standards published by them at an early date.

Tapes for Electrical Purposes

Tapes for electrical insulation have largely been imported but now most of the demand is being met from indigenous sources. In the absence of national standards for tapes for electrical purposes, the quality of the material manufactured indigenously has not been found to be uniform. Therefore, it is necessary to formulate Indian Standard Specifications for Tapes for Electrical Purposes, and hence a new Committee, Tapes for Electrical Purposes Sectional Committee, TDC 35, has been set up. Its **first meeting** was held on 7 July 1960 at Calcutta, under the chairmanship of Shri A. K. Choudhuri, President of the West Bengal Tape Manufacturers' Association, Calcutta.

The Committee considered the draft Indian Standard Specification for Cotton Tapes for Electrical Purposes prepared on the basis of data supplied by the West Bengal Tape Manufacturers' Association and decided that further samples of tape be collected from the consumers and manufacturers of tapes for the scrutiny of the Committee. The Committee also decided that its activities be confined, for the present, to the preparation of specification for cotton tapes for electrical purposes only.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Central Region Storage and Marketing Structures

In the absence of the Chairman, Shri Amrik Singh Cheema, Shri L. R. Dawar, Director of Food & Civil Supplies, Punjab, presided over the third meeting of the Central Region Storage and Marketing Sectional Committee, AFDC 3, held in Jaipur on 26 July 1960.

The Committee finalized the draft Indian Standard Code of Practice for Construction of Food Grain Storage Structures Suitable for Trade and Government Purposes for the Central Region in the light of comments received and recommendations made by the Central Region Storage and Marketing Structures Subcommittee, AFDC 3:1.

The Committee also agreed to draw up a code of practice for hexagonal type concrete bins for bulk storage and set up the Bulk Storage Subcommittee, AFDC 3: 2, with the Chief Engineer, PWD, Punjab, as its Convener.

The Committee recommended that traders; warehousing corporations, both at the Centre and in the States; co-operative departments; and municipal corporations should adopt Indian Standard Codes of Practice for Construction of Food Grain Storage Structures.

Southern Region Storage and Marketing Structures

Shri Chandulal C. Dangoria presided over the seventh meeting of the Southern Region Storage and Marketing Structures Sectional Committee, AFDC 5, held on 11 August 1960 at Kolhapur. The Committee finalized for publication two draft Indian Standard Layouts for Regulated Market Yards for (a) Cattle, and (b) Fruits and Vegetables, after considering the comments received on them.

Prior to the meeting, the members of the Committee had visited the following markets in order to get first-hand knowledge about their working:

a) *Akluj* — market for cattle;
b) *Phaltan* — market for cattle;
c) *Phule* — vegetable market, Poona City;
d) *Hadapsar* — vegetable market;
e) *Islampur* — Cattle market;
f) *Sangli* — a multi-commodity regulated market;
g) *Jaisingpur* — tobacco market;
h) *Nipani* — tobacco market; and
j) *Kolhapur* — a regulated market, main arrivals being of jaggery (*gur*).

The Committee decided to drop from its programme of work the formulation of the Indian Standard Layout for Cotton Market Yard as it is covered in IS: 1497-1959 Layout for Regulated Market Yards for Agricultural Commodities. The Committee, however, considered necessary that a standard Layout for Tobacco Market Yard should be prepared.

Agricultural and Food Storage Practices

The fourth meeting of the Agricultural and Food Storage Practices Sectional Committee, AFDC 7, was held on 27 July 1960 at Jaipur. It was presided over by its new Chairman, Dr. S. V. Pingale, Director of Storage & Inspection, Ministry of Food & Agriculture, New Delhi.

The Committee finalized the draft Indian Standard Code of Practice for Construction of Underground Rural Food Grain Storage Structures in the light of comments received and recommendations of the Underground Food Grain Storage Subcommittee, AFDC 7:1.

On the suggestion of Dr. Pingale, the Committee agreed that Indian Standards Specifications for (a) Silos, (b) Flat Storage, and (c) Fork Lifts for Stacking Grain Bags should be formulated. The Mechanically Operated Storage Structures Subcommittee, AFDC 7:3, was set up to look after this work. Dr. Pingale was nominated as the Convener of the new Subcommittee.

Dairy Industry

The Dairy Industry Sectional Committee, AFDC 12, held its seventh meeting for the first time in Madras on 6 and 7 June 1960. Dr. K. C. Sen presided over the meeting at which a large number of distinguished industrialists concerned with the dairy industry was also present.

The Committee finalized for adoption the two draft specifications for (a) processed cereal infant foods, and (b) special infant foods. The Committee approved for wide circulation draft standard specifications for the following:

a) Aluminium Milk Cans,
b) Aluminium Foil for Milk Bottle Caps,
c) Aluminium milking Pails,
d) Aluminium milk Strainers, and
e) Stainless Steel Milk Cans.

The draft Indian Standard Methods of Test for Dairy Industry was also approved for wide circulation.

The Committee decided that work for formulation of Indian Standards should be initiated on the following subjects:

a) Batch Pasteurizer,
b) Butter Worker,
c) Butter Scotch Hand,
d) Cheese Press, and
e) Curd Mills.

The Committee recommended that an Indian Standard Layout Plan for a Dairy Laboratory for Routine Testing of Milk should be formulated.

The Committee decided to co-opt the following on AFDC 12:

a) The Chairman, Delhi Milk Scheme; and
b) The Milk Commissioner, Madras.

Food Colours

The Food Colours Sectional Committee, AFDC 19, at its second meeting held on 2 and 3 August 1960 at Bombay approved the following draft Indian Standards for wide circulation:

a) Specification for Tartrazine,
b) Specification for Sunset Yellow FCF,
c) Specification for Amaranth,
d) Specification for Erythrosine,
e) Specification for Indigo Carmine, and
f) Methods of Sampling and Test for Coal Tar Food Colours.

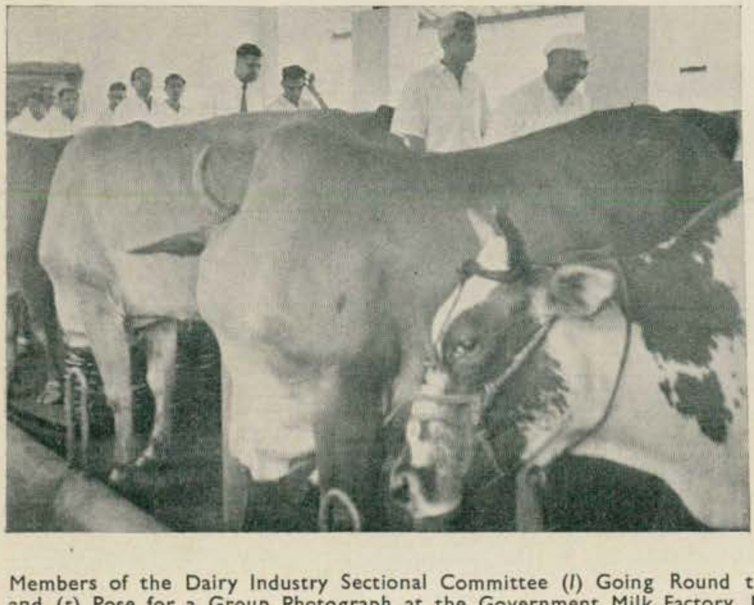
At the request of the Secretary, Central Committee for Food Standards, Ministry of Health, Government of India, AFDC 19 agreed to examine the question of the removal of *Ratanjot*—a natural food colour—from the list of colours permitted under the Prevention of Food Adulteration Rules, 1955. There is some difference of opinion about the safety of this colour for use in foodstuffs and it has been reported that the colouring principle is derived from plants of a number of varieties, whose botanical identification is absolutely essential.

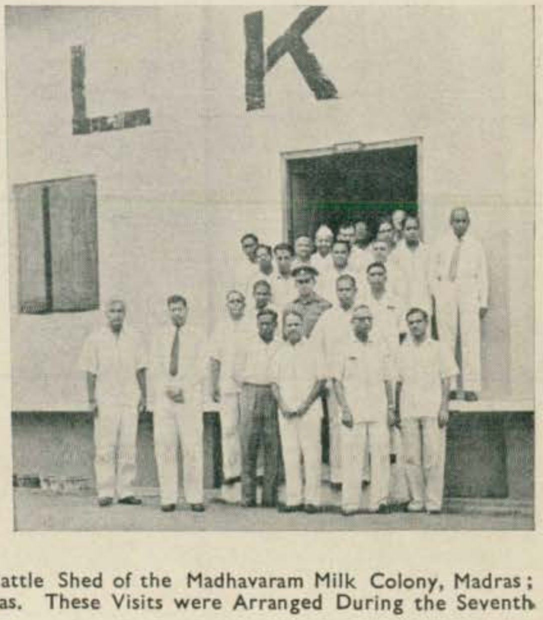
The Committee will also consider the recommendation of its Coal Tar Food Colours Subcommittee, AFDC 19:2, for the removal, from the permitted list, of the following coal tar food colours:

a) Red 6B,
b) Red FB,
c) Acid Magenta II,
d) Blue VRS, and
e) Brilliant Black BN.

Spices and Condiments

The second meeting of the Spices and Condiments Sectional Committee, AFDC 21, was held on 15 September 1960 in Manak Bhavan under the chairmanship of Dr. J. S. Patel, Agricultural Commissioner, Government of India. In his opening remarks, the Chairman stated that the main aim of AFDC 21 was to consider standardization of spices and condiments with a view to improving their quality.





Members of the Dairy Industry Sectional Committee (*l*) Going Round the Cattle Shed of the Madhavaram Milk Colony, Madras; and (*r*) Pose for a Group Photograph at the Government Milk Factory, Madras. These Visits were Arranged During the Seventh Meeting of the Committee

The Committee approved draft Indian Standard Specifications for the following items for wide circulation:

a) Cardamom,
b) Pepper,
c) Ginger, and
d) Curry Powder.

The draft Indian Standard Methods of Sampling and Test for Spices and Condiments was also approved for wide circulation.

Since India holds the secretariat of ISO/TC 34/SC 7 Agricultural Products/Spices and Condiments, the Committee discussed and finalized the proposed draft ISO Recommendation for the following:

a) Terminology for Spices and Condiments,
b) Methods of Sampling and Test for Spices and Condiments,
c) Specification for Pepper,
d) Specification for Cardamom,
e) Specification for Ginger, and
f) Specification for Curry Powder.

The Committee has on its future programme the following subjects in the order given below:

a) Chillies,
b) Celery Seed,
c) Fennel Seed,
d) Coriander,
e) Cumin Seed,
f) Cloves, and
g) Turmeric.

At the request of the Development Wing, Ministry of Commerce & Industry, the Committee also accepted the subject of mustard powder on priority basis.

Pest Control Products

The twelfth meeting of the Pest Control Products Sectional Committee, AFCDC 6, was held at Manak Bhavan on 21 and 22 July 1960, under the newly appointed Chairman Dr. K. B. Lal, Plant Protection Adviser to the Government of India, Ministry of Food & Agriculture. The Committee recorded appreciation of the valuable services rendered by Lt-Col Jaswant Singh, the retired Chairman of AFCDC 6.

The Committee at this meeting finalized for publication three draft Indian Standard Specifications for the following:

a) Cuprous Oxide, Technical (Fungicidal Grade);
b) Cuprous Oxide Water Dispersible Powder Concentrates; and
c) Cuprous Oxide Dusting Powders.

The Committee approved for wide circulation draft specifications for the following:

a) Liquid Amine Salts of 2, 4-D;
b) Diazinon, Technical; and
c) Malathion, Technical.

The Committee decided that an amendment be issued substituting the Zeummers' Method for the determination of Gamma Isomer content in Gamma-BHC(Lindane)-IS:882-1956 for the method at present given in the specification. It further decided that for Specifications for BHC Dusting Powders (*Revised*) (IS: 561-1958); BHC Water Dispersible Powder Concentrates (*Revised*) (IS: 562-1958); BHC Emulsifiable Concentrates (*Revised*) (IS: 632-1958); and BHC, Refined (IS: 881-1956), the modified Chromatographic Method as suggested by M/s Tata Chemicals Limited be substituted for the present Chromatographic Method included in these specifications.

The Committee decided that no change was called for in IS: 563-1955 DDT, Technical, in respect of form of the material; in IS: 562-1958 BHC Water Dispersible Powder Concentrates (*Revised*); in IS: 565-1955 DDT Water Dispersible Powder Concentrates, in respect of suspensibility of the materials; and in IS: 1251-1958 Zinc Phosphide, Technical, in respect of sieving requirements of the material.

The Committee decided that the accelerated storage test for BHC, DDT and Aldrin Dusting Powders, was not necessary. Consequently, necessary amendments deleting relevant clauses from IS: 561-1958, IS: 564-1955 and IS: 1308-1959 covering these products will be issued.

While discussing the nature of packing for ethylene dichloride carbon tetrachloride mixture covered by IS: 634-1957, the Committee felt that the packing should not be left as a subject of agreement between the purchaser and the vendor, since the pesticides are toxic to health. An *ad hoc* Containers for Pesticides Subcommittee with Dr. Y. K. Subrahmanyam as Convener was appointed for going into the details of the packing clause of each of the published standards on pesticides and to recommend definite packs for them.

BUILDING DIVISION

Cement and Concrete

The Cement and Concrete Sectional Committee, BDC 2, held its sixteenth meeting on 7 July 1960 at Bombay under the chairmanship of Shri E. A. Nadirshah.

Twelfth Meeting of the Pest Control Products Sectional Committee in Progress Under Its New Chairman, Dr. K. B. Lal (Fifth from r)

The Committee examined the draft Indian Standard Specification for Prestressed Concrete Poles for Overhead Power, Traction and Telecommunication Lines in the light of comments received and recommendations of the Concrete Pipes and Poles Subcommittee, BDC 2: 6 and finalized it for adoption and printing.

The Committee also approved for wide circulation five draft standard specifications for the following:

a) Portland Blastfurnace Slag Cement (draft Revision of IS: 455-1953);
b) Portland Pozzolana Cement;
c) Load Bearing Hollow Concrete Blocks;
d) Reinforced Concrete Dust Bins; and
e) Unreinforced Corrugated Asbestos Cement Sheets (draft Revision of IS: 459-1955).

The Committee also accepted the proposal of BDC 2: 6 to draft a Code of Practice for Selection, Handling and Erection of Concrete Poles.

Sanitary Appliances and Water Fittings

The seventh meeting of the Sanitary Appliances and Water Fittings Sectional Committee, BDC 3, was held on 28 and 29 July 1960 in Calcutta under the chairmanship of Shri K. R. Bhide. The comments received on draft specifications for Flushing Cisterns, Mixing Valves, Drinking Fountains, Manhole Covers, Pillar Taps and Ball Valves were considered and the drafts were finalized for publication.

The following six drafts were approved for wide circulation:

a) Specification for Water Meters with Threaded End Connections (draft Revision of IS: 779-1956);
b) Specification for Water Meters with Flanged End Connections;
c) Code of Practice for Selection, Installation and Maintenance of Water Meters;
d) Specification for Sluice Valves for Water Works Purposes (draft Revision of IS: 780-1956);
e) Specification for Sluice Valves for Water Works Purposes (350 to 1200 mm Size); and
f) Specification for Salt-Glazed Stoneware Pipes and Fittings (draft Revision of IS: 651-1955).

The Committee agreed to start work on the following items:

a) Acid Resistant Glazed Stoneware Pipes;
b) Automatic Flushing Cisterns;
c) Gunmetal Plug Cocks for Water, Steam and Oil;
d) Surface Boxes for Different Types of Valves;
e) Code of Practice for Selection, Installation and Maintenance of Sluice Valves; and
f) Sluice Gates for Water Supply and Drainage Purposes.

Building Stones and Bricks

An urgent meeting of the Building Stones and Bricks Sectional Committee, BDC 6, was held on 12 September 1960 under the chairmanship of Shri M. V. Joglekar, Chief Engineer, Hindustan Construction Company Ltd., Bombay, to discuss certain important comments received on the modular size for building brick as specified in IS: 1077-1957 Specification for Common Burnt Clay Building Bricks. The Committee concluded that the specification as published was implementable, and decided to incorporate an amendment regarding the depth of frog for better facility of manufacture.

The Committee also finalized for printing the draft Indian Standard Method for Determination of Resistance to Wear of Natural Building Stones.

Pozzolanas

The Pozzolanas Sectional Committee, BDC 16, held its fourth meeting on 6 July 1960 at Bombay under the chairmanship of Dr. R. R. Hattiangadi, Technical Director, the Associated Cement Companies Ltd., Bombay.

The Committee discussed the draft Indian Standard Methods of Test for Pozzolanic Materials in the light of comments received during its wide circulation and finalized it for printing after making a few changes.

The Committee also considered a preliminary draft specification for Fly Ash for Use in Concrete, prepared by ISI Directorate. While the Committee was in general agreement with the various provisions contained in the draft, it was felt that detailed information on the properties of fly ash, obtained from indigenous sources, should also be included in the draft.

Wood Products

The Wood Products Sectional Committee, BDC 20, held its seventh meeting on 11 August 1960 at Bangalore under the chairmanship of Dr. D. Narayanamurti.

The Committee decided to issue an amendment to IS: 709-1957 Specification for Medium Strength Aircraft Plywood.

The Committee examined the following draft Indian Standards and draft amendments in the light of the comments received and finalized them for adoption and printing:

a) Specification for Blockboards;
b) Specification for Fibre Hardboard;
c) Methods of Test for Plywood;
d) Specification for Wood Wool for General Packaging Purposes;
e) Amendment No. 2 to IS: 10-1953 Specification for Plywood Tea-Chests (*Revised*); and
f) Amendment No. 1 to IS: 710-1957 Specification for Marine Plywood.

Fire-Fighting Equipment

Shri L. G. Mirchandani of the Ministry of Home Affairs presided over the fourth meeting of the Fire Fighting Equipment Sectional Committee, BDC 22, held at Manak Bhavan on 21 and 22 June 1960. In an appeal to indigenous manufacturers (*see also* p. 21), the Chairman asked them to make sincere efforts for manufacturing fire-fighting equipment conforming to Indian Standard Specifications. He added that if they had any real difficulty, they should not hesitate in putting forward their case before BDC 22.

The Committee finalized for publication five draft Indian Standard Specifications for the following:

a) Small Fire Engine;
b) Snatch Block, Single Sheave;
c) Towing Tender for Trailer Pump for Fire Brigade Use;
d) Foam Crash Tender, Small; and
e) Combined Foam and CO_2 Crash Tender.

A draft Indian Standard Specification for Fire Extinguisher, Water (Bucket Pump Type) was approved for wide circulation.

The Committee agreed to take up the following subjects for formulation of Indian Standards:

a) Gas Cartridges;
b) Metal Helmet;
c) Pipe Branch; and
d) Small Fire Engine ½-ton Chassis.

The Committee felt that it was essential to draw up codes of practice for the selection and maintenance of various units of fire-fighting equipment. A new Subcommittee was set up for the purpose and Shri M. G. Pradhan was appointed as its Convener.

The Committee also reviewed at its meeting the progress of work on the following problems:

a) Oxy-acetylene cutting set used in fire services,
b) Testing of hook ladders, and
c) Effect of mineral waters on cast iron pump casings.

Water Supply and Sanitation

The fourth meeting of the Water Supply and Sanitation Sectional Committee, BDC 24, was held on 25 and 26 July 1960 at Calcutta under the chairmanship of Shri N. V. Modak, Director, Central Public Health Engineering Research Institute, Nagpur. The Committee considered the comments received on the draft Indian Standard Code of Practice for Building Drainage and finalized it for publication. The Committee also approved for wide circulation a draft Code of Practice for the Selection, Installation and Maintenance of Sanitary Appliances. During the meeting, the comments on the first draft Amendment to IS: 1172-1957 Code of Basic Requirements for Water Supply, Drainage and Sanitation were also considered and the draft Amendment was finalized for publication.

CHEMICAL DIVISION

Paints and Allied Products

The Paints and Allied Products Sectional Committee, CDC 8, at its thirteenth meeting held under the chairmanship of Shri P. C. Chanda at Calcutta on 2 August 1960, finalized for publication the draft Indian Standard Specification for Black Japan, Type C (for Hot Surfaces).

The Committee approved for wide circulation draft Revisions of 38 standards — 29 on ready mixed paints, 3 on pigments, 4 on aluminium paints and components, one on varnishes and one on driers. These had been recommended after study, extending over two years, by a special panel constituted for the purpose. In a new series of draft specifications for paints and allied products for aircraft materials, the following three were approved for wide circulation:

a) Thinner for Synthetic Paints and Varnishes for Aircrafts;
b) Thinner for Cellulose Nitrate Based Paints, Dopes and Lacquers for Aircrafts; and
c) Ready Mixed Paints, Zinc Chrome Priming (Synthetic) for Light Alloys for Aircrafts.

One of the highlights of the work of the Committee was the approval of a working draft for the technical classification of the long series of Indian Standards on Paints and Allied Materials. This classification, when finalized, will enable consumers to locate readily the specific standard specification for paints and allied materials as required by them.

An important item concerning the metric changeover of the paint industry was the decision to adopt the unit kg/10 litres in place of the existing expression of lb/Imperial gallon.

Glassware

The tenth meeting of the Glassware Sectional Committee, CDC 10, was held at the Central Glass & Ceramic Research Institute, Calcutta on 25 August 1960. It was presided over by Dr. Atma Ram. This meeting was convened specially to finalize a draft Indian Standard Specification for Glass Liquor Bottles giving recommended metric sizes of bottles for use in the alcohol industry which is to go metric from 1 April 1961.

Besides this, a draft Indian Standard Specification for Floating Dairy Thermometers was finalized for publication and a draft standard on Liquid Bright Gold approved for wide circulation to interests concerned.

Paper

The Paper Sectional Committee, CDC 15, held its ninth meeting in Calcutta on 29 August 1960 under the chairmanship of Shri C. A. Subrahmanyam. Two very important questions were discussed at the meeting, the first relating to untrimmed sizes of paper and the second to standard substances of paper. The Indian Standard Specification for Paper Sizes (IS: 1064-1957) specifies finished sizes obtained after trimming. Stock sizes of paper must necessarily be more than those given in IS: 1064-1957 to allow for trimming. The Committee has now come to conclusion with regard to the trimming margin to be allowed and a draft Indian Standard for Stock Sizes of Paper will be prepared for wide circulation in accordance with the Committee's decision taken at the meeting.

Paper is now sold on the basis of its weight in pounds for a certain number of sheets. In the metric system, the substance will be referred to as the weight in grams per sq metre (g/m^2). The Commitee agreed upon a series of standard substances which will be put forward to the industry and trade in the form of a draft proposal. The series ranges from 40 g/m^2 to 325 g/m^2 suitable for writing and printing paper and pulp board.

The Committee also decided to take up the subjects of ' paper for multi-walled bags ' and ' cigarette tissue paper ' on its programme of work.

Petroleum Products

The sixth meeting of the Petroleum Products Sectional Committee, CDC 22, was held on 25 August 1960 at Calcutta. Dr. A. Lahiri, the Chairman of the Committee, mentioned in his opening remarks that in the formulation of Indian Standard Specifications for: (a) Kerosines (IS: 1459-1959), and (b) Diesel Fuels (IS: 1460-1959), recently published, special consideration was given to the existing imbalance in the country between production pattern and demand of these products. He added that these standards were laid down with a view to minimizing, as far as practicable, this imbalance in the country without impairing the efficiency, quality and safety factors of these products. The Chairman, therefore, suggested that it would be worth-while collecting data from Government departments and petroleum industry in both public and private sectors for finding out how much foreign exchange would be saved by the implementation of these standards.

Considerable thought is being given by CDC 22 to the problem of accurate measurement of bulk quantities of liquid petroleum products. Accuracy in measurements and adoption of uniform measurement methods in the country are very important in the production, distribution and utilization of petroleum products, as these operations involve accounting, payments for purchases, sales, etc. The Committee, through the Petroleum Measurements Subcommittee, CDC 22: 6, is, therefore, processing various draft standards covering all stages in petroleum measurements from calibration of tanks to final calculation of petroleum oil quantities. Of these draft standards, the Committee in this meeting finalized the draft Indian Standard Methods for Calibration of Vertical Tanks and Computation of Capacity Tables for Vertical Tanks for Bulk Storage of Liquid Petroleum and Its Products. The Committee, however, decided to withhold publication of the Indian Standard Method for Measurement of Temperature of Petroleum and Liquid Petroleum Products because of the controversy about the use of 'Deep Cup Case' as one of the sampling equipments, and the use of middle sample for the determination of correct temperature.

The prospect of production and utilization of liquefied petroleum gases has been progressively increasing in the country. The Committee, therefore, thought it desirable to give immediate consideration to this subject and decided to appoint a new Subcommittee on Liquefied Petroleum Gases, CDC 22: 8.

Petroleum Products and Lubricants

The second meeting of the Methods of Test for Petroleum, Petroleum Products and Lubricants Sectional Committee, CDC 29, was held on 9 and 10 September 1960 in Bangalore under the chairmanship of Shri J. J. Bagchi.

In this meeting, the Committee finalized the following draft Indian Standard Methods of Test and recommended that the period of wide circulation of these draft methods be waived as they were based on internationally recognized test methods:

a) Knock Characteristics of Aviation Fuels by the Aviation Method,
b) Knock Characteristics of Aviation Fuels by the Supercharge Method,
c) Knock Rating of High Performance Fuels by Extended Motor Method,
d) Bromine Number by Colour-Indicator Method,
e) Bromine Number by Electrometric Titration Method,
f) Olefins and Aromatic Content, and
g) Thermal Stability of Aviation Turbine Fuels.

The Committee set up a new Subcommittee for Introduction of Metric System, CDC 29: 7, to deal with the problems arising out of actual application of metric system to the general methods of test for petroleum and its products.

The Committee recommended that the correlation test scheme in respect of the determination of Octane rating and tetraethyl lead, which is being conducted by M/s Burmah Shell, be brought under the auspices of ISI to give the scheme a national status. A new Correlation Test Scheme for Gasoline Subcommittee, CDC 29: 8, was set up for the purpose. Furthermore, it was decided that the Subcommittee should draw up a draft scheme for the consideration and formal approval of the Committee in due course with any modification and/or improvement which may be felt necessary.

The Committee agreed to the proposal of Engine and Machine Test Subcommittee, CDC 29: 2, to take up the formulation of Indian Standard Manual on Engine Rating of Fuels on the basis of relevant ASTM publication and entrusted the work to CDC 29: 2.

ELECTROTECHNICAL DIVISION

Electrotechnical Standards

The Electrotechnical Standards Sectional Committee, ETDC 1, at its second meeting on 21 July 1960 confined itself mainly to examine the recommendations of the Nomenclature and Graphical Symbols Subcommittee, ETDC 1: 3, which had met earlier. The Committee accepted all its recommendations and finalized the two documents on Electrotechnical Vocabulary — Part I: Fundamental Definitions, and Part II: Machines and Transformers. The Committee also approved for wide circulation the draft Indian Standard Graphical Symbols Used in Electrotechnology.

Taking up the draft revision of IS: 585-1954 Recommended Voltages and Frequency for AC Transmission and Distribution Systems, the Committee decided that in view of the voltage of 6·6 kV being progressively given up in favour of 11 kV, the former voltage need not be a primary voltage for transmission and distribution purposes in this country. Another voltage of 220 kV was also included in the standard as a preferred voltage for the country.

Electrical Insulators and Accessories

Two drafts were approved for wide circulation and one new subject was decided to be taken up by the Electrical Insulators and Accessories Sectional Committee, ETDC 3, at its third meeting held on 11 July 1960 at Calcutta. Shri B. K. Mukherjee of Government Test House was in the chair.

The titles of draft Indian Standard Specifications approved for wide circulation are as follows:

a) High Voltage Bushings; and
b) Insulator Hardware for Overhead Lines with Nominal Voltage of 3·3 kV and Above.

The new Indian Standard which was decided to be formulated is Code of Practice for Selection and Maintenance of Insulator Hardware.

Electric Fans

The fifth meeting of the Electric Fans Sectional Committee, ETDC 5, was held in Delhi on 26 and 27 August 1960 under the chairmanship of Shri S. N. Mukerji, Director, Government Test House, Alipore. The Committee finalized the Indian viewpoint on the draft IEC documents on the following:

a) Standard Specification for Electric Ceiling Fans and Regulators, and
b) Standard Specification for AC Table Fans and Regulators.

These documents were discussed at the meeting of IEC/TC 43 — Fans held at Vigyan Bhavan from 7 to 11 November 1960, the full report of which will appear in the next issue of the Bulletin.

Electrical Instruments and Meters

The sixth meeting of the Electrical Instruments and Meters Sectional Committee, ETDC 6, was held on 18 and 19 August 1960 under the chairmanship of Shri T. S. Rao at Bangalore. The following three drafts were finalized for publication at the meeting:

a) AC Electricity Meters (IS: 722-Part IV) Three-phase Kilowatthour Meters with Maximum Demand Indicator;
b) DC Potentiometers for Laboratory and Industrial Uses; and
c) Time Switches.

The following new subjects were taken up for the formulation of Indian Standards:

a) Fuel Gauges, and
b) Multi Test Meters.

A new Rectifiers Subcommittee was constituted for assisting the Sectional Committee in the work connected with standardization of semi-conductors (metal), rectifiers and allied subjects.

Radio Equipment

Shri B. V. Baliga presided over the twelfth meeting of the Radio Equipment Sectional Committee, ETDC 8, held at Manak Bhavan in New Delhi on 26 August 1960. The Committee devoted most of its attention to the finalization of technical preparation for meetings of ten IEC committees dealing with electronic and telecommunication subjects, which met in New Delhi from 31 October to 12 November 1960. An important subject discussed in detail was the result of a series of investigations conducted in the past few months in a number of places for collection of data relating to permissible leakage current on radio-receiving and other electronic equipment.

The Committee finalized for publication two draft Codes of Practice — one covering installation of indoor amplifying and sound distribution systems, and the second covering installation of outdoor public address systems.

Primary Cells and Batteries

At the meeting held in New Delhi on 28 and 29 June 1960 under the chairmanship of Shri G. D. Joglekar, the Primary Cells and Batteries Sectional Committee, ETDC 10, discussed the formulation of Indian viewpoints on a number of documents which were discussed later by IEC/TC 35 at its New Delhi meeting.

At the national level, the Committee approved an amendment to IS: 203-1958 Leclanché Type Dry Batteries for Flash Lights; this amendment related to the raising of minimum levels of performance of certain types of flash light cells. An amendment to IS: 586-1959 Leclanché Type Dry Cells for Telecommunication, Signalling and General Purposes, introducing an additional grade of general purpose signal cells was also approved. Besides this, the Committee examined the recommendations of the Panel set up for formulating standards for flash light torches, and approved the broad lines on which these standards should be prepared.

Automobile Electrical Equipment

The draft Indian Standard Specification for Electric Horns — Part I: DC Vibrating Type, was discussed at length and approved for wide circulation at the second meeting of the Automobile Electrical Equipment Sectional Committee, ETDC 14. This meeting was held at Bangalore on 17 August 1960 under the chairmanship of Shri V. P. S. Menon of the Development Wing, Ministry of Commerce & Industry. The Committee also decided to start immediately the work on the formulation of a national standard for ignition coils.

Switchgear and Controlgear

The second meeting of the Switchgear and Controlgear Sectional Committee, ETDC 17, which was held at Bangalore on 8 August 1960 under the chairmanship of Mr. H. C. Hardy, devoted its attention to the examination of the documents discussed later at the New Delhi IEC meetings of SC/17A High-Voltage Switchgear and Controlgear and SC/17B Low-Voltage Switchgear and Controlgear. An important observation about several documents was that the maximum ambient temperature for test specified in IEC documents as 25°C would be difficult to obtain in India. It was, therefore, recommended that the maximum temperature of the range should be at least 40°C.

ENGINEERING DIVISION

Hand Tools

Shri K. N. P. Rao, the Chairman, presided over the eleventh meeting of the Hand Tools Sectional Committee, EDC 12, held at Government Test House, Calcutta, on 31 August and 1 September 1960. The Committee finalized for publication draft Indian Standard Specifications for the following:

a) Picks and Beaters,
b) Powrahs,
c) Shovels,
d) Engineers' Files, and
e) Swage Blocks and Stands.

The Committee decided that ISI Directorate should prepare a revision of the draft Indian Standard Specification for Screw Drivers and bring it before the Metal Workers' Tools Subcommittee, EDC 12: 2, at its next meeting. With regard to the draft Specification for Wood Working Chisels and Gauges, it was decided to re-edit it in the light of the decisions taken and then circulate it amongst the members of EDC 12 and EDC 12: 6.

The Committee agreed to give representation to:

a) Victor Tools Corporation, Jullundur, and Railway Board on the Wood Working and Carpenters' Tools Subcommittee, EDC 12: 6; and
b) Victor Tools Corporation, Jullundur, and Directorate General of Ordnance Factories on Spanners Subcommittee, EDC 12: 7.

Screw Threads

The Screw Threads Sectional Committee, EDC 27, at its twelfth meeting held on 26 and 27 July 1960 at Manak Bhavan and presided over by Shri R. Krishnamurti considered the comments received on the following drafts and approved them for finalization subject to a number of improvements, and technical actions to be taken:

a) Technical Supply Conditions for Threaded Fasteners,
b) Boiler Rivets (12 to 48 mm Diameter), and
c) Rivets for General Purposes (12 to 48 mm Diameter).

The Committee stressed the need for expeditious finalization of basic standards for screw threads.

Wire Ropes and Wire Products

Two draft Indian Standard Specifications — one for Fibre Cores for Steel Wire Ropes, and the other for Steel Wire for Ropes — were finalized for publication at the second meeting of the Wire Ropes and Wire Products Sectional Committee, EDC 32. This meeting was held at Calcutta on 13 and 14 May 1960 and presided over by Shri A. C. Hooja.

The Committee further decided that the two draft Indian Standard Specifications for (a) Steel Wire Ropes for Winding Purposes in Mines, and (b) Steel Wire Ropes Haulage Purposes in Mines, should be revised by the ISI Directorate and then they should be circulated to all members of EDC 32. Before circulation, if a need is felt, an *ad hoc* meeting of manufacturers represented on the Committee and the representatives of the office of Chief Inspector of Mines, and the CSIR should be called to decide the outstanding issues.

The Committee revised the composition of the Subcommittee for Wire Ropes and Its Accessories, EDC 32: 2, and also set up a new Subcommittee for Wire Products (Other than Wire Ropes), EDC 32: 3.

Commercial Weights and Measures

In the absence of Shri V. V. Apte, the Chairman of the Commercial Weights and Measures Sectional Committee, EDC 41, Dr. N. K. Gopalan presided over its ninth meeting held at Manak Bhavan on 22 August 1960. The draft Indian Standard Specification for Spring Balances was finalized for publication and another draft Specification for Large Metric Capacity Measures was approved for wide circulation for comments.

The Committee agreed that the following Hindi abbreviations should be adopted and as and when the published standards come up for revision, the abbreviations should be modified, wherever necessary, to bring them in line with this recommendation:

UNIT	HINDI ABBREVIATION
Length	
Millimetre	मिमी
Centimetre	सेमी
Metre	मी
Mass	
Milligram	मिग्रा
Gram	ग्रा or ग्राम
Kilogram	किलो or किग्रा
Tonne	टन
Capacity	
Millilitre	मिली
Litre	ली

The Committee agreed to co-opt Mr. J. C. Franklin and Shri V. M. Pednekar on EDC 41.

A new Panel for Automatic Weighing Machines, Self-Indicating and Semi-Indicating Machines, EDC 41/P8 was set up and Shri V. M. Pednekar was appointed as its Convener.

STRUCTURAL AND METALS DIVISION

Methods of Physical Tests

The third meeting of the Methods of Physical Tests Sectional Committee, SMDC 3, was held at Calcutta on 12 and 13 September 1960 under the chairmanship of Dr. B. R. Nijhawan, Director, National Metallurgical Laboratory. At this meeting, the Committee finalized for publication the following 11 draft Indian Standards:

a) Lead Calibration of Testing Machines for Tensile Testing of Steel;
b) Calibration of Vickers Hardness Testing Machines;
c) Wrapping Test of Wire;
d) Reverse Bend Test of Steel Wire;
e) Simple Torsion Testing of Steel Wire;
f) Modified Erichsen Cupping Test for Steel Sheet and Strip;
g) Beam Impact Test (V Notch) on Steel;
h) Brinell Hardness Test for Grey Cast Iron;
j) Tensile Test for Light Metals and Their Alloys;
k) Brinell Hardness Test for Light Metals and Their Alloys; and
m) Diamond Pyramid Hardness Test for Light Metals and Their Alloys.

The Committee reviewed the work done by the Methods of Non-Destructive Testing of Materials Subcommittee, SMDC 3: 1, and accepted the following new subjects for formulation of Indian Standards:

a) Glossary of Terms Relating to Industrial Radiography and Fluoroscopy;
b) Glossary of Terms Relating to Ultrasonic Testing;
c) Recommended Practice for Radiographic Testing; and
d) Reference Blocks for Routine Checking of Ultrasonic Testing Equipment.

The Committee also decided that draft Indian Standards should be formulated on the following new subjects:

a) Calibration of Brinell Hardness Testing Machines;
b) Flanging Test on Steel Tubes;
c) Drift Expanding Test on Steel Tubes;
d) Bend Test on Steel Tubes;
e) Flattening Test on Steel Tubes;
f) Method of Test for Expansion of Copper and Copper Alloy Tubes;
g) Method of Mercurous Nitrate Test for Copper and Copper Alloys; and
h) Tensile Testing of Grey Cast Iron.

The present position of adoption of Indian Standards formulated by this Committee was reviewed, and it was decided that all the members of the Committee should intimate ISI Directorate about it in regard to their respective organizations. The Committee also decided to hold a Symposium on Non-Destructive Testing as early as possible, so that the knowledge and experience available in India in this field could be pooled and made use of in their work.

Methods of Sampling

Presiding over the fourth meeting of the Methods of Sampling Sectional Committee, SMDC 4, Dr. A. V Sukhatme, the Chairman, said that the work of this Committee was likely to have bearing on the work of most other sectional committees under SMDC. This was so because SMDC 4 had been set up: (a) to assist and advise other sectional committees under SMDC on statistical matters in general and sampling problems in particular; and (b) to formulate standards on methods of sampling.

The Committee considered the comments received during wide circulation of draft Indian Standard Methods of Sampling of the following:

a) Manganese Ores,
b) Iron Ores, and
c) Foundry Sands.

It was decided that the version of the above three drafts, finalized at the meeting, be circulated to the members of the Committee for approval within a fortnight, so that the publication of the standards could be expedited.

The Committee also approved for wide circulation the draft Indian Standard Methods of Sampling Non-ferrous Metals. Furthermore, ISI was authorized to remodel the draft Indian Standard Sampling Inspection Tables in consultation with the Chairman and Dr. A. Matthai before putting it into wide circulation.

The Committee decided that the work of preparing Indian Standard Methods of Sampling Quartzite, Bauxite and Dolomite be undertaken. For this purpose, a Subcommittee on Sampling of Ores, SMDC 4: 3, was formed with Shri B. B. Ghoshal as the Convener. Shri D. S. Murty, Chief Inspector of Armaments, Kirkee, was appointed as the Convener of the Subcommittee on Sampling in Specifications, SMDC 4: 2.

Structurals

The third meeting of the Structurals Sectional Committee, SMDC 6, was held at Manak Bhavan on 2 and 3 September 1960. Shri O. S. Murthy, Director Planning, Railway Board, presided. In this meeting, the following draft Indian Standards were finalized for publication:

a) Rolling and Cutting Tolerances for Hotrolled Steel Products, and
b) Coldformed Lightgauge Steel Structural Sections.

The publication of the former standard is expected to remove considerable difficulty now being experienced by the manufacturers and the purchasers with regard to the tolerances to which these products should be manufactured and bought. It is expected that the publication of the latter standard would go a long way in the use of these sections in steel structures and considerable steel would be saved.

The Committee also decided to prepare standards on the following subjects:

a) Sizes for Mild Steel Plates and Sheets;

b) Sizes for Mild Steel Flats;
c) Sizes for Mild Steel Bars, Round and Square; and
d) Bulb Plates.

The formulation of standard sizes for plates, sheets, flats, steel bars and bulb plates in metric units will greatly assist in making available metric sections in this country.

To meet the special requirements of Railways for wagon building, the Committee decided to include the properties of a few channel sections in IS:808-1957 Rolled Steel Beam, Channel and Angle Sections.

The Committee also reviewed the activities of the two subcommittees under them and decided that the work on preparation of a standard specification for piling sections should be expedited. Since there is a heavy demand for piling sections in this country, it is expected that this will help in saving foreign exchange by producing these sections in this country.

A comprehensive note, outlining the various structural uses to which aluminium is being put to at the moment and is likely to be put in foreseeable future, is to be prepared before SMDC 6 takes up the work of standardization of aluminium and aluminium alloy structural sections. It was also decided to expedite the work on the preparation of the second handbook which is under preparation by this Committee.

The Committee reviewed the progress of work with regard to the investigations on coldformed light-gauge structural steel sections going on at the National Physical Laboratory, New Delhi, and visited NPL in the afternoon of 3 September when a medium range column was tested to demonstrate the work being done.

Structural Engineering

The third meeting of the Structural Engineering Sectional Committee, SMBDC 7, was held on 25 and 26 August 1960 at Manak Bhavan. The meeting was presided over by Shri V. Venkataramaya of Research Designs & Standards Organization, Railways. The Committee finalized for publication the draft Indian Standard Code of Practice for Design of Vertical Mild Steel Cylindrical Welded Oil Storage Tanks.

The Committee also finalized the draft Revision of IS:800-1956 Code of Practice for Use of Structural Steel in General Building Construction for wide circulation. One of the important changes in the Revision is with respect to the permissible stress in bending. A more accurate basis has now been provided for arriving at it by making use of the theoretical expressions given by S. Timoshanko and George Winter instead of approximate formulæ adopted earlier. Another important change in the Revision is with regard to the general increase of all the permissible stresses based on the increased guaranteed minimum yield stress for structural steel.

The Committee appointed a Panel to study the draft Indian Standard Code of Practice for Cranes and Hoists and the comments on it received during its wide circulation. The subject of this standard forms one of the items for which intensive co-ordination among the Commonwealth countries has been felt desirable. The conclusions and suggestions arrived at during the technical session on cranes at the fourth Commonwealth Standards Conference, Ottawa, are therefore, being incorporated in the draft Indian Standard.

Foundry

The Foundry Sectional Committee, SMDC 17, met on 11 July 1960 at Calcutta under the chairmanship of Shri N. G. Chakrabarti, Works Manager, Foundry Division of the Tata Locomotive & Engineering Co. Ltd., Jamshedpur. The Committee finalized for publication the draft Indian Standard Specification for Coal Dust for Use in Foundry. One of the important factors discussed in detail, while finalizing this draft, was the question of grading of coal dust based on volatile matter and ash content taking into consideration the quality of coal available indigenously.

The Committee approved for wide circulation two draft Indian Standard Specifications — one for Sodium Base Bentonite, and the other for High Silica Sand for Use in Foundries. The Committee accepted the new subject of 'Silica Flour' for formulation of an Indian Standard.

A comprehensive note on the basic characteristics of high silica sands for use in foundries has been prepared for utilization by the Geological Survey of India in locating sources of silica sands for use in foundry in the country.

The Committee decided to request the National Productivity Council for undertaking the study of the standardization aspect pertaining to foundry equipment and materials when a team of foundrymen is sent to visit Japan, USA and other countries.

TEXTILE DIVISION

Textile Standards

The Textile Standards Sectional Committee, TDC 1, in its nineteenth meeting held on 16 July 1960 at Bangalore and presided over by Shri Srinagabhushna, approved for wide circulation the following draft Indian Standards:

a) Guide for Marking Textile Materials Made of Wool;
b) Method for Determination of Breaking Load (Strength) and Elongation at Break of Woven Wool Fabrics (By Constant-Rate-of-Traverse Machine); and
c) Method for Determination of Length and Width of Wool Fabrics.

The Committee also considered the comments on IS: 232-1958 Glossary of Textile Terms, received since its finalization. It was decided that the Subcommittee for Definitions for Textile Terms Pertaining to Natural Fibres, TDC 1: 19, should consider these comments and submit its recommendations to TDC 1 for revising IS : 232-1958.

Cotton, Yarn and Cloth

Two drafts were finalized for publication and another two approved for wide circulation at the thirteenth meeting of the Cotton, Yarn and Cloth Sectional Committee, TDC 2, held on 19 August 1960 in Bombay. Shri Nanddas Haridas was in the Chair. The titles of draft Indian Standard Specifications finalized for publication are given below:

a) Cotton Sewing Thread, Bleached or Dyed; and
b) Cotton Tape Newar, Grey or Dyed.

The draft Specifications for the following were approved for issuing in general circulation:

a) Cotton Embroidery Thread, Bleached or Dyed; and
b) Cotton Lining Cloth (Warp Faced Satin), Dyed.

The Committee also decided that IS: 171-1951 Specification for Cotton Yarn, Grey (*Tentative*) be revised in metric system.

Textile Chemistry

The Textile Chemistry Sectional Committee, TDC 5, in its twenty-sixth meeting held on 5 August 1960 at Ahmedabad and presided over by Dr. P. C. Mehta, finalized for publication the following draft Indian Standards:

a) Method for Determination of Colour Fastness of Textile Materials to Nitrogen Oxides;
b) Procedure for Determination of Fastness of Dyestuffs; and
c) Method for Determination of Barium Activity Number of Cotton Textile Materials.

Another draft Indian Standard Method for Estimation of Carboxylic Acid Groups in Cotton Textiles was approved for wide circulation.

The Committee also finalized an amendment to IS: 987-1958 Methods for Determination of Colour Fastness of Textile Materials to Bleaching with Sodium Chlorite.

Coir and Coir Products

Shri Revi Karuna Karan, the Chairman, presided over the seventh meeting of the Coir and Coir Products Sectional Committee, TDC 9, held in Ernakulam on 13 August 1960. The Committee finalized for publication the draft Indian Standard Specification for Door Mats, Rod, in the light of comments received during its wide circulation. A draft Indian Standard Specification for Door Mats, Creel, Bit and Fibre was also approved for wide circulation.

The Committee decided that IS: 898-1957 Specification for Coir Fibre (*Tentative*) as amended by Amendment No. 1 be made firm without any further change.

The Committee nominated Shri C. T. Jacob as Convener of TDC 9: 1 and TDC 9: 1: 2.

Handloom Cloth

The draft Indian Standard Specification for Handloom Cotton Mootus, Striped or Checked, was approved for general circulation at the sixteenth meeting of the Handloom Cloth Sectional Committee, TDC 13, held on 15 September 1960 at Manak Bhavan. It was presided over by Shri C. S. Ramanathan. The following draft amendments were finalized for publication:

a) Amendment No. 1 to IS: 750-1956 Specification for Handloom Cotton Lungies, Striped or Checked; and
b) Amendment No. 1 to IS: 1093-1957 Specification for Handloom Cotton Madras Handkerchiefs.

The Committee decided not to take up the work of formulation of Indian Standard Specification for Handloom Cotton Tussore in view of the difficulties encountered in manufacturing this type of cloth on handloom samples of furnishing fabrics and tapestry cloth. The work of formulation of draft Indian Standard Specification for Handloom Cotton Handkerchief was decided to be taken up by the Committee.

The Textile Expert to the Government of Punjab agreed to supply samples of Shoddy Woollen Melton Cloth and Shoddy Woollen Blankets for the scrutiny of the Committee with a view to taking up these items for the formulation of Indian Standards.

At the seventeenth meeting of the Committee held on the next day, the draft Indian Standard Specifications for the following were finalized for publication:

a) Handloom Silk Bush Shirt Cloth, Loomstate; and
b) Silk *Kora* (Loomstate) Cloth.

The draft Indian Standard Specification for Silk Sari Cloth, Undyed, Dyed or Printed, was considered along with the draft specification for Printed Silk Saries formulated by the Technical Committee on Quality Control of the All India Handicrafts Board. It was decided that particulars of some more varieties of silk sari cloth be included in the draft standard. The All India Handicrafts Board agreed to supply constructional details and corresponding samples of silk sari cloth for the scrutiny of the Committee.

This meeting was held in joint session with the Technical Committee on Quality Control of the All India Handicrafts Board.

Ropes and Cordages

Three draft Amendments to printed Indian Standards were finalized for publication and four draft Indian Standard Specifications approved for wide circulation by the Ropes and Cordages Sectional Committee, TDC 14, in its sixth meeting held in joint session with the eighth meeting of the Subcommittee for Ropes and Cordages, TDC 14: 1. The meeting was held on 25 August 1960 in Calcutta under the presidentship of Dr. A. K. Ghosh. Amendments to the Indian Standard Specifications for the following were finalized:

IS:1084-1957 Hawser-Laid Manila Rope
IS:1085-1957 Shroud-Laid Manila Rope
IS:1086-1957 Cable-Laid Manila Rope

Titles of draft Indian Standard Specifications approved for wide circulation are given below:

a) Country Jute Twine, Three-Ply;
b) Spun Yarn, Jute, 18-Ply;
c) Tarred Hemp Marline, Two-Ply; and
d) White Indian Hemp Line.

Cotton Mill Wooden Articles

The Cotton Mill Wooden Articles (Other Than Shuttles) Sectional Committee, TDC 19, in its third meeting held on 6 and 7 September 1960 in Bombay and presided over by Shri M. A. Rehman, finalized for publication the draft Indian Standard Specification for Varnished and Enamelled Ring Rabbeth Bobbins for Cotton Mills. The draft Indian Standard Specification for Picking Arms (or Sticks) for Over-Pick Cotton Looms was approved for wide circulation.

The Committee recommended that the work of formulation of Indian Standard Specifications for the following be taken up:

a) Box Back Board,
b) Race Board,
c) Slay Bottom, and
d) Slay Cap.

This work was allotted to a new Subcommittee for Cotton Loom Slay Parts Made of Wood, TDC 19: 3, and Shri H. N. Contractor was appointed as its Convener.

Cotton Mill Shuttles

Mr. S. J. Levy was the Chairman of the second meeting of the Cotton Mill Shuttles Sectional Committee, TDC 20, held on 29 July 1960. The Committee considered the preliminary draft Indian Standard Specification for Shuttles for Plain Calico Looms and approved the amended draft for general circulation for a period of three months with a view to obtaining suggestions for its improvement. The Committee decided that samples of tips (for use in shuttles for plain calico mills) be obtained from Shri C. Chakraverti, Shri H. N. Contractor and Shri S. P. Mehta for hardness test at the point of tips and the test report be placed before TDC 20 at its next meeting.

Textile Mill Leather Articles

Two draft standards were finalized for publication and another two approved for wide circulation at the fifth meeting of the Textile Mill Leather Articles Sectional Committee, TDC 21. This meeting was held on 25 August 1960 in

Bombay under the chairmanship of Dr. A. Seetharamiah.

The titles of draft specifications finalized for publication are as follows:

a) Large Size Spring Buffers for Cotton Looms, and
b) Small Size Spring Buffers for Cotton Looms.

The titles of draft specifications approved for wide circulation are as under:

a) Raw Hide Round Foot Pattern 4 B Pickers for Cotton Over-Pick Looms, and
b) Raw Hide Pickers for Jute Looms.

The Committee also recommended that the subject of Roller Skin be taken up for formulation of an Indian Standard.

Cotton Healds and Reeds

The Cotton Healds and Reeds Sectional Committee, TDC 22, held its fourth meeting in joint session with the third meeting of the Sub-committee for Cotton Healds for Cotton Mills, TDC 22: 1 on 20 and 21 July 1960 in Bombay. Shri D. S. Morarji was in Chair. The draft Indian Standard Specification for Cotton Healds for Use in Cotton Looms was considered in the light of comments received as a result of wide circulation and finalized for publication.

The Committee also approved for wide circulation the draft Indian Standard Specification for Cotton Cambs for Use in Jute Looms.

Wire Healds

The fourth meeting of the Wire Healds Sectional Committee, TDC 23, was held on 15 September 1960 in Ahmedabad. Shri B. R. Ramaswamy of Ahmedabad Textile Industry's Research Association presided over the meeting.

The requirements for Inset-Eye Wire Healds for the purpose of including in the draft Indian Standard Specification for Inset-Eye Wire Healds for Cotton and Silk Weaving (Excluding Jacquard and Fancy Weaving) were decided by the Committee.

Spindle Tape and Tubular Banding

Shri B. C. Munshaw of M/s Texind Corporation Ltd., Bombay, presided over the fourth meeting of the Spindle Tape and Tubular Banding Sectional Committee, TDC 25, held on 20 August 1960 in Bombay. The Committee considered the comments received on the draft Indian Standard Specification for Cotton Spindle Tape during its wide circulation and finalized it for publication.

Wicks for Oil Burning Domestic Appliances

The draft Indian Standard Specification for Flat Cotton Wicks for Hurricane Lanterns and Lamps was finalized for publication at the fourth meeting of the Wicks for Oil Burning Domestic Appliances Sectional Committee, TDC 32. This meeting was held at Manak Bhavan on 2 June 1960 under the chairmanship of Shri P. N. Kuckreja.

The Committee resolved that more samples of circular and round wicks be collected from wick manufacturers for testing, and the test report be placed before the Committee in its next meeting. Furthermore, lamp manufacturers be requested to supply the dimensions of burners of circular and round wick lamps.

AD HOC COMMITTEE ON QUALITY CONTROL

The Union Commerce Ministry has recently set up an *ad hoc* Committee on 'Quality Control and Pre-Shipment Inspection of Various Goods Exported from India' under the chairmanship of Dr. Lal C. Verman, Director ISI. The Committee will:

(a) Review the existing schemes, rules, regulations and legislation relating to compulsory and voluntary quality control, and pre-shipment inspection of export commodities and their packing, and to suggest such action as may be necessary to better ensure the quality of goods exported from India;

(b) Indicate the type of legislative and administrative machinery that may be considered essential to be set up for the purpose;

(c) Recommend methods and policies to be adopted by the Inspection and Certifying Agencies in the discharge of their functions;

(d) Examine the adequacy or otherwise of testing laboratories and pre-shipment inspection agencies at present available in the country for the purpose and to recommend measures for improving the faciliti es;

(e) Examine the existing machinery for drawing up specifications and grades of quality of exported goods, and recommended improvements, if any;

(f) Suggest additional commodities that may be brought under quality control having due regard to the existing quantum of exports and possibility of their expansion; and

(g) Consider any other matter relating to the main object of improving the quality of export goods and make recommendations, where necessary.

In considering the above matters, the Committee has been asked to give due consideration to the fact that metric units will be increasingly brought into use in the country for all purposes.

SUPERSESSION OF IS: 19-1949

The Indian Standard Prodcedures for Testing Cotton Textiles and Cordages (Other than Jute) for Resistance to Attack by Micro-Organisms (IS: 19-1949) has been superseded by the following two Indian Standards:

IS: 1386-1959 Methods for Testing Cotton Cordages for Resistance to Attack by Micro-Organisms, and

IS: 1389-1959 Methods for Testing Cotton Fabrics for Resistance to Attack by Mibro-Organisms.

NEW INDIAN STANDARDS

Indian Standards recently published are briefly described here

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Tapioca Chips for Animal Feed

Tapioca chips form an important substitute for grain in animal feeds, especially in the States of Kerala and Madras. These have also been found to be suitable for the fattening of pigs and give satisfactory results when they constitute about a third of the total dry matter in the ration for pigs. The Indian Standard Specification for Tapioca Chips for Animal Feed (IS: 1509-1959) prescribes the requirements and the methods of sampling and test for the material.

The formulation of Indian Standards for tapioca products was undertaken at the instance of the Tapioca Market Expansion Board, Government of Kerala. So far, four Indian Standard Specifications have been published; the other three cover tapioca products for human consumption, namely, edible tapioca chips, edible tapioca flour and edible tapioca starch.

Infant Milk Foods

Infant milk foods used in this country have so far been imported. Efforts are now being made to manufacture them in this country. The formulation of Indian Standards for such foods has been taken up at the request of the Central Committee for Food Standards.

Infant foods at present in use in this country can be divided into three categories, namely: (a) infant milk foods, (b) processed cereal infant foods, and (c) special infant foods. The Indian Standard Specification for Infant Milk Foods (IS. 1547-1960) has been formulated to cover only the first category. The standards for the other two are under print.

BUILDING DIVISION

Standards for Fire Fighting Equipment and Appliances

The latest additions to the series of Indian Standard Specifications for fire fighting equipment and appliances, being prepared by ISI at the instance of the Ministry of Home Affairs, Government of India, are the following:

a) Specification for 30-34 m (or 100-110 ft) Mechanically Operated Turn-Table Ladder for Fire Brigade Use (IS: 932-1960);
b) Portable Chemical Fire Extinguisher, Soda Acid Type (IS: 934-1960); and
c) Portable Chemical Fire Extinguishers, Carbon Tetrachloride Type (IS: 935-1959).

In the preparation of these standards, the desirability of promoting the manufacture of fire fighting equipment and the need to ensure a degree of uniformity between the equipment purchased from abroad and the equipment manufactured in this country have been kept in view.

Measurement of Flow of Water in Open Channels

The following four Indian Standards cover the measurement of flow of water in open channels:

a) IS: 1191-1959 *Glossary of Terms Used in Measurement of Flow of Water in Open Channels* — The object of this glossary is to provide a clear understanding of the precise meaning of terms used in measurements of flow of water in open channels; it is hoped that this will contribute substantially in eliminating ambiguity and promoting the exact manner of expressing situation, conditions, method of measurement and of recording values.
b) IS: 1192-1959 *Velocity-Area Methods for Measurment of Flow of Water in Open Channels*—It deals with the measurement of flow of water in open channels by measuring the velocity of water and the area of cross-section of the channel. This does not apply with the same degree of accuracy to waterways subject to tidal influence, pulsating flow and rapidly varying stage discharges.
c) IS: 1193-1959 *Methods for Measurement of Flow of Water in Open Channels Using Notches, Weirs and Flumes*— This standard covers the method of measurement by taking observations of water levels upstream and downstream of existing or specially built hydraulic structures, such as weirs, bridges, piers, flumes, etc. The discharge is computed with the aid of empirical formulæ or with the help of certain definite relations established by hydraulic model tests.
d) IS: 1194-1960 *Forms for Recording Measurment of Flow of Water in Open Channels* — This standard lays down the following forms:
   - Form 1 Record of gauges,
   - Form 2 Record of water level,
   - Form 3 Weekly sheet showing hourly record of water level during flood period,
   - Form 4 Record of cross-section,
   - Form 5 Computation of discharge from float measurement,
   - Form 6 Computation of discharge from current meter measurements,
   - Form 7 Computation of discharge by slope area method, and
   - Form 8 Composite form for record of daily discharge data.

Domestic Refrigerators

The manufacture of refrigeration and air-conditioning equipment in India has made substantial headway recently and most of the components are now being made indigenously, except for hermetically-sealed and semi-sealed compressors and controls. The industry, though still in its infancy, has realized the necessity of adopting certain minimum standards to which indigenous manufacture should conform. To meet this need, several Indian Standards are being prepared to cover various types of different equipment and components manufactured in the country. The Indian Standard (IS: 1476-1959) Specification for Domestic Refrigerators (Mechanically Operated) covers the general construction requirements and methods of testing and rating of domestic refrigerators having a net volume up to and including 350 litres. The standard does not cover absorption type of refrigerators.

Painting and Allied Finishes of Iron and Steel in Buildings

The Indian Standard Code of Practice for Finishing of Iron and Steel in Buildings: Painting and Allied Finishes — Part I Operations and Workmanship [IS: 1477 (Part I)-1959] covers operations and workmanship for the finishing of iron and steel in buildings with paints or other organic coating; general reference to metallic coating in this standard is applicable only to metallic coatings by the hot dip process, electrolytic process, metal spraying process or powder cementation process.

The second part of this code, which is under preparation, will cover schedules and equipment. These two parts are intended to give guidance for obtaining from reasonably good to first class protection to iron and steel by painting and allied finishes under local climatic conditions.

Mild Steel Dust-Bins

Four sizes of dust-bins having capacities 30, 60, 70 and 100 litres are covered in IS: 1495-1959 Specification for Mild Steel Dust-Bins. The object of this standard is to give guidance to manufacturers of dust-bins in regard to suitable material, dimensions and construction including manufacture, workmanship and finish.

Soils for General Engineering Purposes

The survey and classification of soils are at present being carried out in the country by several departments of various states, such as agricultural, irrigation and highways. Each of these agencies adopts a different system for soil classification and this has led to difficulties experienced by each agency in interpreting the soils investigated by others and often results have not been found easily comparable. With a view to evolving a unified system of classification of soils for general engineering purposes in the light of experience available and the methods currently followed in the country, IS: 1498-1959 Classification and Identification of Soils for General Engineering Purposes has been published.

The system of classification recommended in this standard would be found suitable by roads departments as well as irrigation departments. With a suitable modification of procedures which the agricultural departments are now following, it is considered possible for them also to indicate the groups into which the soils fall according to this classification.

Solid Wood Packing Cases

A survey of the sizes of packing cases, methods of their construction and the requirements to be met by them, indicated that there was a large variety in existence, and because of this a great deal of material was being wasted and sometimes timber superior in quality than what was necessary was being used for the purpose. In the context of acute shortage of timber for constructional and other essential needs, it was felt that a standard should be issued to simplify and rationalize the sizes and prescribe the constructional requirements and the material to be used. Consequently, IS: 1503-1960 Specification for Rectangular Solid Wood Packing Cases has been published. It is hoped that this will lead to economy in the use of timber without loss of efficiency.

Sand for Plaster

The Indian Standard Specification for Sand for Plaster (IS: 1542-1960) relates to naturally occurring sands and crushed stone sands used in mortars for internal wall and ceiling plastering, and external plastering and renderings, using mixes of lime, cement, composite lime-cement or gypsum (with or without admixtures) and sand.

This standard is one of a series of Indian Standard Specifications on aggregates for mortars and concrete. Other specifications published so far in the series are:

- IS: 383-1952 Coarse and Fine Aggregates from Natural Sources for Concrete
- IS: 515-1959 Natural and Manufactured Aggregates for Use in Mass Concrete
- IS: 650-1955 Standard Sand for Testing of Cement

Waterproofing Bitumen (Plastic)

Materials and methods of waterproofing and damp-proofing of roofs, floors and basements have been covered by IS: 1322-1959 Specification for Bitumen Felts for Waterproofing and Damp-Proofing; IS: 1346-1959 Code of Practice for Waterproofing of Roofs with Bitumen Felts.

The Indian Standard Specification for Bitumen (Plastic) for Waterproofing Purposes (IS: 1580-1960) published recently lays down the requirements and methods of test for plastic bitumen used as a leak stop for waterproofing cracked or porous masonry and concrete floors and walls.

CHEMICAL DIVISION

Ferro-Gallo Tannate Fountain Pen Ink

The Indian Standard (IS: 220-1959) Specification for Ferro-Gallo Tannate Fountain Pen Ink (0·1 percent Iron Content) is a revision of an earlier standard on the same subject issued in 1950. The object of the revised standard is to give a lead to the ink industry in producing inks which may write in bright shades and also contain suitable percentage of iron to impart some permanence to writings by using raw materials which are at present available. The revised standard prescribes the requirements and the method of sampling and tests for ferro-gallo tannate fountain pen inks containing not less than 0·1 g of iron (as Fe) per 100 ml of the ink. Another Indian Standard (IS: 1581-1960) Specification for Ferro-Gallo Tannate Fountain Pen Ink (0·2 percent Iron Content) prescribes the requirements and the methods of sampling and tests for inks containing not less than 0·2 g of iron (as Fe) per 100 ml of the ink.

Rectified Spirit and Ordinary Denatured Spirit

The following two revised Indian Standard Specifications have been published recently:

- IS: 323-1959 Rectified Spirit (*Revised*)
- IS: 324-1959 Ordinary Denatured Spirit (*Revised*)

These standards were first issued in 1952. Since their publication, the industry has progressed considerably and hence their revision was felt necessary especially in regard to the requirements of composition, acidity and residue on evaporation. In IS: 323-1959, an additional method, namely, potassium ferrocyanide method, has also been prescribed as an alternate method for the determination of copper. In IS: 324-1959, taking into consideration the impurities normally obtained in heads and tails in rectification, the requirements for composition, acidity, alkalinity and residue on evaporation have been modified; strength of apparent ethanol content raised; and a new requirement for residue on incineration included. This standard deals with only one class of denatured spirits, namely, spirit denatured with pyridine bases and caoutchoucine; hence, the title of this specification has been changed to 'Ordinary Denatured Spirit'.

Tests for Coal and Coke

Although India is a producer and a consumer of coal and coke on a fairly extensive scale, no national standards were available so far on the methods to be used for testing them. The Indian Standard Methods of Test for the following have now been issued in order to meet this requirement:

IS: 1350-1959 Coal and Coke — Proximate Analysis, Total Sulphur and Calorific Value
IS: 1353-1959 Coal Carbonization — Caking Index, Swelling Properties and Gray-King Assay (L.T.) Coke Types
IS: 1355-1959 Ash of Coal and Coke

While the need is urgent for standard methods of test to be used not only in contracts between buyers and sellers, but also in the various testing laboratories in the country and has to be met immediately, it has, nevertheless, been considered prudent to keep these standards tentative for sometime, during which period further investigations will be conducted. Moreover, the Technical Committee of the International Organization for Standardization for Solid Mineral Fuels (ISO/TC 27) is attempting to reach international agreement on these methods of test. The longer and wider experience of some other members of the ISO/TC 27 can be drawn upon in due course and the present standards revised, if necessary.

Glass Funnels

The Indian Standard Specification for Glass Filter Funnels (IS: 1541-1959) prescribes the requirements and method of test for two types, namely, common glass filter funnels and analytical glass filter funnels suitable for laboratory purposes. The requirements specified relate to pattern, material and workmanship, construction and finish, dimensions, limit of alkalinity, and thermal endurance.

Steel Drums and Kegs

Two Indian Standards, namely, IS: 442-1954 Drums for Paints, and IS: 618-1956 Kegs (Open Top Drums) for Paints were issued earlier for the exclusive use of the paint industry; it has now been felt that more comprehensive specifications should be drawn up for drums and kegs for use of paint and other industries. Consequently, the Indian Standard Specification for Steel Drums and Kegs (Galvanized and Ungalvanized) (IS: 1549-1960) has been published which supersedes the two standards issued earlier.

The present standard (IS: 1549-1960) covers a range of galvanized and ungalvanized steel drums and kegs up to 150 litres nominal capacity in 15 different sizes.

Carbon Paper for Typewriters

Three types of carbon papers, namely, light weight, medium weight and standard weight, have been covered in the Indian Standard Specification for Carbon Paper for Typewriters (IS: 1551-1959). The requirements laid down cover description, carbon work, basic paper, curling, size, keeping quality, and packing and marking.

Vaporizing Oil and Kerosine Type Aviation Turbine Fuels

With the setting up of refineries in the country the production of petroleum products is increasing at a rapid rate. Consequently, the need for formulation of Indian Standards on various petroleum products is being increasingly felt. The Estimates Committee of the Lok Sabha also emphasized the necessity for drawing up Indian Standards on petroleum products. The following two Indian Standard Specifications have recently been published in this regard:

IS: 1558-1960 Vaporizing Oil; and
IS: 1571-1960 Aviation Turbine Fuels, Kerosine Type.

The object of these standards is to help consumers procure quality materials. The former standard prescribes the requirements and the methods of test for vaporizing oil used in the country as a fuel for spark-ignition engines of low compressive ratio such as those used for tractors. The latter standard prescribes the requirements and methods of test for aviation turbine fuels, kerosine type used in turboprop and jet engined aircrafts. Two grades have been specified, namely, (a) Grade K40 (Kerosine Type, Freezing Point −40°C), and (b) Grade K50 (Kerosine Type, Freezing Point −50°C).

Glass Weighing Bottles

The Indian Standard Specification for Glass Weighing Bottles (IS: 1574-1960) prescribes the requirements and methods of tests for squat and tall types of glass weighing bottles used in scientific laboratories. The requirements cover pattern, material, construction, finish, dimensions, and limit of alkalinity. Packing and marking requirements along with sampling procedure and test for alkalinity are also included.

Copper Oxychloride, Technical

A series of Indian Standards on pesticides and their formulations have been issued. These standards cover at present BHC, DDT, dieldrin aldrin, endrin and their formulations; lime sulphur solution; pyrethrum extracts; nicotine sulphate solution; zinc phosphide; fumigants, like ethylene dichloride, carbon tetrachloride mixture, ethylene dibromide, methyl bromide; and common names for pesticides. The latest addition to the series is the Indian Standard Specification for Copper Oxychloride, Technical (IS: 1486-1959) which prescribes the requirements and the methods of test for the material used extensively in the formulation of fungicides for agricultural and horticultural purposes.

ELECTROTECHNICAL DIVISION

Porcelain Insulators for Overhead Lines

With a view to limiting the number of types and sizes of both pin and shackle insulators, the Indian Standard Specification for Porcelain Insulators for Overhead Lines with a Nominal Voltage Below 1 000 Volts (IS: 1445-1959) recognizes only two types in each. Those included, represent the most popular types manufactured and used in the country. To achieve uniformity of manufacture, important overall dimensions have been rationalized.

This standard does not deal with the choice of insulators for specific operating conditions which are being covered separately in a code of recommended practice for selection and maintenance of insulators.

Public Address Amplifiers

The object of IS: 1490-1959 Recommendations for Minimum Performance Requirements of Mains-Operated Public Address Amplifiers is to lay down certain minimum levels of electrical performance that should be expected of moderately priced public address amplifiers intended for general purposes and designed for operation from electric mains supply. The standard does not include general requirements, such as impedance tappings, types and number of controls, marking, etc. These requirements will be covered in another Indian Standard covering General Requirements for Audio Amplifiers, which is under preparation.

I.F. Transformers and R.F. Coils

The Indian Standard Tests and General Requirements for I.F. Transformers and R.F. Coils Used in Amplitude Modulation Broadcast Receivers (IS: 1512-1959) prescribes the methods of test for measuring the characteristics of intermediate frequency (I.F.) transformers and radio frequency (R.F.) coils. It also covers general requirements including climatic tests and mechanical durability tests, which are common to all types of I.F. transformers and R.F. coils irrespective of the circuits for which they are designed.

Metal Clad Switches

The purpose of IS: 1567-1960 Specification for Metal Clad Switches is to meet the need of the industry and domestic users. The standard specifies the requirements and tests for metal clad switches suitable for a maximum voltage of 650 V between poles, and current rating not exceeding 100 A. These switches may consist of any series combination of air-break switches and fuses forming a composite unit, having not more than three fused poles with or without neutral, within metallic enclosure (or enclosures), and are intended for use on DC systems, and AC systems whose frequency, unless otherwise specified, is 50 cycles per second. Splitter units and isolators are excluded from the scope of this standard.

Cadmium Plating

Electroplated coatings of cadmium for protective purposes on fabricated articles of iron and steel are covered by the Indian Standard Specification for Cadmium Plating (IS: 1572-1960).

The standard specifies three grades designated as A, B, and C. The recommended applications for the three grades are as follows:

Grade A For exposure to marine atmosphere and tropical conditions with high humidity,

Grade B For conditionsng falli in between A and C, and

Grade C For dry interior conditions.

It is recommended that the grade and type required should be specifically indicated in the enquiry or order by the intending purchaser of the cadmium-coated article. This standard also includes requirements of cadmium plating with supplementary chromate or phosphate treatment.

ENGINEERING DIVISION

Counter Machines and Crane Weighing Machines

The Indian Standard Specifications for Counter Machines (IS: 1434-1959) and for Crane Weighing Machines (IS: 1438-1960) belong to a series of Indian Standard Specifications for commercial weighing instruments, being prepared by ISI at the instance of the Standing Metric Committee, Government of India, in connection with the introduction of metric system of weights and measures in the country. Other standards in this series cover general requirements for weighing instruments; and specifications for beam scales, platform weighing machines, weighing bridges, automatic weighing machines and steelyards.

Chaff Cutter Blades

Chaff cutter blades of different sizes and designs are at present in use in the country. The Indian Standard Specification for Chaff Cutter Blades (IS: 1511-1959) is intended to assist in regulating the quality of indigenous manufacture of the product. This specification covers the requirements for two sizes of chaff cutter blades primarily intended for use in hand-driven machines. In addition to recommending typical chemical compositions of steel to be used in the manufacture of these blades, the standard also specifies the more important dimensions that are essential to ensure interchangeability of blades of different makes.

Horizontal Centrifugal Pumps

The Indian Standard Specification for Horizontal Centrifugal Pumps for Clear, Cold, Fresh Water (IS: 1520-1960) is divided into three sections. The first section covers terminology, nomenclature, standard units, classes and types, direction of rotation, accessories and suction limitations of the horizontal centrifugal pumps. The second section gives particulars of information to be supplied by the purchaser. The third section, besides including the information to be furnished by the supplier, covers pump tests, guarantees, tolerances and general requirements.

The specification is not intended to be restrictive in character; some of the requirements of this specification may be either modified or made more elaborate.

Single Cylinder Fuel Injection Pumps

The Development Council for IC Engines and Power Driven Pumps has, from time to time, recommended the formulation of national standards for IC Engines and their components. The Tariff Commission has also recommended the formulation of Indian Standards for diesel fuel injection equipment. The Indian Standard Specification for Single Cylinder Fuel Injection Pumps (IS: 1543-1960) is one of a series of Indian Standards for diesel engines and their components. It is intended to prepare, in due course, standards for multicylinder fuel injection pumps and for elements of fuel injection equipment, such as nozzles and delivery valves.

STRUCTURAL AND METALS DIVISION

Aluminium-Alloy Ingots and Castings

The Indian Standard Specification for Aluminium Alloy Ingots and Castings for Aircraft Purposes (*Revised*) (IS: 202-1960) covers the requirements of eight aluminium-base alloys in ingot form for remelting for the manufacture of castings, and aluminium-base alloy castings for aircrafts purposes.

This standard was first issued in 1950 as a tentative standard. As a result of the experience gained by the industry in using this tentative standard, it was decided to revise and issue it as a firm standard. The main modifications made in this revision relate to certain changes in designation, chemical composition, mechanical properties and inclusion of four more alloys.

Copper Rods for Boiler Stay Bolts and Rivets

The requirements for the material commercially known as arsenical copper rods in the annealed condition for locomotive boiler stay bolts, rivets, etc, are covered in IS:288-1960 Specification for Copper Rods for Boiler Stay Bolts and Rivets (*Revised*). The material covered by this standard is also suitable for stay bolts of marine and land boilers, of both the fire-tube and water-tube types. The standard does not cover deoxidized arsenical copper. The standard was first issued as a tentative standard in 1951 and has now been revised and published as a firm standard.

Analysis of Antifriction Bearing Alloys

The object of the Indian Standard Methods of Chemical Analysis of Antifriction Bearing Alloys (IS: 1409-1959) is to prescribe the methods of analysis which would be useful as reference methods. The standard lays down the procedures for the determination of tin, arsenic, lead and copper, bismuth, iron, cadmium, zinc, and aluminium. In its preparation, due consideration has been given to the facilities available in the country for such analysis.

Covered Electrodes for the Metal Arc Welding

In the past, the absence of a specification for electrodes which deposit metal having tensile properties in excess of those of mild steel has meant that the stresses in welded joints in higher tensile steels have been limited to those which were permissible in mild steel. The implementation of the Indian Standard Specification for Covered Electrodes for the Metal Arc Welding of High Tensile Structural Steel (IS:1442-1959) will ensure that the electrodes are capable of depositing metal having tensile properties comparable with those of high tensile structural steel thus enabling such steels to be used more economically.

The present standard is one of a series of Indian Standards on covered electrodes for metal arc welding of steel. Other specifications published so far in the series are:

a) Covered Electrodes for Metal Arc Welding of Mild Steel (IS: 814 1957), and
b) 1/2-Percent Molybdenum Steel Covered Electrodes for Metal Arc Welding (IS:1395-1957).

Ferro Alloys

The following three specifications are the latest additions to the series of Indian Standards for Ferro Alloys:

IS:1467-1960 Ferro Tungsten
IS:1468-1960 Ferro Titanium
IS:1469-1960 Ferro Molybdenum

These standards cover requirements regarding the size, chemical composition, sampling and supply of the respective alloys.

Analysis of Iron Ores

The purpose of IS:1493-1959 Methods of Chemical Analysis of Iron Ores is to help co-ordination of various methods followed by the laboratories attached to the various indigenous steel plants and the public analysts engaged in analyzing the export consignments. The standard prescribes the methods for the determination of moisture, silica, iron, alumina, titanium, manganese, calcium oxide, magnesium oxide, phosphorus, sulphur, ferrous oxide, vanadium and combined water present in the iron ore. For export purposes, determinations of lead, copper, zinc and arsenic are sometimes required. Therefore, methods for their determination have also been included.

Wooden Pattern Equipment for Foundries

The Indian Standard Specification for Wooden Pattern Equipment for Foundries (IS:1513-1959) specifies the basic classification, construction, colouring and marking of the following classes of wooden pattern equipment used in foundries:

Class 1 Skeleton patterns,
Class 2 Strickle or sweep boards,
Class 3 Softwood pattern equipment,
Class 4 Softwood equipment with hardwood reinforcement,
Class 5 Hardwood equipment, and
Class 6 Hardwood equipment reinforced with metal.

The system for the marking and colouring of patterns, given in this standard, is intended to apply to one-off intricate prototype patterns, to patterns where a considerable number of castings is required and to patterns which may be used over a considerable period.

Refractories for Glass Furnaces

The glass manufacturers in India have been complaining about the poor quality of refractories now available for the glass industry. According to them, the most common defects in such refractories are: they corrode rapidly, produce stone in glass, are laminated, are underfired and shrink considerably on heating. Consequently, their life is generally poor and seldom exceeds a year. On the other hand, the refractory makers have pointed out that in the absence of a specification for refractories for the glass industry it would be difficult for them to satisfy the glass manufacturers. As a result of this, several tests were conducted in the Central Glass and Ceramic Research Institute, Calcutta, on the refractories at present being used in the glass industry, both indigenous and imported. The Indian Standard Specification for Fireclay Refractories for Glass Melting Tank Furnaces (IS: 1522-1960) is based on the results of these investigations.

Refractories for Steel Plants

Refractories required by steel plants constitute the bulk of production of the refractory industry. The requirements of refractories for steel plants have greatly increased with the establishment of three more steel plants in the public sector and with possible further expansion during the Third Five-Year Plan period. The quality of refractory to be used in different units of the steel industry varies depending upon the performance requirements. With a good quality refractory for a particular location, there would be no need for frequent replacement, thus contributing to increased production of steel and cutting down cost of maintenance. These considerations have led to the preparation of a series of Indian Standards to meet effectively the requirements of the industry in the country. The latest additions to this series are:

IS: 1523-1960 Bottom Pouring Refractories for Steel Plants
IS: 1524-1960 Refractory Sleeves for Steel Plants
IS: 1525-1960 Ladle Refractories for Steel Plants

These standards prescribe the general requirements, tolerances on sizes, chemical composition, pyrometric cone equivalent, apparent porosity, spalling resistance, permanent linear change after re-heating, marking, etc.

Solid Drawn Copper Alloy Tubes

The Indian Standard Specification for Solid Drawn Copper Alloy Tubes (IS:1545-1960) covers the requirements for solid drawn tubes of the following alloys of copper, of outside diameters 5 to 40 mm both inclusive, for use in condensers, heaters and coolers:

a) Brass (70/30),

b) Brass (70/29/1),
c) Aluminium Brass, and
d) Aluminium Bronze.

This standard is one of a series of Indian Standards on copper and copper alloy tubes. The other standard published so far in this series is IS: 407-1953 Brass Tubes for General Purposes which is under revision. Other specifications for copper nickel tubes for condensers in sea-going vessels and copper tubes for general purposes are under preparation.

Determination of Arsenic in Iron and Steel

The necessity of prescribing a standard method for determining arsenic in iron and steel has been felt because various indigenous laboratories have been using different methods and results reported by them are not always in agreement. The method prescribed in IS: 1546-1960 Method for Determination of Arsenic in Iron and Steel has various advantages. Iron, lead, chromium, vanadium, manganese, cobalt and aluminium do not interfere. It yields a precipitate plainly visible on filter. Moreover, the method is applicable for the determination of arsenic in either state of oxidation.

Copper Sheet and Strip

The Indian Standard Specification for Copper Sheet and Strip for the Manufacture of Utensils and for General Purposes covers the requirements for the following two grades of copper sheet and strip suitable for the manufacture of household utensils and general building purposes: Grade 1 includes copper sheet and strip for pressing quality while Grade 2 includes the same for hand-worked articles and general purposes.

The standard is one of a series of Indian Standards on copper sheet and strip. Another standard on copper sheet and strip for electrical purposes is under preparation.

TEXTILE DIVISION

Cotton Calico, Bleached or Dyed

The Indian Standard Specification for Cotton Calico, Bleached or Dyed (IS: 1544-1960) prescribes constructional details and other particulars. The standard does not specify the type of finish, general appearance, lustre and feel of the cloth; neither does it specify the degree of whiteness of bleached cloth nor the colour of the dyed cloth.

Wire Reeds

The two types of wire reeds used in weaving jute and cotton fabrics have been covered in the following two Indian Standard Specifications:

IS: 1552-1960 Wire Reeds for Use in Jute Looms

IS: 1555-1960 Pitch-Bound Wire Reeds for Use in Cotton Looms

These standards prescribe the shape and dimensions and also the provisions intended to regulate their quality and the level of workmanship. Since it was felt that the reed industry was not at present in a position to work exclusively with 'rational' values expressed in the metric system, it was decided to include in these standards the fps values also which are being used at present. In IS: 1552-1960, this has been achieved by means of notes to clauses, and appendix which recognizes dimensions in present usage. In the case of IS : 1555-1960, the standard has been divided into two parts: Part I contains the metric version of the standard, and Part II the fps version. It is envisaged to drop the fps values altogether from these standards at a later stage when the metric system comes to be generally used.

Handloom Cotton Poplin, Floor and Bed Durries

Progress of the handloom industry depends to a large extent on the uniformity of quality of material that it can produce for internal consumption and for export. It is hoped that the following Indian Standard Specifications would be helpful in achieving uniformity of quality:

IS: 1450-1959 Handloom Cotton Floor Durries

IS: 1556-1960 Handloom Cotton Poplin, Bleached or Dyed

IS: 1557-1960 Handloom Cotton Bed Durries

These standards prescribe constructional details and other particulars of different varieties of the material covered by each.

AMENDMENT SLIPS

Amendment slips have been issued during the period 16 June to 15 September 1960 to the following Indian Standards:

No. and Date of Amendment		No. and Title of Indian Standard
No. 1	May 1960	IS: 5-1955 Colours for Ready Mixed Paints
No. 2	June 1960	IS: 560-1955 Specification for BHC Technical
No. 1	July 1960	IS: 563-1955 Specification for DDT, Technical
No. 3	May 1960	IS: 564-1955 Specification for DDT Dusting Powders
No. 2	June 1960	IS: 677-1955 Specification for Cloth, Drab Mixture, Woollen (Water Resistant), No. 1
No. 2	June 1960	IS: 678-1955 Specification for Cloth, Drab Mixture, Woollen (Water Resistant), No. 2
No. 4	May 1960	IS: 705-1955 Specification for Dry Battery-Operated Community Radio Receivers (*Tentative*)
No. 4	May 1960	IS: 706-1955 Specification for AC Mains-Operated Community Radio Receivers (*Tentative*)
No. 2	July 1960	IS: 881-1956 Specification for BHC, Refined
No. 2	June 1960	IS: 1036-1957 Specification for 6-Volt Accumulator-Operated Community Radio Receivers
No. 1	July 1960	IS: 1052-1957 Specification for Dieldrin, Technical
No. 1	July 1960	IS: 1260-1958 Code of Symbols for Labelling of Dangerous Goods
No. 1	June 1960	IS: 1309-1958 Specification for Endrin, Technical

DRAFT INDIAN STANDARDS

Brief reviews are given here of draft Indian Standards issued recently for wide circulation to elicit comments ,rom interested parties in India and abroad. Comments are considered by the Sectional Committee concerned at the stage of finalization of the drafts.

Titles of draft Indian Standards which are due to be issued in wide circulation in the near future are also given at the end; some of these might have been circulated while this issue was under print.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Pesticides

A series of Indian Standard Specifications for pesticides has been published. The following draft specifications are the latest to be added to this series:

a) Liquid Amine Salts of 2, 4-D;
b) Diazinon, Technical; and
c) Malathion, Technical.

These drafts prescribe the requirements and methods of test for various requirements of the three products; the sampling procedure has also been included in each draft.

Aluminium Food Grain Storage Bins

The use of metal bins for the storage of food grains in small quantities has been receiving consideration for sometime. Aluminium bins were the first to be considered in this connection. Among the advantages of aluminium bins mention may be made of their hygienic nature; high reflectivity of the metal, which keeps food grains stored inside comparatively cool; freedom of aluminium from rusting, which ensures long life to the bins; and the ease of manufacture. Furthermore, their use in the Community Project in Bhopal has shown that they might solve considerably the problem of storage of food grains in the National Extension Service Blocks and the Community Development Blocks.

Keeping all these facts in view, a draft Indian Standard Specification for Aluminium Food Grain Storage Bins has been prepared. The draft lays down the requirements of materials, dimensions, and methods of construction of three sizes of storage bins, namely, 15, 30 and 35 tonnes.

Toffees and Lozenges

Toffees are boiled sugar confections made out of sugar, edible fat and a few other optional ingredients. Lozenges are confections mainly made out of pulverized sugar or icing sugar with certain grinding materials and lubricants with the addition of suitable flavours and colours.

The two draft Indian Standard Specifications — one for Toffees and the other for Lozenges — cover ingredients, physical characteristics and chemical requirements of these materials. Methods of sampling and tests for determining conformity of the material to the prescribed requirements have also been prescribed.

Aluminium Milk Cans

An ideal milk can has to be designed in such a way that it may transport its contents safely without spillage and with minimum of churning. It should also withstand rough handling, occupy minimum of space on trucks or lorries, allow a high degree of sterilization and should also facilitate cleaning. Further, it has to be light and durable. The draft Indian Standard Specification for Aluminium Milk Cans has been drawn up after giving due consideration to all these points.

Aluminium Foil for Milk Bottle Caps

In big dairies, the aluminium caps are made from the aluminium foil by automatic machines, built into the framework of the filling unit. The roll of foil is placed on a spindle and a certain length fed through to the discs. The feed to the dies is done with a variable stop-and-start motion allowing the strip time to stop, while the die punches out the shape leaving the cap beneath the strip. The caps are made from the aluminium foil of just sufficient width to produce the cap circle. The width of foil covered by the draft Indian Standard Specification for Aluminium Foil for Milk Bottle Caps has been so prescribed that the caps prepared according to this draft standard will be adjusted with 38 mm neck diameter as prescribed in IS : 1392-1959 Specification for Glass Milk Bottles.

Aluminium Milking Pails

Milking pails can be made of tinned mild steel, aluminium alloy or stainless steel. The draft Indian Standard Specification for Aluminium Milking Pails covers only the aluminium milking pails. The Specification for Milking Pails (Hooded Type), Mild Steel, Tinned (IS: 1517-1959) has already been published. The drawing up of a specification for stainless steel milking pails is on the future programme of ISI.

Aluminium Milk Strainers

The purpose of the draft Indian Standard Specification for Aluminium Milk Strainers is to help the manufacture of a fast filtering strainer which is easy to clean and sterilize. At present, three different types of strainers are in use. They are:

a) the fine mesh gauze plate type, with dome-shaped perforated brass disc held in position by a spring clip;
b) domed type with plates and two brass gauzes held in position by a spring clip; and
c) domed type with lower and upper perforated plate with a textile pad as filtering medium.

The present draft covers only the third type which is widely used in India. This type of strainers is much more easily cleaned and the rate of filtration is satisfactory.

Oilcakes as Livestock Feed

With a view to assisting the proper utilization of materials and helping the proper development of oilcake industry, the following three draft Indian Standards have been prepared:

a) Specification for Cottonseed Oilcake as Livestock Feed;
b) Specification for Decorticated Groundnut Oilcake as Livestock Feed; and
c) Methods of Analysis for Oilcakes as Livestock Feed.

The first two draft standards prescribe limits for moisture, crude protein, crude fat, crude fibre, total ash, acid-insoluble ash and castor husk of the respective materials; sampling procedure has also been included in them. The third draft specifies the methods of analysis of various limits mentioned above.

Coal Tar Food Colours

The following five draft Indian Standard Specifications for coal tar food colours have been issued in wide circulation:

a) Tartrazine,
b) Sunset Yellow FCF,
c) Amaranth,
d) Erythrosine, and
e) Indigo Carmine.

In the preparation of these drafts extensive use has been made of the Data Sheets prepared by WHO under the joint FAO/WHO programme on international non-nutritive food additives. The various Food and Agricultural Legislation Bulletins and the Current Food Additives Legislation Bulletins of FAO, relating to a number of overseas countries have also been of considerable assistance.

Another draft Indian Standard on Methods of Sampling and Test for Coal Tar Food Colours has also been prepared. These methods are intended for the testing of coal tar food colours permitted under the Prevention of Food Adulteration Rules, 1955, Ministry of Health, Government of India.

BUILDING DIVISION

Concrete Pipes

The draft Indian Standard Specification for Concrete Pipes (with and without Reinforcement) is a revision of the earlier standard (IS: 458-1956) on the same subject published in 1956. The draft revision incorporates certain important changes. The pipe diameters have been rationalized in the metric system to correspond with the nominal diameters accepted at both the national and international levels. Other dimensions and values have also been expressed in rationalized metric units. Spigot dimensions for unreinforced concrete non-pressure pipes have now been included.

Natural Building Stones

Several types of natural building stones show rapid deterioration when exposed to acid-bearing atmospheres which may be found in industrial centres and sea coasts. For the selection of the proper type of stone for use in such exposed areas, it is necessary to know the resistance of stone surface against action of acids. The draft Indian Standard Method of Test for Surface Softening of Natural Building Stones by Exposure to Acidic Atmospheres lays down the method for this purpose.

Glossary of Terms Relating to Building Stones

Stone is a well-known building material, finding use in masonry work, paving, beam and slab construction, etc. In the production of building stones, a clear understanding of the meaning of the various terms used in connection with the occurrence, classification and description, quarrying and dressing of stone will be of great help. The draft Indian Standard Glossary of Terms Relating to Occurrence, Quarrying and Dressing of Building Stones has been prepared to fulfil this need.

Timber Flush Door Shutters

Hitherto flush door shutters of varied constructions have been supplied at the various factories on the basis of individual orders. This has been one of the major hindrances in regular and bulk production. The object of the draft Indian Standard Specification for Timber Flush Door Shutters is to make it possible for manufacturers to make available readily on the market flush door shutters of standard size and finish. Overall dimensions of flush door shutters specified in this standard have been evolved to suit door frames conforming to IS: 1003-1957 Specification for Timber Panelled and Glazed Doors and Windows, and are based on 10 cm module. By the implementation of this standard, it will be possible to interchange flush door shutters with timber panelled and glazed shutters conforming to IS: 1003-1957.

Steel Shelving Racks

The need for prescribing the requirements of various types of steel and wooden furniture has been lately emphasized by consumers — both Government and Private. This need has been fully appreciated and a concerted attempt is being made by ISI to lay down the requirements of all types of furniture, both wooden and steel, consistent with the demands of the industry. Recognition is also accorded to the necessity of laying down only those requirements of furniture which will ensure satisfactory performance, allowing flexibility for the designer in achieving other desirable usefulness.

The draft Indian Standard Specification for Steel Shelving Racks is first in the series of standards to be formulated on metal furniture, since steel shelving rack is an important item of furniture generally used in offices.

Aluminium Doors, Windows and Ventilators

Two draft Indian Standard Specifications—one for Aluminium Doors, Windows and Ventilators, and the other for Aluminium Industrial Windows — have been prepared. The first covers the requirements regarding material and fabrication of aluminium doors, windows and ventilators, manufactured from extruded aluminium alloy sections of standard sizes and designs; they shall be complete with fittings ready for being fixed into the buildings. The second draft deals with aluminium windows suitable for use in industrial buildings. Both standards cover units designed to suit openings based on a module of 10 cm.

Firemen's Helmets

At present there is no uniformity of helmets being used by the various fire services in the country. The firemen's helmets are required to conform to certain requirements, for example, electrical flame, penetration and impact resistances; water absorption; etc. The draft Indian Standard Specification for Firemen's Helmets has been prepared with a view to guiding the manufacture of helmets which would be suitable for use in fire services. It is also hoped that the publication of this standard would help the fire services in the country in obtaining helmets of good quality.

Electric Passenger and Goods Lifts

The safe installation and operation of lifts has been ensured in certain cities by Lift Acts and Rules framed in those cities. It is noteworthy that there is no uniformity in these rules in respect of minimum standards of installation which should be fulfilled for safe working of lifts. The draft Indian Standard Code of Practice for Installation, Operation and Maintenance of

Electric Passenger and Goods Lifts is intended to give the necessary guidance in this regard. A section on ' Design Consideration ' has also been included and, it is hoped, that this will be useful in the selection of lifts and planning of their location in buildings.

Batch Type Concrete Mixers

The draft Indian Standard Specification for Batch Type Concrete Mixers lays down requirements regarding water tanks and fittings, loaders, hoppers, discharge heights, power units, road-worthiness, etc, of both tilting and non-tilting types of batch concrete mixers. The draft has been prepared with a view to assisting their users in obtaining concrete mixers capable of mixing concrete to a satisfactory standard with good mechanical efficiency and rated output.

CHEMICAL DIVISION

Cutting Oil, Sulphurized

In order to assist manufacturers for maintaining the quality of their product at the prescribed level, and also to ensure the interest of consumers regarding quality, the draft Indian Standard Specification for Cutting Oil, Sulphurized, has been prepared. The draft prescribes the requirements and methods of test for two grades of cutting oil, sulphurized, which is used as coolant and lubricant for cutting tools running at high speeds. These grades are based mainly on viscosity and sulphur content of the material.

Bleaching Earths

Requirements for two grades of acidic and one grade of neutral bleaching earth are prescribed in the draft Indian Standard Specification for Bleaching Earths of Indian Origin Used for Decolourizing Vegetable Oils. The requirements included in the draft are based on the experience of manufacturers, consumers and testing laboratories in the country, as also on the valuable data supplied by CSIR and its laboratories. Methods of test of bleaching earths are covered by IS:1035-1957 Methods of Sampling and Test for Bleaching Earths Used for Decolourizing Vegetable Oils, which is a necessary adjunct to this draft.

Gents' Shoes

Fabrication of footwear is a big and firmly established industry in the country. Of late, ample encouragement has been provided to the industry by the fast developing possibility of a good export market being established. Keeping in view the potentialities of this new development, it was considered expedient that the basic requirements for gents' shoes be specified in a national standard on the subject in order to assist manufacturers to fabricate gents' footwear of uniform and dependable quality. Hence the draft Indian Standard Specification for Gents' Shoes has been prepared. Subsequently, specifications for ladies' and children's footwear will also be formulated.

Miners' Boots and Shoes

A departmental specification for miners' boots and shoes has already been drawn up by the Miners' Boots Committee, set up in 1959, by the Ministry of Labour and Employment, Government of India. This committee was required, firstly to recommend a protective footwear for coal miners compatible with health, safety, habits and cost; and secondly, to examine whether the types of footwear currently used by miners are suitable or not. After the preparation of the departmental specification necessity was felt to make a national standard also on the subject, and hence the draft Indian Standard Specification for Miners' Boots and Shoes has been prepared.

Polystyrene Moulding Materials

Three types of polystyrene moulding materials are covered in the draft Indian Standard Specification for Polystyrene Moulding Materials consisting essentially of polymerized styrene without pigments. Type 1 is the general purpose material suitable for injection moulding and extrusion; Type 2 is also a general purpose material with better mould-release and flow characteristics than Type 1; and Type 3 is a material of high impact strength and elongation, based on rubberized polystyrene. The draft also prescribes the requirements and methods of test for all the three types of polystyrene moulding materials.

Unsupported Flexible Vinyl Film and Sheeting

Flexible vinyl film and sheeting are manufactured from a polymer of vinyl chloride or a co-polymer, the major constituent being vinyl chloride. Such material should be suitably compounded and then converted into film or sheeting of nominal thickness usually in the range of 0·075 to 0·500 mm.

The draft Indian Standard Specification for Unsupported Flexible Vinyl Film and Sheeting covers the requirements and methods of test for the material of the following two types:

Type 1 — General purpose unprinted film and sheetings; and
Type 2 — Printed film and sheetings of Type 1.

Methods of Test for Finished Plastic Mouldings

Plastic moulded products are finding ever-increasing applications in home and industry. With a view to getting uniform results, it is essential to lay down uniform methods of test for finished mouldings. Consequently the draft Indian Standard Methods of Test for Finished Plastic Mouldings, Part I, has been prepared. The draft covers:

a) Tests for visual examination, dimensional stability, specific gravity, degree of cure, permanence of print and colour bleeding; and
b) Methods for determination of acetone soluble matter, *p*H of the water extract, ammonia and ammonium compounds, phenols formaldehyde, sulphates and chlorides in phenolic mouldings.

Subsequent parts of the draft standard covering methods of test for individual type of moulding are under preparation.

Chemical Test for Industrial Water

The draft Indian Standard Methods of Test (Chemical) for Industrial Water, Part III is the last part of the draft standard. Parts I and II of the draft standard have already been issued into wide circulation. At the time of publication of the standard all the three drafts will be merged into one. Since one draft would have become voluminous hence the draft has been circulated in three parts.

This draft standard has been prepared to guide water testing laboratories in testing industrial water. Some of the methods prescribed may be applicable to sea water, sewage and trade effluents also but these have not been specifically covered.

ELECTROTECHNICAL DIVISION

Aluminium Conductors in Insulated Cables

In view of the increasing use of aluminium conductors in insulated cables for electrical purposes, the draft Indian Standard Specification for such conductors has been prepared. Existing Indian Standards for insulated cables require the use of copper conductors and the primary object of this draft is to specify dimensions and requirements for a range of aluminium conductors suitable for the same purpose. It is thus complementary to sections relating to copper conductors as given in IS: 1594-1960 Metric Sizes of Copper Wires and Conductors for Electrical Purposes.

Polyvinyl Chloride Sleeving

The draft Indian Standard Specification for Polyvinyl Chloride Sleeving, suitable for general use, including equipment and components for tropical use, has been prepared at the instance of the Directorate of Technical Development and Production (Air), Ministry of Defence. In view of the increasing use of PVC sleevings, it was keenly felt that standardization of dimensions and wall thicknesses in addition to performance requirements should be done at the national level.

Audio Amplifiers

The draft Indian Standard Recommendations for General Requirements for Audio Amplifiers covers a number of electrical, mechanical and other requirements excluding performance requirements of general purpose audio amplifiers. Both mains operated and battery operated amplifiers are dealt with in the draft which is one of a series of Indian Standards being published on the subject.

ENGINEERING DIVISION

Galvanized Steel Wires

The following five draft Indian Standard Specifications have been prepared:

a) Galvanized Steel Barbed Wire for Fencing (Draft Revision of IS: 278-1951);
b) Galvanized Steel Wire, Chain Link Fences;
c) Stranded Galvanized Steel Wire for Fencing;
d) Galvanized Stay Strand for Telegraph and Telephone Purposes, Signal Posts and Suspension Strand; and
e) Galvanized Steel Wire Strand for Signalling Purposes.

These drafts specify the requirements in respect of materials, freedom from defects, etc, and prescribe mechanical and coating tests for various types of galvanized steel wires used for different purposes.

Graphite for Pencil Slips

The object of the draft Indian Standard Specification for Graphite for Pencil Slips is to assist the development of the indigenous pencil industry which is gradually growing up. The draft recognizes graphite of two grades depending on the fineness and ash content. An Indian Standard Specification for Black Lead Pencils (IS: 1375-1959) has already been published.

Installation and Maintenance of Belt Drives for Power Transmission

Drive selection and layout; design, installation and maintenance of belt drives; and fitting fasteners, are dealt with by the draft Indian Standard Code of Practice for Installation and Maintenance of Belt Drives for Power Transmission.

Rubber and Canvas Conveyor and Elevator Belting

The draft Indian Standard Specification for Rubber and Canvas Conveyor and Elevator Belting covers the requirements for the rubber cover, fabric and tests for the belting specified in the title of the Indian Standard. Belting, in accordance with this specification, is not suitable for such applications as involve fire and heat resistance and foodstuff processes.

STRUCTURAL AND METALS DIVISION

Methods of Sampling of Non-Ferrous Metals

The difficulty in obtaining a thoroughly representative sample of non-ferrous metals and alloys lies in the fact that the impurities or the alloying elements tend to segregate in the process of solidification. Hence the procedure recommended in the draft Indian Standard Methods of Sampling Non-Ferrous Metals in the form of ingot, casting, slab, billet, sheet, etc, have been evolved with due regard to the existing knowledge of type and extent of segregation likely to occur in the particular item.

TEXTILE DIVISION

Marking Textile Materials Made of Wool

The aim of the draft Indian Standard Guide for Marking Textile Materials Made of Wool is to establish a generally recognized usage of terms used for marking textile materials made wholly or partly of wool. The draft provides guidance for the application of terms to be used in marking textile materials containing not less than 20 percent, by weight, of wool fibre. The draft does not lay down a method for determining the percentage by weight of wool present in a given textile material.

Determination of Breaking Load and Elongation at Break of Woven Wool Fabrics

The draft Indian Standard Method for Determination of Breaking Load (Strength) and Elongation at Break of Woven Wool Fabrics (By Constant-Rate-of-Traverse Machine) has been prepared with a view to eliminating, as far as possible, variations in their testing procedure. The draft provides for the use of test specimen in the form of the following two types of strips:

a) Ravelled strips — for testing such fabrics of which threads can be easily ravelled, for instance, unmilled fabrics; and
b) Cut strips — for testing such fabrics of which the threads cannot be easily ravelled, for instance, heavily milled fabrics.

Determination of Length and Width of Wool Fabrics

Terminology, sampling, atmospheric conditions for testing, conditioning of test sample, equipment and procedure are covered in the draft Indian Standard Method for Determination of Length and Width of Wool Fabrics.

Jute and Hemp Cords

The following four draft Indian Standard Specifications have been prepared in respect of jute and hemp cords:

a) Country Jute Twine, Three-Ply;
b) Spun Yarn, Jute, 18-Ply;
c) Tarred Hemp Marline, Two-Ply; and
d) White Indian Hemp Line.

These drafts prescribe terminology, sampling, atmospheric conditions for testing, conditioning of samples, general and specific requirements and methods of test for the specific items covered by each.

Shuttles for Plain Calico Looms

The draft Indian Standard Specification for Shuttles for Plain Calico Looms prescribes requirements for

(*Continued on p.* 51)

New Subjects Approved for Formulating Indian Standards

The following list gives the new subjects approved by the Division Council concerned or its Standing Working Committee during July, August and September 1960 for formulation of Indian Standards.

Agricultural and Food Products Division

Parathion, Technical
Hexagonal Type Concrete Bins for Bulk Storage
Silos
Flat Storage
Fork Lifts for Stocking Grain Bags
Seeds of Temperate Type Vegetables Like Cabbage, Cauliflower, etc
Seeds of Important Crops Like Wheat, Maize, Rice, etc
Seed Potatoes
Sugar Cane Setts
Budded Grafts and Seedlings of Ornamental Flowers Like Roses, Chrysanthemum, etc
Grafts of Fruit-trees (Apples, Mangoes, Citrus Fruits, etc) and Runners of Bananas
Cardamom
Pepper
Ginger
Curry Powder
Chillies
Celery Seed
Fennel Seed
Coriander
Cumin Seed
Cloves
Turmeric
Mustard Powder
Methods of Sampling and Test for Spices and Condiments
Terminology for Spices and Condiments
Fresh Fruits
Fresh Vegetables
Processed Fruits and Vegetables
Packaging, Storage and Transport of Fruits and Vegetables
Arecanuts

Building Division

Acid Resistant Plugged Stoneware Pipes
Code of Practice for Selection, Installation and Maintenance of Sluice Valves
Gun Metal Plug Cocks with Glands, Screwed Ends as well as Flanged Ends for Water, Oil, Air and Steam Services for Various Pressures
Automatic Flushing Cisterns
Surface Boxes for Valves, Air Valves, etc
Penstocks (Sluice Gates) Used in Water Supply and Sewage
Methods of Test for Fibre Boards
Perforated Clay Bricks
Dead Lock (Mortice)
Special Security Lock

Engineering Division

Carpenter's Augers
Auger Bits
Auger Gimlets
All Steel Carpenter's Plane
Carpenter's Cramps
Carpenter's Squares
Spirit Levels
Fan Belts

Structural and Metals Division

Calibration of Brinell Hardness Testing Machines
Flanging Tests on Steel Tubes
Draft Expanding Tests on Steel Tubes
Bend Tests on Steel Tubes
Flattening Test on Steel Tubes
Test for Expansion of Copper & Copper Alloy Tubes
Method of Mercurous Nitrate Test for Copper and Copper Alloys
Tensile Testing of Grey Cast Iron
Simple Bend Testing of Aluminium and Aluminium Alloys, Sheet and Strip
Simple Bend Testing of Aluminium and Aluminium Alloys, Tube
Glossary of Terms Relating to Industrial Radiography and Fluoroscopy
Glossary of Terms Relating to Ultrasonic Testing
Recommended Practice for Radiographic Testing
Reference Blocks for Routine Checking of Ultrasonic Testing Equipment
Refined Nickel
Silica Flour for Foundry Purposes
Bulb Plates

DRAFT INDIAN STANDARDS — *Continued from p. 50*

6 sizes of shuttles ranging from 343 to 419 mm commonly used in the cotton weaving industry. Requirements are included for shuttles of ordinary (kissing) type.

DRAFT INDIAN STANDARDS TO BE CIRCULATED

During the period under report, the following draft Indian Standards were being processed to be put into wide circulation in the near future:

1) Schedule of Unit of Weights of Building Materials
2) Code of Practice for Manufacture of Lime in Mixed-Food Vertical Kiln
3) Specification for Venetian Blinds for Windows
4) Specification for Magnesium Powder for Explosives and Pyrotechnical compositions
5) Specification for Alumino Ferric
6) Specifications for Stainless Steel Milk Cans
7) Methods of Test for Dairy Industry — Part III: Bacteriological Examination of Milk
8) Method of Determination of Freezing Point of Milk
9) Specification for High Silica Sand
10) Specification for Sodium-Base Bentonite for Use in Foundries
11) Specification for Silvered Mica Capacitors
12) Specification for Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting
13) Specification for Braided Cables with Copper Conductors for Overhead Transmission Lines

Draft Standards from Commonwealth Countries

The following draft standards from Commonwealth Countries were received for comments during the period 16 June to 15 September 1960. Copies of these documents are available in ISI Library for reference.

Australia

Doc-468 Methods for Testing Vitreous Enamel Finishes
Doc-469 Polyethylene Film
Doc-470 Determination of Corrected Invoice Weight of Textile Material
Doc-471 Rules for the Use of Precast Concrete Blocks in Buildings
Doc-472 Precast Concrete Blocks
Doc-473 Mortar for Unit Masonry Construction
Doc-474 Design, Construction, Inspection and Operation of Boilers and Unfired Pressure Vessels and Their Appurtenances. Part 1: Boilers Other than Water Tube and Locomotive Boilers for Railway Purposes
Doc-475 Size Measurements for Boy's Pyjamas
Doc-476 Preferred Numbers
Doc-477 Dial Test Indicators (Level Type)
Doc-478 Cast Iron Angle Plates and Box Angle Plates for Workshop
Doc-479 Spring Callipers and Dividers
Doc-480 Methods of Testing Plastics. Part 4: Analytical Methods and Viscosity in Solution. Part 5: Miscellaneous Methods
Doc-481 Corrugated Steel Pipes, Pipe-Arches and Arches
Doc-482 Ropes Made from Manila and Sisal
Doc-483 Pressure Sensitive Adhesive Packaging Tapes
Doc-485 Cellulose Acetate Moulding Compounds
Doc-486 Aluminium Ingots for Remelting
Doc-487 High Voltage Cables
Doc-488 Pressure Sensitive Adhesive Electrical Tapes
Doc-489 Iron Castings with Spheroidal or Nodular Graphite
Doc-490 Knurling Wheels
Doc-491 Adjustable Hand Reamers with Inserted Blades
Doc-492 Grinding Wheels
Doc-493 Cotton Mops
Doc-494 Determination of Length of Woven or Knitted Fabrics
Doc-495 Thin PVC Sheeting (Flexible, Unsupported)
Doc-496 Ceiling Roses (Low Voltage, 5-Ampere Rating)
Doc-497 Determination of Copper in Iron and Steel
Doc-499 Paints, Varnishes, Lacquers and Related Materials
Doc-500 Isolating Transformers
Doc-503 Infant's and Girl's Pyjamas (Woven Fabrics)

Canada

B 71.5-19 Tubular Rivets
C 105 Indoor High-Potential Full-Load Air Interrupter Switches
Z 69 A Radiation Symbol

Ireland

S 99 Glazed Ware Pipes

New Zealand

D 6266 Electrically Heated Blankets for Domestic Use
D 6281 Model Building Bylaw

Pakistan

EDC/SC 4/1 A.C. Electricity Meters

Rhodesia and Nyasaland

D (T1) 4 Tarpauline
D (BC7) 7 Straight-Run Bitumen and Fluxed Lake Asphalt for Roadmaking Purposes
D (BC7) 8 Cutback Bitumens for Roadmaking Purposes
D (BC7) 9 Test Methods for Bitumen

South Africa

SABS 15/5/1/2 School Book-keeping Books
SABS 15/5/2/1 Toilet Paper
SABS 15/5/2/2 Paper Towels
SABS 15/5/2/3 Carbon Paper
SABS 15/8/1/2 Doc. 17 Materials for Reconditioning Passenger Car Tyres
SABS 15/22/7/7 Fusion Welded Portable Cylindrical Tanks for Liquefiable Gases
SABS 15/23/19 Hypodermic Syringes
SABS 15/24/2/2 Doc. 18 Semi-flexible Vinyl or Asbestos Floor Tiles
SABS 15/24/4 Doc. 11 Flexible Polyvinyl-Chloride Hose
SABS 15/26 Doc. TC/2 Hypodermic Needles for General Medical Use
SABS 15/36/4 Pine Oil and Substituted Phenolic Liquid Antiseptic
SABS 17/4/21 Moulded Case Circuit Breakers

United Kingdom

AA(TMT)53 Loom Weft Forks and Grates
AA(E)110 Direct-Reading Personal Radiation Dosemeters
AA(TIB)130 British-Made Blockboard and Laminboard
AA(MEE)258 Drafting Reference Tables and Benches
AA(MEE)259 Draughtsmens' Seats
AA(MEE)260 Drafting Stands
AA(MEE)268 Axleboxes (Roller Bearing) for Railway Rolling Stock
AA(RPE)284 Classification, Sampling and Methods of Testing High Temperature Insulating Refractories
AA(PLC/RUC)285 Flexible Urethane Foam Components for Upholstered Furniture
AA(M)290 Spectacle Frames Made of Cellulose Acetate
AA(SGC)291 Spencer Wells Artery Forceps (Straight and Curved) with Box Joints
AA(PLC)310 Chemically Bonded Glass Fibre Mat for Plastics Reinforcement
AA(SFE)319 Domestic Heating Stoves Using Coke and Other Solid Fuels
AA(ELE)372 Capacitors for Connection to Power-Frequency Systems
AA(ADC)385 Glue Size for Decorators' Use
AA(C)414 *p*H Scale
AA(ACM)458 Normal Equal-Loudness Contours for Pure-Tones and Normal Threshold of Hearing Under Free-Field Listening Conditions
AA(ACE)504 Aircraft Material, Aluminium and Aluminium Alloys Wires for Rivets

AA(ISE)532 Methods for the Analysis of Iron and Steel: Determination of Tin in Iron and Steel

AA(ISE)533 Methods for the Analysis of Iron and Steel: Determination of Nickel in Iron and Steel and Permanent Magnet Alloys

AA(PLC)538 Rainwear from Polyvinyl Chloride Sheeting

AA(TMT)620 Drop Wires for Warp Stop Motions

AA(MEE)630 Stainless Steel Compression Pipe Fittings

AA(PVC)667 Lead Chromes and Zinc Chromes for Paints

AA(PHC)733 Identification of Exposed Colour Roll Film

AA(ISE)800 Galvanized Steel Wire for Armouring Submarine Cables

AA(T)824 Ropes Made from Coir, Hemp, Manila and Sisal

AA(SGC)840 Methods of Measurement of Surgical Footwear

AA(MEE)1004 Drg. No. B.S. 689-108 Signal Wire Connections. Drg. No. B.S. 689-207 Joints and Connections

AA(P)1109 Recommendations for the Carriage of Live Animals by Air — Rodents, Rabbits and Small Fur-Bearing Animals

AA(P)1110 Recommendations for the Carriage of Live Animals By Air — Dogs and Cats

AA(COT)1314 Regatta Fabrics (As Purchased by Local Authorities and Hospitals)

AA(ISE)1329 Pearlitic Malleable Iron Castings

AA(ISE)1330 Iron Castings with Spheroidal or Nodular Graphite

AA(B)1358 Cable Covers (Concrete and Earthenware)

AA(INE)1367 Indicating Tachometers for General Industrial Use

AA(NFE)1388 Methods for the Sampling and Analysis of Tin and Tin Alloys. Part 8: Determination of Bismuth in Ingot Tin, Tin-Lead Solders and White Metal Bearing Alloys

AA(NFE)1389 Methods for the Sampling and Analysis of Tin and Tin Alloys. Part 9: Determination of Arsenic in Ingot Tin and Tin-Lead Solders

AA(NFE)1390 Methods for the Sampling and Analysis of Tin and Tin Alloys. Part 10: Determination of Iron in Ingot Tin, Tin-Lead Solders and White Metal Bearing Alloys

AA(NFE)1391 Methods for the Sampling and Analysis of Tin and Tin Alloys. Part 11: Determination of Tin in Solders

AA(NFE)1392 Methods for the Sampling and Analysis of Tin and Tin Alloys. Part 12: Sampling of Solders

AA(FSB)1409 Portable Fire Extinguishers of the Dry Powder Type

AA(ACE)1410 Glossary of Aeronautical Terms. Section 10: Auxiliary Services

AA(ACE)1411 Glossary of Aeronautical Terms. Section 11: Navigation

AA(ACE)1412 Glossary of Aeronautical Terms. Section 12: Parachutes

AA(ACE)1413 Glossary of Aeronautical Terms. Section 13: Air-Traffic and Ground Services

AA(ACE)1414 Glossary of Aeronautical Terms. Section 14: Radiocommunication and Radiolocation

AA(GLC)1452 Hollow Glass Blocks

AA(DAC)1464 Milk Tankers

AA(FHB)1543 All Steel Barns (with Curved Roofs)

AA(ISE)1572 Steel for Marine Boilers

AA(M)1665 Addendum to B.S.3030 School Furniture, Part 2: 1959 Performance Tests—Performance Tests for School Stools, Housecraft Tables and Large Tables

AA(M)1666 B.S.3030, School Furniture, Part 6 — Anthropometric Data and Related Information for Design of Furniture and Fittings (Excluding Data for Sitting Work)

AA(M)1667 School Furniture, Part 7: Woodwork and Metalwork Room Furniture

AA(M)1668 School Furniture, Part 10: Housecraft and Needlework Room Furniture

AA(M)1669 Kitchen Stools and Container Stands for School Catering

AA(SAB)1696 Ceramic Wash Basins and Pedestals

AA(MEE)1708 Dimensions of Toroidal Sealing Rings ('O' Seals and Their Housings)

AA(MEE)1710 Alloy Steel Chain Slings

AA(ELE)1757 Mains Operated Snychronous Clocks

AA(DNC)1839 Artificial Teeth Made of Acrylic Materials

AA(PVC)1850 Machine Made Shellac

AA(ACE)1955 Cartridge Fuses for Aircraft Part 3: Cartridge Fuse-Links (Type B)

AA(M)2018 Aluminium Food Storage Cannisters (for Use by Local Authorities)

AA(HIB)2019 Culinary Baling Bowls for Local Authorities

AA(ELE)2020 Measurement of Electrical Power and Energy for Acceptance Testing

AA(M)2036 Aluminium Pudding Basins (for Use by Local Authorities)

AA(TLE)2147 Electronic-Valve Bases, Caps and Holders

AA(LBC)2194 Apparatus (Including Flasks and Receivers) for the Determination of Distillation Range

AA(LBC)2195 Separating and Dropping Funnels

AA(LBC)2196 Lunge-Rey Weighing Pipette

AA(SAB)2219 Cast Iron Baths

AA(PVC)2220 Red Lead for Paints and Jointing Compounds

AA(ELCP)2241 Draft Revision of CP 1005, Code of Practice on the Use of Electronic Valves

AA(TLE)2242 Retainers for Electronic Tubes and Valves, Part 1: General Requirements and Tests

AA(P)2247 Carriage of Live Animals by Air Reptiles

AA(ELE)2360 Electric Cooking and Heating Appliances, Part 1: General Specification

AA(P)2390 Glass Carboys and Carboy Hampers

AA(M)2408 Part 3A, Special Requirements for Assault Poles of B.S. 3191, 'Fixed Playground Equipment for Schools'

AA(SFE)2413 Measurements of Smoke Emission From Industrial Boilers, Coal Fired Shell Boilers with Various Types of Mechanical Stokers

AA(TIB)2427 Information About Plywood

AA(AGE)2454 Agricultural Power Take-off Shafts and Guards Part 1: Power Input Connections and Yokes

AA(AGE)2455 Agricultural Power Take-off Shafts and Guards, Part 2: Single Extension P.T.-O. Shaft Lengths

AA(AGE)2456 Drawbars and Hitches for Agricultural Machines, Implements and Trailers, Part 1: Dimensions of Standard Automatic Hitch

AA(AGE)2457 Wheels for Agricultural Machinery, Implements and Trailers, Part 1: Wheel and Hub Centre Dimensions

AA(M)2516 Glossary of Terms Relating to Ophthalmic Lenses and Spectacle Frames

AA(LBC)2573 Design of Glass Vacuum Desiccators

AA(LIT)2819 Tarpaulins for Tropical Use

AA(SFE)3138 Back Boilers for Use in Domestic Solid Fuel Appliances

A(PVC)3698 Black Bitumen Coatings Type A. Bitumen Solution for General Purposes
A(PVC)3699 Black Bitumen Coatings Type B. Bitumen Solution for Cold Water Tanks
A(MEE)8648 Heavy Duty Electric Overhead Travelling & Special Cranes for Use in Steel Works
A(MECP)8991 Code of Practice on Selection and Installation of Domestic Gas Cooking Appliances
A(MECP)8992 Code of Practice on Flues for Gas Appliances
A(WPC)9043 Copper/Chrome Water-Borne Wood Preservatives and Their Application
A(WPC)9044 Fluoride/Arsenate/Chromate/Dinitrophenol Water-Borne Wood Preservatives and their Application
A(ISE)9112 Investment Castings in Metal, Part 2: Corrosion, Heat, and Wear Resisting Alloys
A(ELE)9113 Cotton Covered Copper Conductors, Part 1: Round Wire
A(ELE)9114 Cotton Covered Copper Conductors, Part 3: Round Wire: Metric Units
A(BMB)9176 Roofing Felts (Bitumen and Fluxed Pitch)
A(NFE)9198 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 1: Sampling of Ingot Tin
A(NFE)9199 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 2: Determination of Tin in Ingot Tin
A(NFE)9200 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 3: Determination of Antimony in Ingot Tin
A(NFE)9201 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 4: Determination of Copper in Ingot Tin and Tin Lead Solders
A(NFE)9202 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 5: Determination of Lead in Ingot Tin and Tin Antimony Solders
A(NFE)9203 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 6: Determination of Copper in High Purity Ingot Tin
A(NFE)9204 Methods for the Sampling and Analysis of Tin and Tin Alloys, Part 7: Determination of Silver in Solders
A(PHC)9216 Sizes of Sensitized Materials for Recording Instruments
A(TMT)9238 Loom Pirn Trays (Pirn Trays for 1 in., $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. dia Pirns)
A(SFE)9252 Glossary of Coal Terms
A(BLCP)9303 Code of Practice on Fire Precautions in Flats and Maisonettes
A(SFE)9390 Performance Testing of Convection Type Space Heaters Operating on Steam or Hot Water
A(MEE)9391 The Izod Impact Test
A(BLCP)9498 Code of Practice for Bitumen Felt Roof Coverings
A(SGC)9506 Orthopaedic Calipers Made of Aluminium Alloy (Jointed and Unjointed)
A(CRE)9573 Glossary of Mining Terms, Explanatory Notes on Compilation of the Glossary
A(ELE)9680 PVC-Covered Conductors for Overhead Power Lines
A(ELE)9696 Method for Grading Muscovite Mica By Size
A(PAC)9709 Industrial Paper Towelling and Dispensing Cabinets
A(OEM)9753 Typewriters
A(ELE)9822 Dimensions of Lampholder, Plug Part and Gauges for Capless Photo-Flash Lamps
A(TPC)9848 Benzenes and Benzoles
A(TPC)9849 Toluenes
A(TPC)9850 Xylenes
A(DAC)9861 Methods for the Sampling and Analysis of Rennet Casein (Part 1: Methods)
A(SAB)9877 Tap Washers for B.S. 1010 Taps
A(ELE)9888 Enamelled Copper Conductors (Oleo-Resinous Enamel), Part 1: Round Wire
A(DAC)9902 Methods for the Chemical Analysis of Butter
A(PEE)9903 Metallic Spiral-Wound Gaskets for the Petroleum and Petrochemical Industry
A(RDE)9949 Mastic Asphalt (Limestone Aggregate) for Roads and Footways
A(RDE)9951 Mastic Asphalt (Natural Rock Asphalt Aggregate) for Roads and Footways

FOURTH MEETING OF ISO/TC 38 — TEXTILES — *Continued from p. 20*

This proposal was accepted and a new working group (ISO/TC 38/WG 7) was set up with France as its secretariat.

The committee met with Mr. A. W. Bayes of the United Kingdom in the chair. The Indian delegation to these meetings consisted of Brig N. N. Chopra (Leader of the delegation) and Major V. Dhruva both of Military Adviser's Department, High Commission of India, London; Shri S. N. Hakim of Shree Ambica Jute Mills Ltd., Howrah; Shri A. R. Ramanathan of the Travancore Rayons Ltd., Rayonpuram Post, Kerala; Shri S. G. Shah of Sankalchand G. Shah & Co. (P) Ltd., Bombay; and Shri K. G. Thanawala of M. Best Cotton Rope Manufacturing Co., Bombay.

A CORRECTION

In line 7 from top in the middle column of p. 292 of Volume 12, No. 6 of this Bulletin please read '440 000' in place of 4·4 million. The corrected sentence would then read as: 'Production in India in 1959 of the various types of storage batteries totalled about 440 000 pieces, including motor vehicle batteries of which latter about 45 percent bear the ISI Certification Mark'.

STANDARDS ADDED TO ISI LIBRARY

The list includes standards received in ISI Library during 16 *June to* 15 *September* 1960. *Full titles of only those standards are given which, besides being accessioned in the Library, are also stocked by ISI for sale. Numbers of all other standards are listed under their respective general classification headings. Readers, who are interested in obtaining their titles or any other information concerning them, are requested to address the Librarian.*

The standards are in the official language(s) of the country of origin.

001.4 Scientific Nomenclature. Terminology

Japan: JIS Z 8103: 1959 Glossary of Terms Used in Instrumentation
Netherlands: NEN 3165
Spain: UNE 4070
UK: BS 204: 1960 Glossary of Terms Used in Telecommunication (Including Radio) and Electronics
BS 3203: 1960 Glossary of Paper, Stationery and Allied Terms

003.62 Notations. Symbols

Germany: DIN 18072
Netherlands: NEN 3011
South Africa: SABS 071
UK: BS 3238: Part 1: 1960 Graphical Symbols for Components of Screw-Mechanism: Transductors and Magnetic Amplifiers
USA: ASA Y10.14: 1959 Letter Symbols for Rocket Propulsion

389.151 Metric Conversion

USA-American Petroleum Institute: API RP 5D

389.171 Preferred Numbers

Czechoslovakia: CSN 01 0201
Germany: DIN 323 Bl.2

53 Physics and Mechanics

Chile: INDITECNOR 22-1 to -3
Czechoslovakia: CSN 65 0310
Germany: DIN 6163 Bl.1-7; 16356
Japan: JIS B 7505: 1959 Pressure Gage
JIS B 7516: 1959 Steel Ruler
JIS B 8318: 1959 Correcting Method for Compressor
JIS Z 4308: 1959 Pocket Chamber and Dozimeters
JIS Z 4309: 1959 Ionization Chamber Type Radiation Doze Ratemeters
JIS Z 4310: 1959 Geiger-Muller Counter Type Radiation Survey Meters
JIS Z 4311: 1959 Radiation Bell Alarm Meters
JIS Z 8103: 1959 Glossary of Terms Used in Instrumentation
UK: BS 734: Part 2: 1959 Density Hydrometers for Use in Milk: Methods
BS 3231: 1960 Thermographs (Bi-metallic Type)
USA-National Bureau of Standards: NBS C 600

54 Chemistry

Czechoslovakia: CSN 65 1153, 6130, 6131, 6134
Germany: DIN 12695, 696, 700
Netherlands: NEN 1748 to 1750, 1753
Spain: UNE 7129

UK: BS 1428: Part A4: 1960 Halogens and Sulphur
BS 1428: Part B2: 1960 Ammonia Distillation Apparatus (Markham): Microchemical Apparatus
BS 1428: Part H1: 1960 Weighing Vessels for Microchemical Analysis
BS 3202: 1959 Recommendations on Laboratory Furniture & Fittings
BS 3218: 1960 Test Tubes and Boiling Tubes
USA: ASA C83.23: 1960 Method for the Determination of the Elastic, Piezo-electric, and Dielectric Constants of Piezoelectric Crystals — The Electro-mechanical Coupling Factor
USA-Compressed Gas Association: CGA-G-2, -4, -5
USA-Toilet Goods Association: TGA 29

553 Minerals and Ores

Yugoslavia: JUS B. F1.010, .030, .050; B.91.050; B.95.010, .020

614.8 Accident Prevention. Safety

Belgium: NBN 549
Canada: 47-GP-1A, -2A, -4
Czechoslovakia: CSN 63 7415
Germany: DIN 6811 to 13
India-Ministry of Defence: IND/GS 941
Japan: JIS Z 9101: 1959 General Code of Safety Colour
Netherlands: NEN 3210
UK: BS 896: Part 1: 1960 Stretchers and Stretcher Carriers: Dimensions
BS 1542: 1960 Equipment for Eye, Face and Neck Protection against Radiation Arising During Welding and Similar Operations
BS 1651: 1960 Industrial Protective Gloves
BS 1721: 1960 C.T.C. and C.B.M. Portable Fire Extinguishers
BS 1869: 1960 Protective Helmets for Racing Motor Cyclists
BS 2495: 1960 Protective Helmets and Peaks for Racing Car Drivers
UK-Ministry of Supply: DTD 810A; SSM (L) 6-1/3
UK-Joint Service Department (Home Office): JCDD-14
Yugoslavia: JUS Z.C2, .020, .025, .030, .035, .040, .045

615 Medical and Surgical Instruments

UK: BS 1938: 1960 Instrument Tables for Use in Hospitals, Opening Theatres
BS 3204: 1960 Harrison's Bowl Forceps
BS 3213: 1960 Hospital Pressure Sterilizers for Water
BS 3215: 1960 Glass Urine Bottles (for Male Use)
BS 3219: 1960 Horizontal Cylindrical Hospital Sterilizers
BS 3220: 1960 Horizontal Rectangular Hospital Sterilizers: Pressure Steam Type
BS 3221: 1960 Medicine Glasses
BS 3233: 1960 Pressure Steam Sterilizers of Small Size
BS 3236: 1960 Dressing Trolleys
BS 3246: 1960 Halsted's Mosquito Forceps

617.7 Opthamology

UK: BS 3199: 1960 Measurement of Spectacles, Method and Glossary

620.1 Materials Testing

Italy: UNI 4237 to 40
Japan: JIS Z 1519: 1959 Volatile Corrosion Inhibitor
UK: BS 1017: Part 1: 1960 Sampling of Coal and Coke: Sampling of Coal
BS 1017: Part 2: 1960 Sampling of Coal and Coke: Sampling of Coke
BS 3228: Part 2: 1960 Procedures for Obtaining Properties of Steel at Elevated Temperatures
Yugoslavia: JUS C.A4.012 to .015

621-1/-9 Machinery Details

Germany: DIN 800; TGL 6863
Hungary: MNOSZ 14453
Netherlands: NEN 3086
Switzerland: VSM 16200, 201, 220
UK: BS 3245: 1960 Jointing Compounds for Use in Liquefied Petroleum Gas Appliances and Installations
USA-Department of Military: MIL-C-13832; MIL-G-11719; -12803

621.165 Steam Turbines

Japan: JIS F 4201: 1959 Size of Dry Combustion Cylindrical Boiler for Marine Use
JIS F 7201: 1959 Marine Water Strainer

621.3 Electrical Engineering

Belgium: NBN 133; 505
Canada: CSA C22.2 No. 0; 52-GP-12, -13
Canada-Canadian Electrical Manufacturers Association: CEMA 15 C-2
Czechoslovakia: CSN 34 1100, 6432, 7403, 20, 23, 45, 53, 8730, 31, 32, 83; 35 0201, 4150, 4509; 72 5761, 62
France: NF C 33-100; C 61-520; C64-030, -080, -168; C68-301
Germany: DIN 6839; 40801; 41102, 542; 45060, 207; 46434 Bl.1-2; 47260, 301 Bl.1-2, 403, 412, 414, 460 to 462, 613 Bl.1-3; 49659; TGL 2728; 3402; 3929; 4176; 4560; 4699; 5354, 58; 5424; 5613; 6244; VDE 0879 Pt.1
Hungary: MNOSZ 9850, 54, 61

India-Department of Posts & Telegraphs: ITD No. S/MZ-120A; -124A
India-Ministry of Defence: ILE Report No. 3-5
India-Ministry of Railways: IRS E 17: 1959 Paper Insulated Cables for Railway Signalling
International Electrotechnical Commission: IEC 65: Appendix III: 1960 Safety Requirements for Electric Mains-Operated Radio Receiving Apparatus; Particular Specification for Electric Mains-Operated Television Receiving Apparatus
IEC 72-1: 1959 Dimensions and Output Ratings of Electric Motors
IEC 96-1: 1958 Radio-Frequency Cables
IEC 99-1: 1958 Lightning Arresters
Ireland: 99; 101
Japan: JIS C 2801: 1959 Commutator Bar
JIS C 4206: 1959 Three-Phase Squirrel-Cage Induction Motors for Textile Machines
JIS C 4208: 1959 Three-Phase Squirrel-Cage Induction Motors for Textile Machines (for Export)
JIS C 6443: 1959 Variable Carbon Resistors for General Use
JIS C 6444: 1959 Variable Carbon Resistors for Special Use
JIS C 7003: 1960 Designation System for Cathode-Ray Tube
JIS C 8305: 1959 Electric Conduit Tubes (Steel)
JIS C 8330: 1960 Couplings (for Steel Conduit Tubes)
JIS C 8331: 1960 Normal Bends (for Steel Conduit Tube)
JIS C 8350: 1959 Bayonet Lamp Holder
JIS C 8501: 1959 Dry Cells
JIS C 8504: 1959 Layer Dry Batteries
JIS C 8505: 1959 Terminals for Dry Cells and Dry Batteries
JIS C 3602: 1959 Signal Bond
JIS E 3603: 1959 Impedance Bond
JIS F 8823: 1959 Distribution Boards for Marine Use
JIS F 8824: 1959 Section Boards for Marine Use
JIS F 8825: 1959 Shore Connection Boxes for Marine Use
JIS W 7102: 1959 General Rule of Connectors, Electric, AN Type, for Aircraft
JIS Z 4801: 1959 Lead Rubber Sheet and Lead Polyvinyl Sheet for X-ray Shielding
JIS Z 4806: 1959 Medical X-ray Protective Screen
JIS Z 4807: 1959 Medical X-ray Protective Chair
Netherlands: NEN 2130; 3015; 3160
UK: BS 173: 1960 Rotating Electrical Machines for Use on Road and Rail Vehicles
BS 204: 1960 Glossary of Terms Used in Telecommunication (Including Radio) and Electronics
BS 397: 1960 Primary Cells and Batteries
BS 1270: 1960 Electric Discharge Lamps
BS 1497: Part 3: 1960 Impregnated Asbestos Covered Copper Conductors: Round Wire, Metric Units
BS 2133A: Part 1: 1960 Fixed Ceramic Dielectric Capacitors Grade I
BS 3188: Part 1: 1960 Enamelled Copper Conductors (Self-fluxing, Enamel with Polyurethane Base): Round Wire
BS 3207: Part 1: 1960 Mineral-Insulated Cable Copper-Sheathed Cables with Copper Conductors
BS 3214: 1960 Plugs and Locking Sockets for Electric Battery Vehicles & Trucks (300 Ampere Rating)
BS 3232: 1960 Safety Requirements for Medical Treatment Lamps
BS 3234: 1960 Polythene Insulation and Sheath of Electric Cables
BS 3239: 1960 Resistivity of Metallic Electrical Conductor Materials
BS 3242: 1960 Aluminium Alloy Conductors for Overhead Power Transmission
BS 3249: 1960 Cables and Flexible Cords Insulated with Varnished Cambric and Heat-Resisting Fibre
BS CP 327.201: 1960 The Reception of Sound and Television Broadcasting
UK: British Electricity Board: BEBS T1
UK-Electrical Research Association: ERA D/T 112; 117
USA: ASA C18.1: 1959 Dry Cells and Batteries
ASA C34.1: 1958 Requirements for Pool-Cathode Mercury-ARC Power Converters
ASA C37.6: 1959 Preferred Ratings for Power Circuit Breakers
ASA C78.1309: 1960 Physical and Electrical Characteristics of 1000-Watt Bt.56 (H12) Mercury Vapor Lamp
ASA C78.1310: 1960 Physical and Electrical Characteristics of 1000-Watt Bt.56(H15) Mercury Vapor Lamp
ASA C78.1312: 1960 Physical and Electrical Characteristics of 100-Watt Bt.56(H15) Fluorescent Mercury Vapor Lamp
ASA C83.21: 1958 Requirements for Solid Dielectric Transmission Lines
ASA C86.11: 1959 Shockproof Cable Terminals and Receptacles for Use on X-ray Equipment
USA-Department of Military: MIL-STD -439
USA-Electronic Industries Association: EIA RS-211; -222 to -225; -232; -235; -236; ERA A/T135; 144; ERA L/T369; 380; ERA O/T21, 23; V/T139; Z/T118; NEMA TR 17
USA-National Electrical Manufacturers Association: NEMA 155; AD1; CPI; EI 17; FBI; HU1; HV1; SG2; SG6; SK50
USSR: GOST 7830; 9124
Yugoslavia JUS B.H3.461; .462; B.H8.230

621.4 Internal Combustion Engines, Heat and Other Special Engines Other Than Steam Engines

Czechoslovakia: CSN 30 2405, 4107, 4108
Germany: DIN 4482
Hungary: MSZ 19936
Japan: JIS F 4303: 1960 Performance of Marine Internal Combustion Engines for Propelling Use
USA-American Petroleum Institute: API RP 7 C-11F

621.5 Pneumatic Machines. Refrigeration Technology

Czechoslovakia: CSN 14 0613, 0645, 0661
Switzerland: VSM 53130
USA-American Society of Refrigerating Engineers: ASRE 14; 18; 23 to 25; 32 to 35; 38
USA-Compressed Gas Association: CGA -P-1, -2

621.6 Storage Containers. Pipes. Valves

Canada: 24-GP-3
Czechoslovakia: CSN 11 0131, 7473
Germany: DIN 1746; 9107; 31550
Japan: JIS B 2041: 1960 Cast Iron 10 kg/cm² Flanged Glove Valves
JIS B 2062: 1960 Sluice Valves for Waterworks Purposes
JIS F 7301: 1959 Marine Bronze 5 kg/cm² Glove Valves
JIS F 7302: 1959 Marine Bronze 5 kg/cm² Angle Valves
JIS F 7303: 1959 Marine Bronze 16 kg/cm² Glove Valves
JIS F 7304: 1959 Marine Bronze 16 kg/cm² Angle Valves
JIS F 7305: 1959 Marine Cast Iron 5 kg/cm² Glove Valves
JIS F 7306: 1959 Marine Cast Iron 5 kg/cm² Angle Valves
JIS F 7307: 1959 Marine Cast Iron 10 kg/cm² Glove Valves
JIS F 7308: 1959 Marine Cast Iron 10 kg/cm² Angle Valves
JIS F 7309: 1959 Marine Cast Iron 16 kg/cm² Glove Valves
JIS F 7310: 1959 Marine Cast Iron 16 kg/cm² Angle Valves
JIS F 7356: 1959 Marine Bronze 5 kg/cm² Lift Check Valves
JIS F 7442: 1959 Marine 40 kg/cm² Welded Unions for Steel Pipe
JIS F 7443: 1959 Marine 40 kg/cm² Screwed Union for Steel Pipe
JIS G 5525: 1959 Cast-Iron Soil Pipes and Fittings
JIS K 6762: 1959 Polyethylene Pipes for Water Works Service
Netherlands: NEN 2285; 3238
Switzerland: VSM 11520; 18386, 549
UK: BS 336: 1960 Couplings, Branch Pipes, Nozzles, Strainers & Auxiliaries for Fire Hose
BS 430: 1960 Solid Drawn Steel Air Receivers
BS 669: 1960 Flexible Tubing and Connector Ends for Appliances Burning Town Gas
BS 1389: 1960 Dimensions of Hose Connections for Welding and Cutting Equipment
BS 1414: 1960 Flanged and Butt-Welding End Steel Outside-Screw-and-Yoke Wedge Gate Valves for the Petroleum Industry
BS 1570: 1960 Flanged and Butt-Welding End Steel Plug Valves for the Petroleum Industry (Excluding Well-Head and Flow-Line Valves)
BS 1735: 1960 Flanged Cast Iron Gate Valves Classes 125 and 250 for the Petroleum Industry
BS 1868: 1960 Flanged Steel Check Valves for the Petroleum Industry
BS 1873: 1960 Flanged Steel Globe Valves for the Petroleum Industry
BS 3016: Part 2: 1960 Pressure Regulators for Use with Butane/Propane Gases: Low Pressure Regulators for Use with Propane Gas
BS 3212: 1960 Flexible Tubing or Hose (Including Connections Where Fitted) for Use in Butane/Propane Gas Installations
BS C 13: 1960 Sizes of Gravity Filling Orifices on Aircraft
BS C 14: 1960 Coupling Dimensions for Aircraft Pressure Refuelling Connection
USA: ASA B31.3: 1959 Petroleum Refinery Piping
ASA B31.4: 1959 Oil Transportation Piping
ASA G46.1: 1959 Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for General Service
USA-American Petroleum Institute: API Bull. 1105; STD 6 CM; 1104
USA-American Water Works Association: AWWA D 100 to 102
USSR: GOST 9117 to 22, 31

621.753 Gauging. Tolerance

Czechoslovakia: CSN 01 4204
Germany: DIN 49660

Japan: JIS B4607: 1960 Outside Caliper
JIS B 4608: 1960 Inside Calipers

621.791 Welding

Germany: DIN 16931
Japan: JIS Z 3101: 1959 Welding Maximum Hardness Test Method
JIS Z 3202: 1959 Bare Welding Rod for Copper and Copper Alloys
UK: BS 2901: Part 2: 1960 Filler Rods and Wires for Inert-Gas Arc Welding: Wires for Gas Shielded Metal-Arc Welding

621.798 Packing and Despatch

Australia: SAA N.33: 1960 Wooden Cheese Crates (for Export Purposes)
Germany: DIN 55410
India-Ministry of Defence: E & S 5294; WS 627
Japan: JIS Z 0218: 1960 Adhesion Test of Gum Tapes
JIS Z 1401: 1960 Wooden Wool
JIS Z 1407: 1960 Wirebound Boxes
JIS Z 1508: 1960 Fibre-Board Boxes For Outer Packing
JIS Z 1509: 1959 Thick Paper Bag (for Potato Starch)
JIS Z 1511: 1960 Gummed Paper Tapes (for Packing)
JIS Z 1518: 1959 Paper String
JIS Z 1601: 1959 Steel Drum (for Liquid)
JIS Z 1606: 1959 Milk Can (Steel)
Spain: UNE 49300, 401 to 7 to 17
UK: BS 3200: 1960 Fibreboard Baskets for Tomatoes
USSR: GOST 5044; 5981

621.822 Bearings

Czechoslovakia: CSN 02 4608
Germany: DIN 617; 625 Bl.1-3; 635; 711 Bl.1-3; 715; 720
International Organization for Standardization: ISO R 113: 1959 Ball and Roller Bearings Accessories
Italy: UNI 4219 to 23
Japan: JIS B 1536: 1959 Needle Roller Bearings
JIS B 1547: 1959 Inspection Method for Needle Roller Bearings

621.855 Chain Transmission

Japan: JIS B 1801: 1960 Transmission Roller Chain
USA-Hoist Manufacturers Association: HMA 300

621.861 Pulley

UK: BS 3243: 1960 Hand-Operated Chain Pulley Blocks

621.88 Means of Attachment. Fastenings

Czechoslovakia: CSN 30 3706, 3709 to 3712
Germany: DIN 799; 908; 913; 7516; 7962 Bl.1, 81 to 88, 96, 97; TGL 0-931; -933
India-Ministry of Defence: IND/GS/DRG 2144; M175 A(C)
International Organization for Standardization: ISO R 106: 1959 Light Metal Rivets for Shipbuilding: Nominal Diameters, Rivet Hole Diameters and Clearances
ISO R 107: 1959 Light Metal Rivets for Shipbuilding: Rivet Heads:
Japan: JIS B 0226: 1959 Screw Threads for Sewing Machine
JIS B 1256: 1959 Plain Washer
JIS B 1353: 1959 Split Taper Pin
JIS B 4616: 1959 Bench Vice
JIS B 4620: 1959 Parallel Bench Vices (Type A)
JIS B 4621: 1959 Parallel Bench Vices (Type B)
JIS B 4622: 1959 Leg Vice
Netherlands: NEN 102; 303; 697; 1241; 1364, 89, 90; 1442, 86 to 88; 1555, 60, 68; 1602 to 04, 24, 25; 1782; 1927, 28; 1948; 2327 to 35
Spain: UNE 17021
Switzerland: VSM 12180, 181 Bl.1-2, 182, 183 Bl.1-2, 771; 35920
UK: BS 3155: 1960 American Machine Screws and Nuts
BS A 210: 1960 Brass Nuts (Unified Hexagons and Unified Threads) for Aircraft
USA: ASA B1.10: 1958 Unified Miniature Screw

621.89 Lubrication

Canada: 3-GP-44A; 3-GP-420
Germany: DIN 51505
Hungary: MNOSZ 13174; MSZ 13155
Japan: JIS K 2222: 1959 Graphite Grease
JIS K 2223: 1959 Aluminium Grease
UK: BS 3223: 1960 Calcium-Base Greases
USA: ASA Z11.16: 1960 Analysis of Lubricating Grease
ASA Z11.57: 1960 Sulphated Residue, Lead, Iron and Copper in New and Used Lubricating Oils
ASA Z11.68: 1960 Sulphated Ash from New Lubricating Oils
ASA Z11.106: 1960 Lead in New and Used Greases
Yugoslavia: JUS B.H3. 160 to 163, 540, 542; B.H8. 110, .150; 220; 240

621.9 Machine Tools

Czechoslovakia: CSN 22 2951; 32 0100
Germany: DIN 320; 8197; 8815; TGL 4429, 30, 42 to 46; 6252
Japan: JIS B 4002: 1959 Square Portion of Shanks for Small Tools
JIS B 4003: 1959 Morse Taper Shanks and Sockets
JIS B 4051: 1959 Grinding Wheel Recommendation Explanation
JIS B 4202: 1959 Right-hand and Left-hand Cuts and Helical Flutes of Plain Milling Cutters and End Mills
JIS B 4203: 1959 Hand of Cuts, Angles and Threads of Angle Cutters
JIS B 4204: 1959 Slotting Cutters
JIS B 4205: 1959 Plain Milling Cutters
JIS B 4206: 1959 Side Milling Cutters
JIS B 4208: 1959 Straight Shank Two-flute End Mills
JIS B 4209: 1959 Taper Shank Two-flute End Mills
JIS B 4211: 1959 Straight Shank End Mills
JIS B 4212: 1959 Taper Shank End Mills
JIS B 4217: 1959 T-Slot Cutters
JIS B 4219: 1959 Metal Slitting Saws
JIS B 4231: 1959 Centre Reamers
JIS B 4401: 1959 Morse Taper Reamers
JIS B 4402: 1959 Straight Shank Chucking Reamers
JIS B 4611: 1959 Hand Drills
JIS B 4612: 1959 Chucks for Hand and Breast Drills
JIS B 4615: 1959 Hack Saw Frame
JIS B 4617: 1959 Breast Drill
JIS B 4618: 1959 Hack Saw Frame
JIS B 4619: 1959 Hack Saw Frame
JIS B 4901: 1959 Pneumatic Grinder
Netherlands: NEN 1359; 1600; 1719, 88, 98; 1976; 2183
UK: BS 3197: 1960 Adze Eye Claw Hammers
USA: ASA AB5.9: 1960 Spindle Nose
ASA B5.10: 1960 Machine Tapers

622 Mining

Germany: TGL 4878
Hungary: MSZ 8892; 10515
Japan: JIS M 3902: 1959 Dimension for CA-7 Type Coal Picks
JIS M 3906: 1959 Coal Pick Steel
JIS M 6501: 1959 Mine Steel Tub
JIS M 8361: 1959 Method of Chemical Analysis for Bauxite Ore
UK: BS 3237: 1960 Light and Medium Rolling Stock for Mineral Haulage in Mines

624.04 Structure Parts

Hungary: MSZ 15020, 024
UK: BS CP 2007: 1960 Design and Construction of Reinforced and Pre-stressed Concrete Structures for the Storage of Water and Other Aqueous Liquids

625.2 Rolling Stock

UK: BS 3117: Part 1: 1960 Wheel Pairs for Locomotives and Rolling Stock (Dimensions): Axles
BS 3117: Part 2: 1960 Wheel Pairs for Locomotives and Rolling Stock (Dimensions): Wheel Centres and Monoblock Wheels

628.9 Illuminating Engineering

UK: BS 1522: 1960 Schedule of Projector Lamp
BS 3224: 1960 High-Intensity Elevated Runway-Lighting Fittings

629.113 Automobile Engineering

Czechoslovakia: CSN 30 1540 to 1543, 1550 to 1553; 3705, 3708, 3718; 4402, 07, 40, 41; 4604; 5010
Germany: DIN 7797, 98; 7804, 07, 13, 17; TGL 4483, 86; 5004 to 07, 49, 51, 52; 5529; 5914
Japan: JIS B 9205: 1959 Tyres for Agricultural Implement and Machinery
JIS B 9206: 1959 Tube for Tyre for Agricultural Implement and Machinery
JIS B 9301: 1959 Bicycle
JIS B 9402: 1960 Mudguard for Bicycle
JIS B 9417: 1960 Saddle for Bicycle
JIS D 0003: 1959 Standard Form of Specifications of Crawler Tractors
JIS D 6403: 1959 Tyre for Industrial Vehicles
JIS D 6404: 1959 Tube of Tyre for Industrial Vehicles
JIS D 6501: 1959 Test Code of Damp Trucks
JIS D 6502. 1959 Test Code of Motor Graders
JIS D 6503: 1959 Test Code of Crawler Tractors
UK: BS 3190: 1960 Speedometers and Odometers for Road Vehicles

629.12 Shipbuilding

Japan: JIS F 0801: 1959 Testing Methods for Ships Machinery at Sea Trial
JIS F 2001: 1959 Bollards
JIS F 2104: 1960 Ships' Cranes for Miscellaneous Use
JIS F 2307: 1960 Door (Clips) of Ships' Cold Store
JIS F 2308: 1960 Door Hinges of Ships' Cold Store
JIS F 2310: 1960 Door Handles of Ships' Cold Store

JIS F 2406: 1960 Deck Lights
JIS F 2603: 1960 Steel Deck Ladders
JIS F 2607: 1959 Ships' Rail Stanchion
JIS F 2610: 1960 Ships' Awnings
JIS F 2611: 1960 Wood Deck Ladders
JIS F 3303: 1959 Electrically Welded Anchor Chain Cables
JIS F 3903: 1959 Mast Lamps Platform
JIS F 3904: 1959 Mast Lamps Platform
JIS F 7210: 1959 Marine Thermometer Pocket
JIS F 8801: 1960 Marine Watertight Cable Glands (for Electric Appliances)
JIS F 8802: 1960 Marine Water Cable Glands (for Bulkhead)
JIS F 8803: 1960 Marine Watertight Cable Glands (for Deck)

629.13 Aeronautical Engineering

Japan: JIS W0202: 1959 Table of Differential Pressure for Airspeed Indicators
JIS W 7105: 1959 Plugs and Receptacles of AN Type Electrical Connector for Aircraft
JIS W 7106: 1959 Insert Arrangements of AN Type Electrical Connector for Aircraft

63 Agricultural and Animal Produce

Chile: INDITECNOR 21-3 to -11, -23
Czechoslovakia: CSN 46 2202, 6104; 47 1720; 48 4711, 6151; 53 3130 to 3137
Ireland: I.S. 102
Netherlands: NEN 1381
Spain: UNE 34003, 004, 007, 008, 032
UK: BS 1300: 1960 Beehives, Frames and Wax Foundation
USA: ASA Z11.43: 1960 Distillation of Plant Spray Oils
USSR: GOST 635; 9157 to 59

64 Domestic Science

Netherlands: NEN 2233 to 37, 75; 3075 to 78
UK: BS 1129: 1960 Timber Ladders, Steps & Trestles
BS 3030: Part 5: 1960 School Furniture: Pupil's Dining Tables and Chairs

655.535.6 Indexing

USA: ASA Z39: 4: 1959 Basic Criteria for Indexes

658.542.1 Time Study

Spain: UNE 52003

661 Chemicals, Fine, Heavy, Etc

Canada: 3-GP-854; 855; 31-GP-115
Germany: TGL 5110; 6192, 93
Hungary: MSZ 7868; 1380
India-Ministry of Defence: IND/SL 0568
Japan: JIS K 1503 & 1504: 1959 Acetone and Butanol
Pakistan: PS 11
Spain: UNE 30058, 066
UK: BS 3161: 1960 Process Vessels for Chemical and Allied Industries
BS 3247: Part 1: 1960 Salt for Spreading on Highways for Winter Maintenance: Rock Salt
USSR: GOST 9097; 9108

662.6/.9 Fuels, Heating, Combustion

Japan: JIS K 2203: 1959 Kerosene
JIS K 2204: 1959 Gas Oil
JIS K 2206: 1959 Aviation Gasoline
JIS K 2264: 1959 Method of Lighting Test for No. 3 Kerosene
JIS K 2271: 1959 Testing Method for Oxidation Stability for Aviation Fuel
JIS K 2276: 1959 Testing Method for Water Solubility for Aviation Fuel
JIS K 2277: 1959 Testing Method for Freezing Point for Aviation Fuel
JIS K 2278: 1959 Testing Method for Oxidation Stability for Aviation Fuel
JIS K 2279: 1959 Testing Method for Calorific Value for Petroleum Products
JIS K 2290: 1959 Method for Lamp Test for Kerosene
JIS M 8810: 1959 General Rules on Analysis and Determination of Coal and Coke
JIS M 8811: 1959 Method of Sampling and Determination of Adherent Moisture for Coal and Coke
JIS M 8813: 1959 Ultimate Analysis for Coal and Coke
JIS M 8814: 1959 Determination of Calorific Value of Coal and Coke
Spain: UNE 32018
UK: BS 1016: Part 9: 1960 Methods for the Analysis and Testing of Coal and Coke: Phosphorus in Coal and Coke
BS 1016: Part 15: 1960 Analysis and Testing of Coal and Coke: Fusibility of Coal Ash and Coke Ash
USA: ASA Z11.58: 1960 Sediment in Fuel Oil by Extraction

664 Food Industries. Preservation

Canada: 32-GP-9, -13 to -15
Czechoslovakia: CSN 56 9260
Germany: TGL 3685, 89, 90; 6203 to 08, 12, 13 Bl.1-3
Spain: UNE 30 059
Yugoslavia: JUS E. H5. 022; 040

665.5 Petroleum Industry

Chile: INDITECNOR 22-4 to -8; 23 -40, -41
Czechoslovakia: CSN 65 6237 to 639, 7016, 7065
Hungary: MSZ 3276
Japan: JIS F 7208: 1959 Testing Method for Sulphur Content in Petroleum Products by the Lamp Gravimetric Method
JIS K 2263: 1959 Testing Method for Sulphur in Petroleum Products by Bomb Method
JIS K 2265: 1959 Testing Method for Flash Point of Petroleum Products by Pensky-Martens Closed Tester
JIS K 2266: 1959 Testing Method for Cloud Point of Petroleum Products
JIS K 2267: 1959 Method of Colour Test for Refined Petroleum Oil by Saybolt Chromometer
JIS K 2268: 1959 Method of Cracking Distillation Test for Gas Oil
JIS K 2269: 1959 Testing Method for Pour Point of Petroleum Products
Netherlands: NEN 3201, 04
UK: BS 3235: 1959 Test Methods for Bitumen
USA: ASA Z11.26: 1960 Distillation of Gas Oil and Similar Distillate Fuel Oils
ASA Z11.29: 1960 Dilution of Gasoline Engine Crankcase Oils
ASA Z11.47: 1960 Ramsbottom Carbon Residue of Petroleum Products
ASA Z11.54: 1960 Ash from Petroleum Oils
ASA Z11.100: 1960 Analysis of Oil-Soluble Sodium Petroleum Sulphonates
ASA Z11.103: 1960 Analysis of Calcium and Barium Petroleum Sulphonates
USA-Toilet Goods Association: TGA 1A, 6 to 8, 20 to 27, 41 to 57, 61

666.1/.2 Glass Industry

Denmark: DS 792
Portugal: NP 183

666.76 Refractory

Yugoslavia: JUS B.D6. 250m .252m .254, .350, .430, .432, .434, .470, .510, .571, .572, .573; B.D8.100, .150, .200, .300 to .307

666.8/.9 Gypsum, Lime, Cement, Etc

Czechoslovakia: CSN 72 2350
USA-American Society for Testing Materials: ASTM STP 205

667.2 Dyeing

Spain: UNE 40 034 to 040

667.6 Paint and Varnish Industry

Czechoslovakia: CSN 67 3067, 3366, 3800, 4362, 4700, 4704, 5050, 5052; 90 3110
Japan: JIS K 5108: 1960 Red Lead
JIS K 5114: 1960 Zinc Chromate (Pigment)
JIS K 5400: 1959 General Testing Method for Coatings

668.3 Adhesive Glue

USA-Department of Military: MIL-A-101A, -140

668.739 Pitch Coke

Czechoslovakia: CSN 65 8412, 8443, 8449

669.1 Ferrous Metallurgy

Czechoslovakia: CSN 01 4470; 41 2042; 42 0041, 0524, 0525
Germany: DIN 50152
Portugal: NP 191 to 197
Spain: UNE 36 008, 154, 546, 556, 558
Switzerland: VSM 10691; 11250
UK: BS 1121: Part 41: 1960 Methods for the Analysis of Iron and Steel: Lead in Carbon Steel and Low Alloy Steel
BS PD 3275; 3381, 91
USA: ASA G45.1: 1959 Welded Steel Wire Fabric for Concrete Reinforcement
ASA G50.1: 1959 Mild-to Medium-Strength Carbon-Steel Castings for General Application
ASA G52.1: 1959 High-Strength Steel Castings for Structural Purposes
Yugoslavia: JUS C.B2.020, .021; C.B3.003; C.J2.020; 021

669.2/.8 Non-Ferrous Metallurgy

Australia: SAA K.53: 1960 Testing Zinc Coating on Hot Dip Galvanised Articles
Czechoslovakia: CSN 42 0670
Germany: DIN 1745, 47, 48; 17640
International Organization for Standardization: ISO R 114: 1959 Composition of 99·8 Unalloyed Magnesium Ingots
ISO R 121: 1959 Composition of Magnesium-Aluminium-Zinc Alloy Castings
ISO R 122: 1959 Composition of Magnesium Aluminium-Zinc Alloy Ingots for Casting Purposes
Ireland: I.S. 17
Israel: S.I. 299
Italy: UNI 4341 to 50, 59, 60
Japan: JIS H 2202: 1959 Brass Ingots for Casting
JIS H 2203: 1959 Bronze Ingots for Casting
JIS H 2204: 1959 Phosphor Bronze Ingots for Casting
Spain: UNE 37 112, 118, 119; 38 511, 521
UK: BS 1728: Part 11: 1960 Methods for the Analysis of Aluminium and Aluminium Alloys: Silicon (Perchloric Acid Method)

BS L 126: 1960 Magnesium-Cerium-Zinc-Zirconium Alloy Ingots and Castings
BS L 127: 1960 Magnesium-Zinc-Zirconium Alloy Ingots and Castings (Precipitation Treated)
BS L 128: 1960 Magnesium-Zinc-Cerium-Zirconium Alloy Ingots and Castings

USA: ASA H8.1: 1959 Free-Cutting Brass Rod, Bar, and Shapes for Use in Screw Machines
ASA H31.1: 1959 Rolled Copper-Alloy Bearing and Expansion Plates and Sheets for Bridge and Other Structural Uses
ASA H33.1: 1959 Leaded Red Brass (Hardware Bronze) Rod, Bar, and Shapes

USA-Copper and Brass Research Association: CBRA Standards

674 Wood Industry

Australia: SAA 0.46: 1960 Round Section Stringer from Western Australian Timbers
SAA 0.71 and CA.31: 1960 Paraquetry Flooring

Canada: 1-GP-103; 11-GP-2, -3

Czechoslovakia: CSN 48 6211; 49 2601, 2615, 2616

Japan: JIS K 1553: 1959 Wood Preservatives of Pentachlorophenol Copper Ammonia Solution

Spain: UNE 49003 to 006

Yugoslavia: JUS D.A 1.049 to .053

676 Paper and Pulp Industries

Germany: DIN 47110

Japan: JIS P 2701: 1959 Rayon Pulp
JIS P 8001: 1959 Sampling and Preparation Method for Analysis of Wood for Pulp
JIS P 8003: 1959 Testing Method of Ash in Wood for Pulp
JIS P 8004: 1959 Testing Method of Cold Water Soluble in Wood for Pulp
JIS P 8005: 1959 Testing Method of Hot Water Soluble in Wood for Pulp
JIS P 8112: 1960 Testing Method of Bursting Strength of Paper
JIS P 8114: 1960 Testing Method of Schopper Folding Endurance of Paper
JIS P 8115: 1960 Testing Method of M.I.T. Folding Endurance of Paper
JIS P 8117: 1960 Testing Method of Air Permeability of Paper
JIS P 8118: 1960 Testing Method of Thickness and Density of Paper

Netherlands: NEN 1109; 10; 2150

Spain: UNE 49 401 L1-3

UK: BS 3203: 1960 Glossary of Paper, Stationery and Allied Terms

USSR: GOST 9107, 23

677 Textile Industry

Czechoslovakia: CSN 80 0401, 0410, 0412, 0413, 0450; 80 3021, 3022; 80 6222

Japan: JIS L 0201: 1959 Symbol of Knitted Stitch
JIS L 0204: 1959 Glossary of Terms Used in Textile Industry (Materials)
JIS L 1001: 1959 Testing Method for Hard and Bast Fabrics
JIS L 1002: 1959 Testing Method of Silk Fabrics
JIS L 1005: 1959 Testing Method of Spun Rayon Fabrics
JIS L 1008: 1959 Testing Method of Cotton Yarn
JIS L 1009: 1959 Testing Method of Spun Viscose Rayon Yarn
JIS L 1011: 1959 Method of Testing Hard and Bast Fibre Yarn
JIS L 1013: 1959 Testing Method for Rayon Yarn
JIS L 1014: 1959 Testing Method for Jute Yarn
JIS L 1015: 1959 Testing Method of Jute Fabrics
JIS L 1016: 1959 Testing Method of Jute Fabrics
JIS L 1017: 1959 Testing Method of Rayon Tyre Cords
JIS L 1018: 1959 Testing Method for Knitted Fabrics
JIS L 1019: 1959 Testing Method for Cotton Fibre
JIS L 1025: 1959 Testing Method for Spun Vinylon Yarn
JIS L 1026: 1959 Method of Testing for Mixed Yarn of Nylon, Viscose
JIS L 1027: 1959 Method of Testing Filament Nylon Yarn
JIS L 1028: 1959 Method of Testing Vinylidene Chloride Yarn
JIS L 1031: 1959 Method of Testing for Vinylon Fabrics
JIS L 1032: 1959 Testing Methods for Filament Nylon Fabrics
JIS L 1033: 1959 Method of Testing Vinylon Spun Yarn for Finishing Net
JIS L 1034: 1959 Method of Testing Filament Nylon Yarn for Finishing Net
JIS L 1035: 1959 Method of Testing Filament Vinylidene Chloride Yarns and Filament Vinyl Chloride Twist Yarns for Finishing Net
JIS L 3101: 1959 Cotton Tyre Cord Fabrics for Bicycle
JIS L 3104: 1959 Cotton Fabrics for Rubber Belt
JIS L 3402: 1959 Mixed Canvas
JIS L 3505: 1959 Lining Cloth Made of Chemical Fibre

Netherlands: NEN 948

UK: BS 1167: 1960 Cotton Fabrics for Rubber Footwear
BS 1425: 1960 Cleanliness of Fillings and Stuffings
BS 2047: 1960 Dimensions of Textile Coiler Cans
BS 2547: 1960 Cones and Tubes for Winding Textile Yarns
BS 3196: 1960 Cotton Cheese Cloth: Tubulars, Flats and Caps
BS 3201: 1960 Doffing Boxes for Ring Spinning Frames
BS 3209: 1960 Determination of Wool Fibre Medullation
BS 3225: 1960 Beams for Cotton, Linen, Silk and Man-Made Fibre Yarn
BS 3240: 1960 Shuttles for Pirn-Changing Automatic Looms

USA: ASA L14.90: 1959 Methods of Testing Spun and Filament Yarns Made Wholly or in Part of Man-Made Organic Base Fibres

678 Rubber and Plastic

Czechoslovakia: CSN 62 1117, 1431; 63 1017, 3880; 64 0210, 6111, 7101; 66 6313, 6340

Germany: DIN 7708 Bl.3, 37, 42

International Organization for Standardization: ISO R 117: 1959 (E) Plastics. Determination of Boiling Water Absorption
ISO R 118: 1959 Plastics. Determination of Methanol-Soluble Matter in Polystyrene
ISO R 119: 1959 Plastics. Determination of Free Phenols in Phenol-Formaldehyde Mouldings
ISO R 120: 1959 Plastics. Determination of Free Ammonia and Ammonium Compounds in Phenol-Formaldehyde Mouldings

Italy: UNI 4302, 03

Netherlands: NEN 3190

UK: BS 903: Part A13: 1960 Methods of Testing Vulcanized Rubber: Determination of Resistance to Low Temperature (Rigidity Modulus Test)
BS 903: Part B11 & B12: 1960 Methods of Testing Vulcanized Rubber: Rubber (Polymer) Determinations
BS 3157: 1960 Latex Foam Rubber Components for Transport Seating
BS 3222: 1960 Low Compression Set Butadiene/Acrylonitrile Vulcanized Rubber Compounds
BS 3227: 1960 Vulcanized Butyl Rubber Compounds
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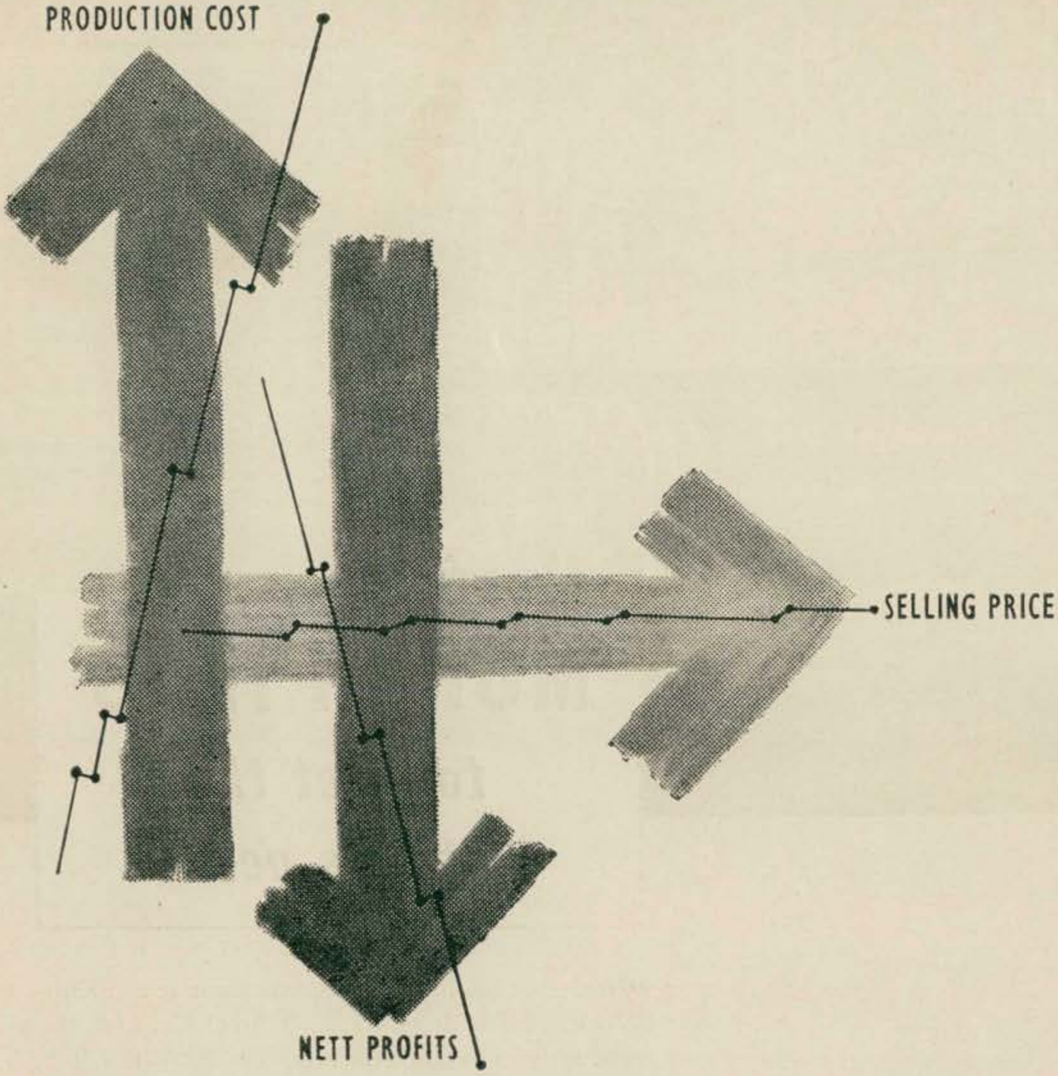

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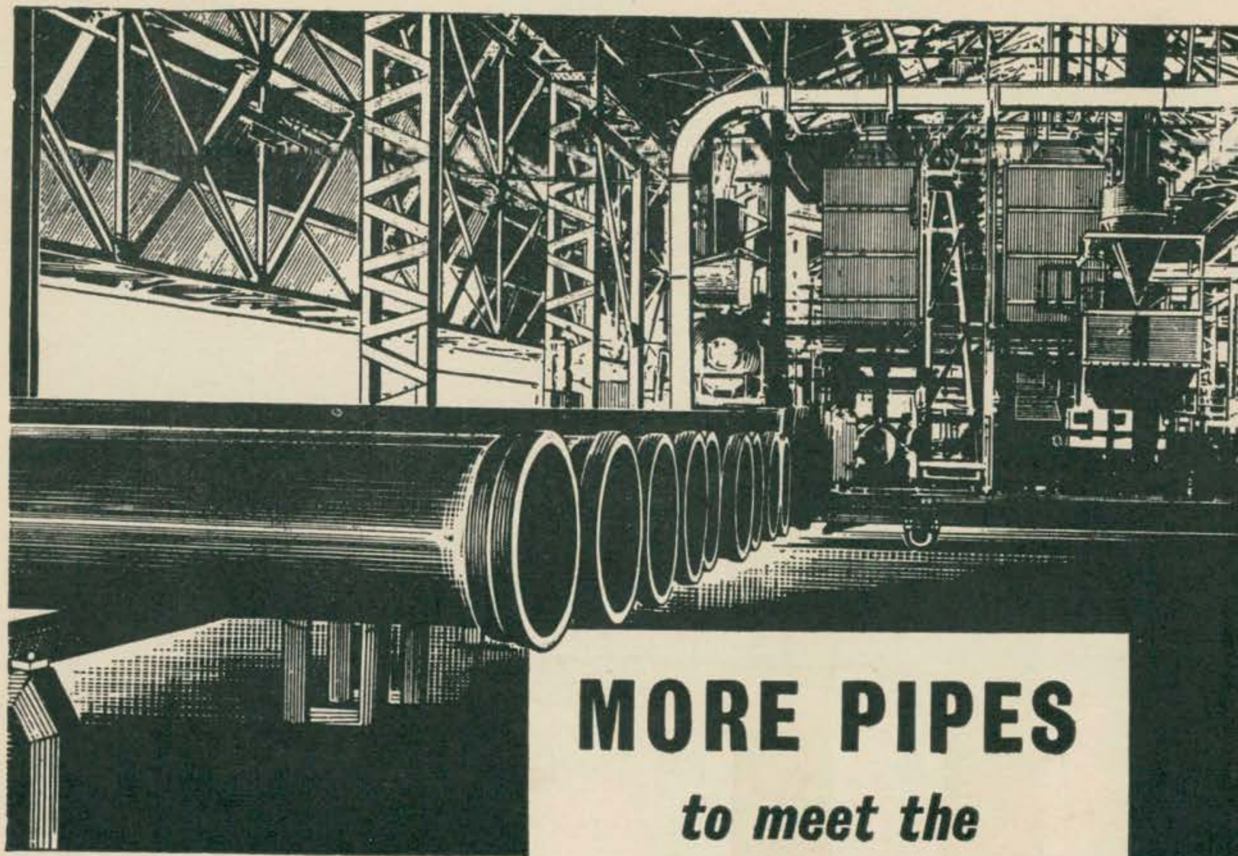

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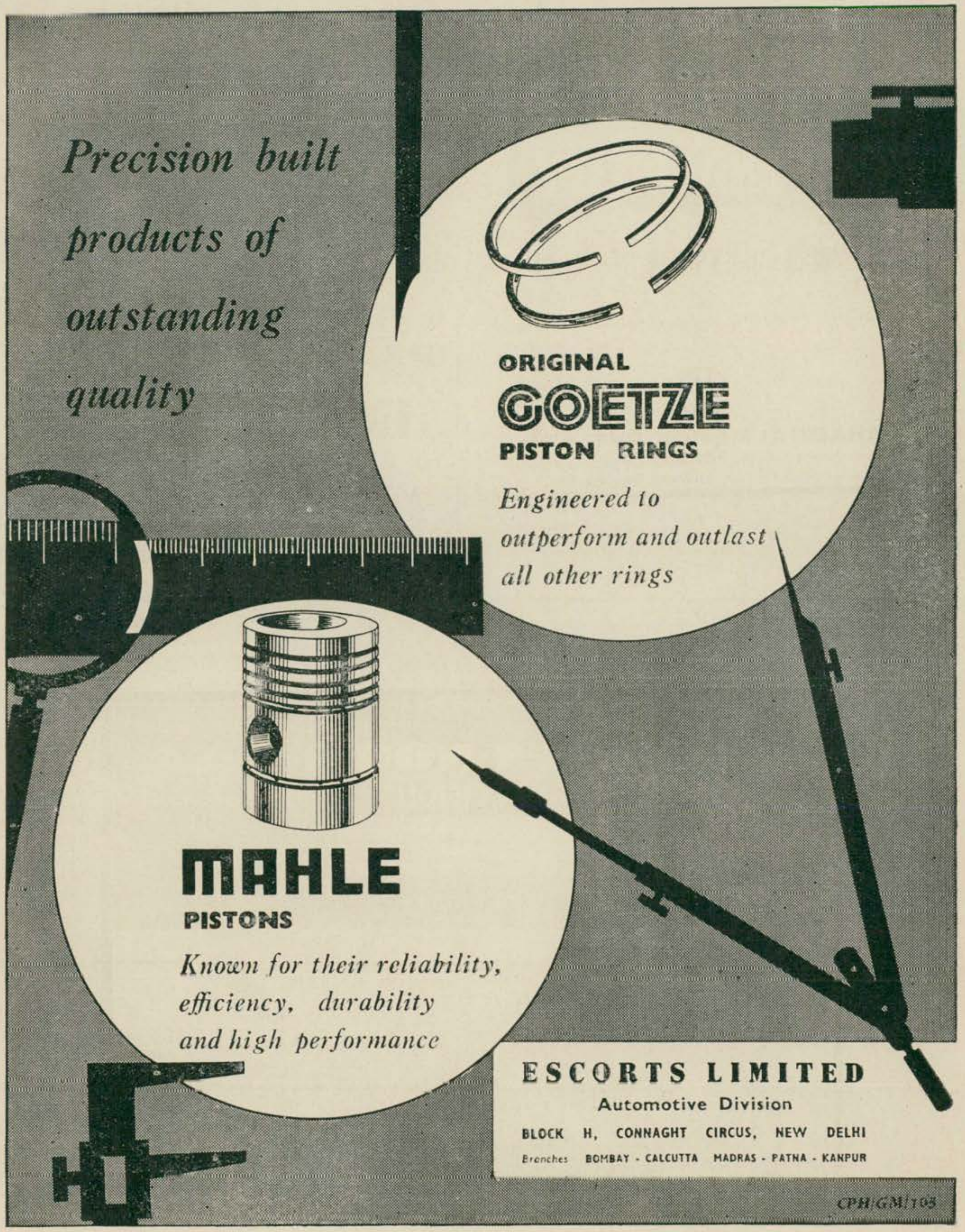
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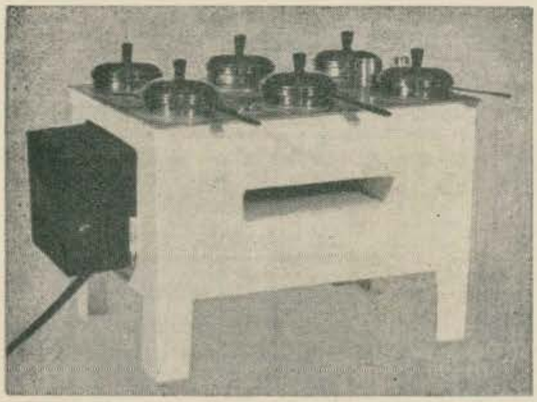

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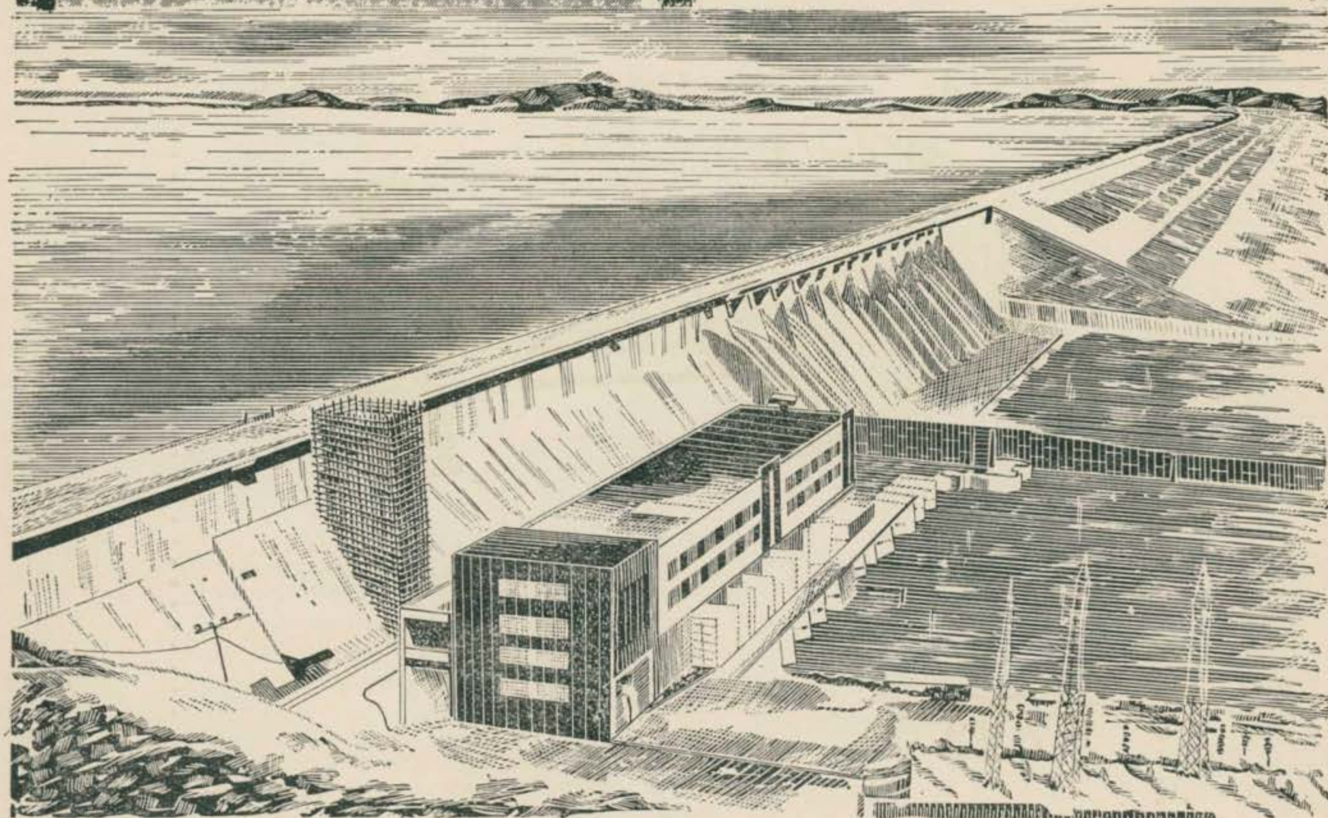


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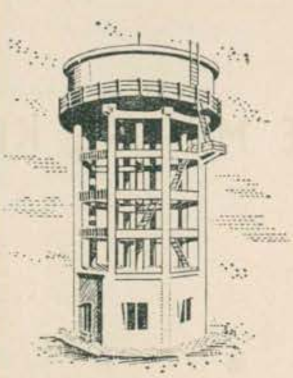

NOTICE

TESTING OF FLAMEPROOF ELECTRICAL EQUIPMENT

The Council of Scientific and Industrial Research wish to draw the attention of manufacturers and others interested to the provision of facilities for testing flameproof enclosures of electrical apparatus at the Central Mining Research Station, Dhanbad, Bihar. Manufacturers are invited to take advantage of this facility for having their products tested for purposes of approval. Enquiries may be addressed to the Director.

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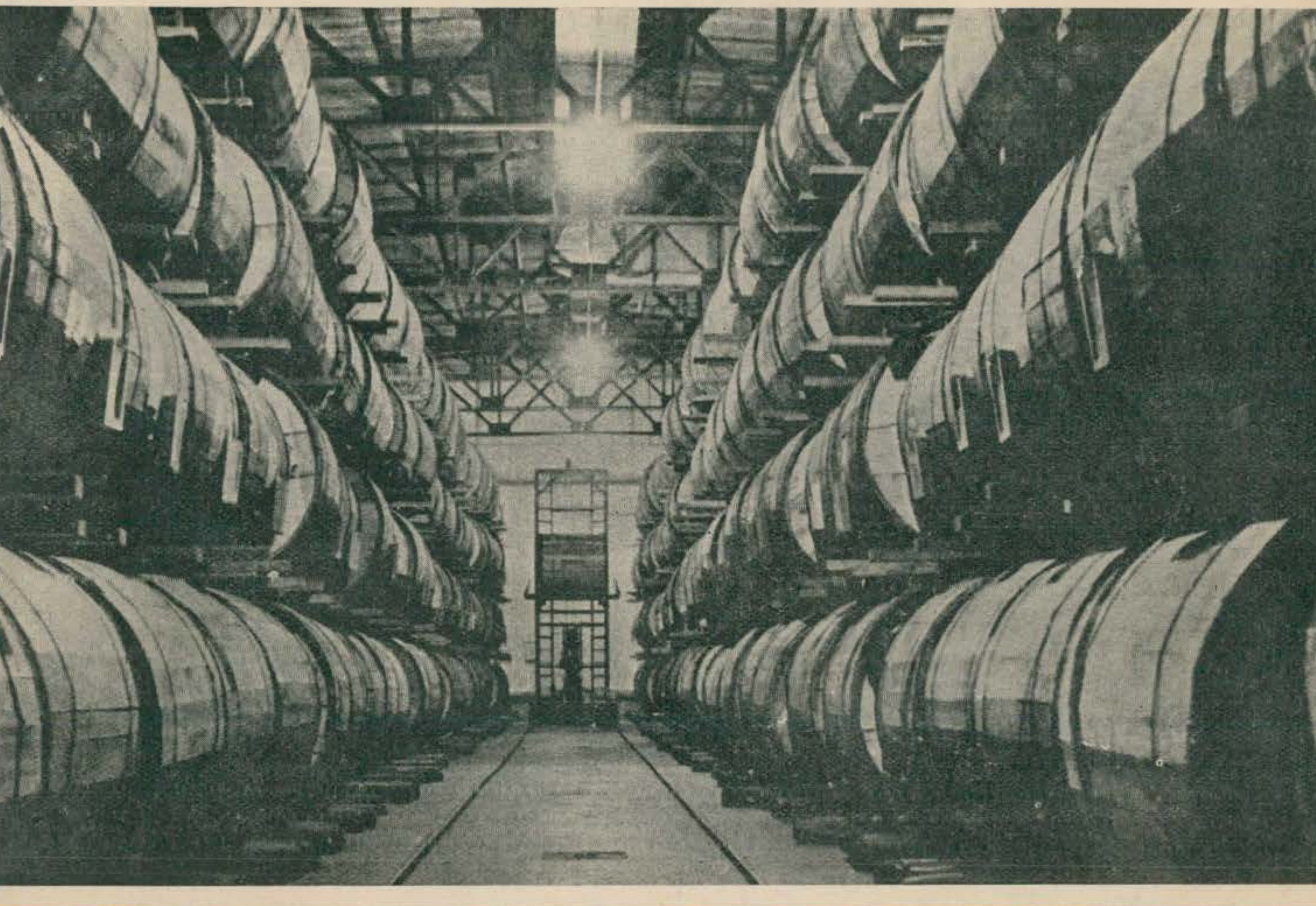
Vol 13 No. 2 Mar-Apr 1961



IN THIS ISSUE

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NEW DELHI I

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ISI BULLETIN

FOUNDED 1949

Vol 13 MAR-APR 1961 No. 2

CONTENTS

Picture on Cover — A tobacco storage depot containing hogsheads used for tobacco maturing. In the background is the lift by which hogsheads are removed.

The Indian Standards Institution has recently published two specifications, one for smoking mixtures and the other for cigarettes made from tobacco processed in India (*see* p. 91).

A brief report on the fourth meeting of the Tobacco Products Sectional Committee of ISI appears on p. 87.

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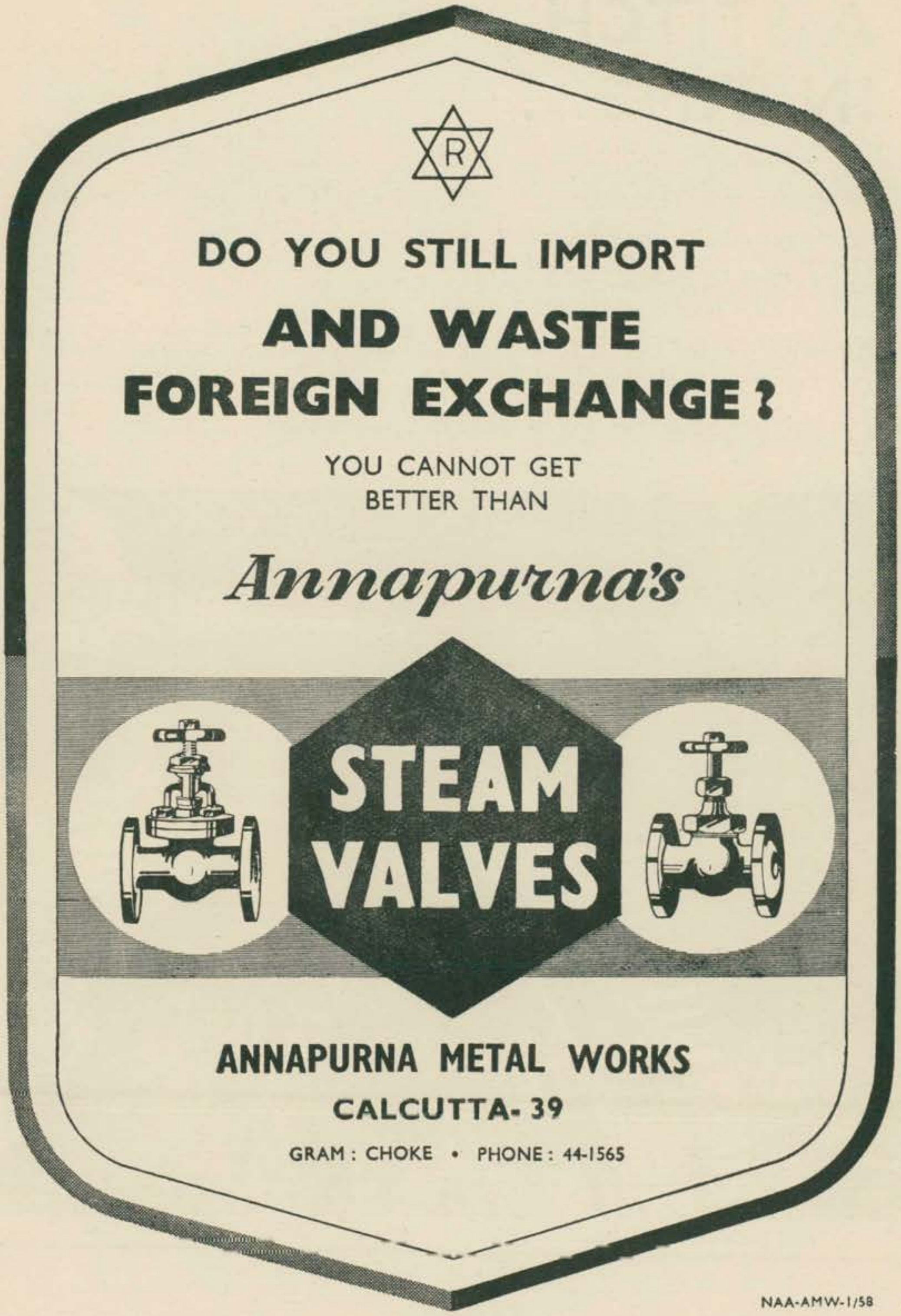
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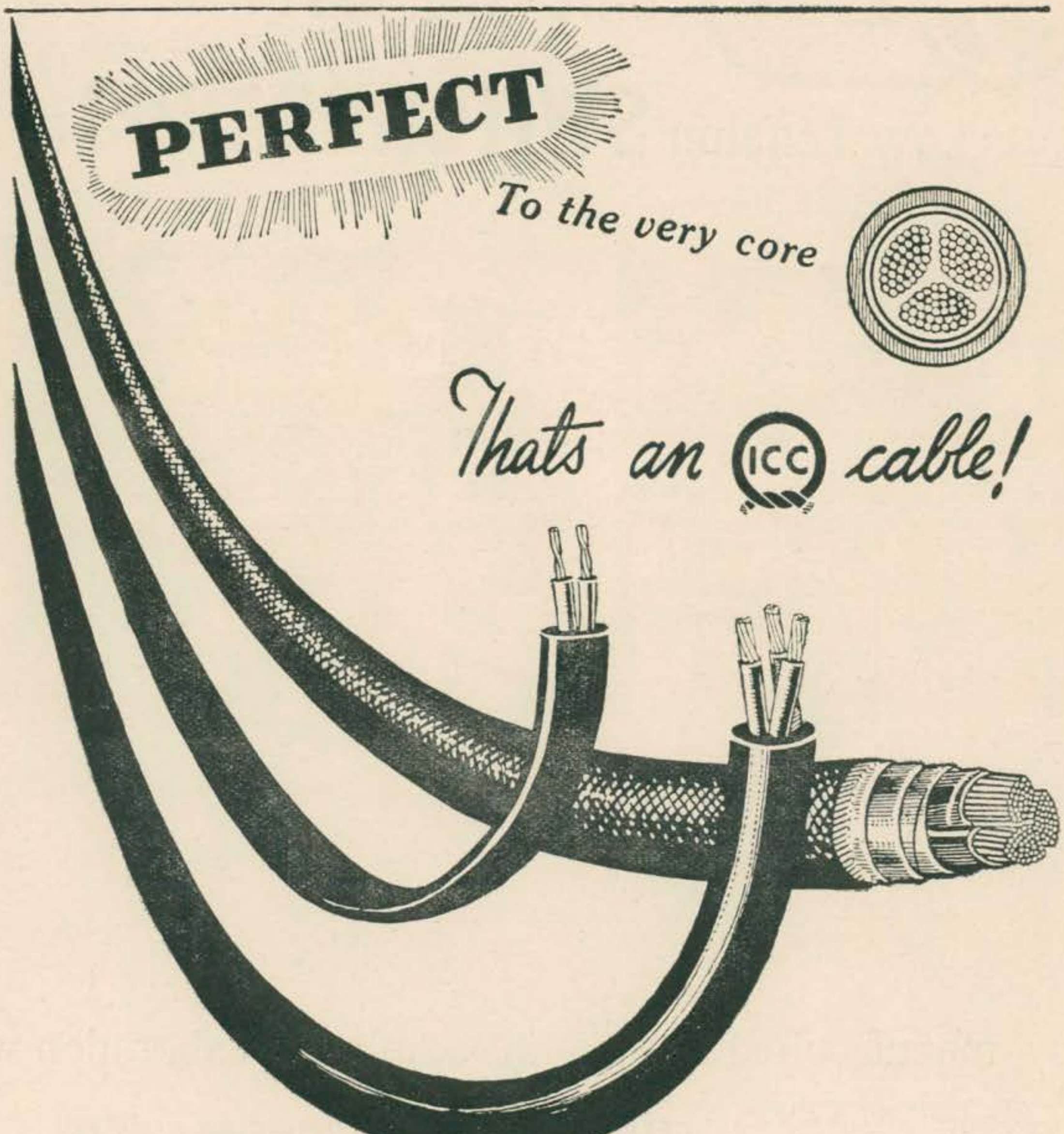
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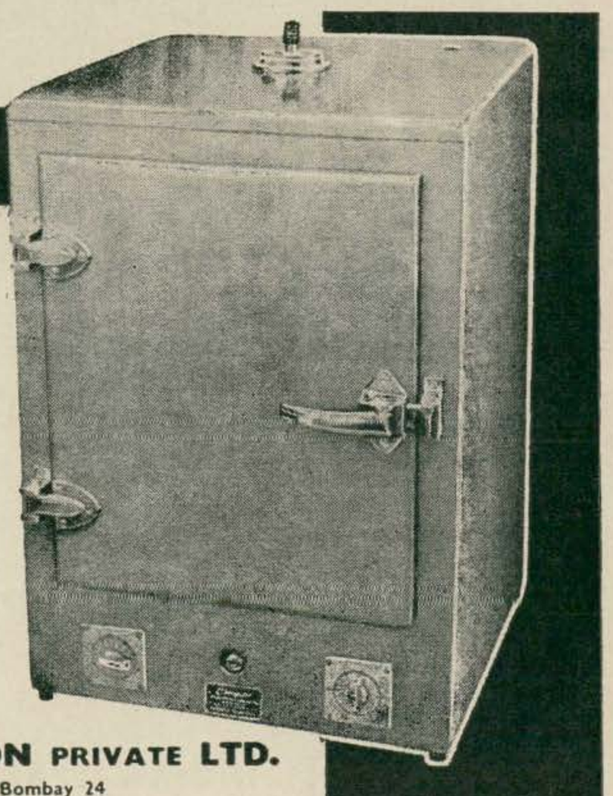

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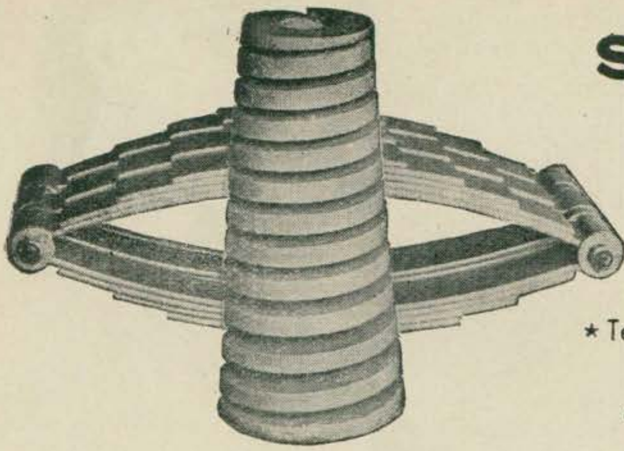

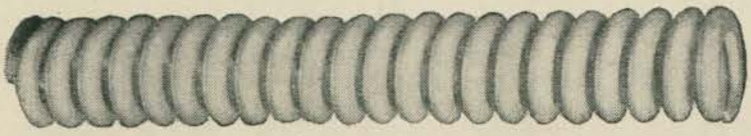

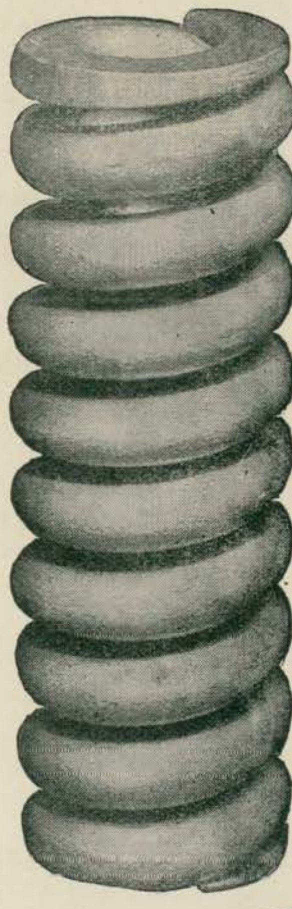

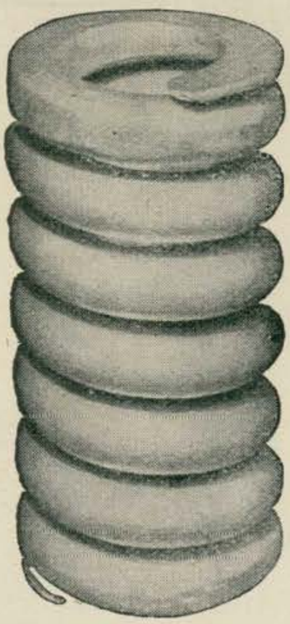

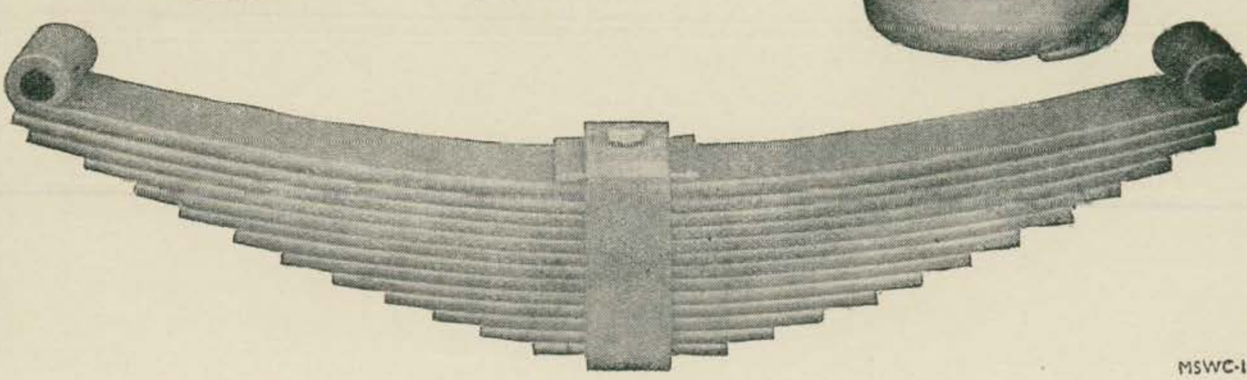

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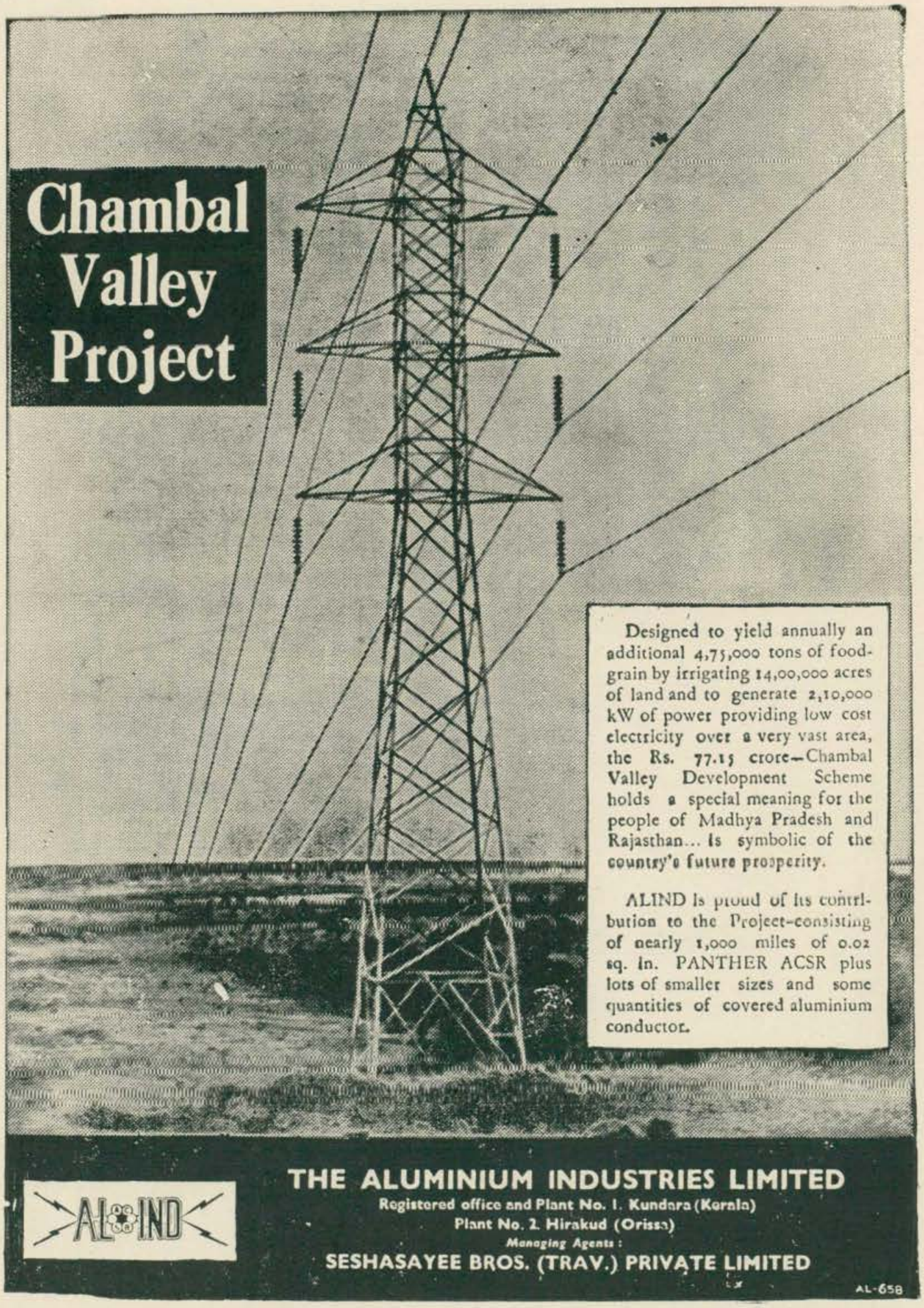
This handbook, which is intented to serve as a source for basic data on the various disciplines required by the students of the first degree course in Science, Engineering and Technology, has been prepared at the request of the Association of Principals of Technical Institutions who felt the need for such a work, in view of the chageover to metric system of weights and measures.

The handbook is divided into the following three sections:

Section A Quantities, Units, and Conversion Factors;
Section B Physical and Chemical Constants; and
Section C Mathematical Formulae and Tables.

In the compilation of tables of physical and chemical constants given in Section B, the choice of the appropriate source was based on the consideration of authenticity and availability of up-to-date data. Only metric values are given in these tables.

The Handbook, priced Rs 7.50 a copy (postage extra), is available for sale at the Headquarters and Branch Offices of the Indian Standards Institution.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ISI BULLETIN

Vol 13 MAR-APR 1961 No. 2

Standardization in Telecommunication

LAL C. VERMAN

STANDARDIZATION itself may be taken to be and, in fact, is often referred to as a branch of engineering, but it is an all-pervading branch, which regulates all other branches of the engineering profession. As a crude simile one may take a tree of many branches, each representing a conventional branch of engineering, mechanical, civil, electrical and so on, with as many such branches as one may desire. It would be incorrect to regard standardization as one such branch or sub-branch, because it has no independent existence in the same sense as the other branches. But it would be more appropriate to liken standardization to the sap circulating system of the tree, which, though a part of the anatomy of the tree, is nevertheless all-pervading, for it must carry nourishment to all parts and sustain every branch, every leaf, so that the tree may bear fruit. Similarly, standardization, though a part of the profession of engineering, is a system, a methodology, the aim of which is to bring about order in the inner working of all branches of the profession, so that man may reap the maximum of benefit from the engineer's effort.

We publish here extracts from Dr. Verman's Presidential Address delivered at the Seventh Annual General Meeting of the Institution of Telecommunication Engineers held in New Delhi on 23 December 1960 (*see* p. 106). The address covered briefly the role that standardization plays in the orderly development of telecommunication engineering — *Ed.*

Of all branches of engineering, telecommunication perhaps is the one which, without systematic standardization, would stand to suffer the most. Indeed, without standardization it could hardly exist. Even before communication got wedded to tele, standardization was a prime necessity.

Language consists of words having standard meanings; and when words are written down on paper, every letter must denote a standard sound. In some languages a letter may represent more than one sound, but obviously this fact does not detract from the argument. By standard here is meant a one-to-one correspondence between a given sound or symbol and the meaning it conveys. All primitive forms of telecommunication systems, be they dependent on visual smoke signals or audible tom-tom signals, had to have a standard code. Is it, therefore, surprising that the first contribution to standardization in the present day art of telecommunication was the one which brought the Morse Code for telegraph into being? Ever since the day Samuel Morse conceived the idea of his code in 1832, telecommunication has been making great strides, from wired telegraphy to telephony, from wireless telegraphy to broadcasting, from radiophone links to television and ultra short-wave relay networks, from radars to the cosmic tracking of artificial satellites and missiles, to the exploration of space itself by radio-astronomy, and so on. All these advancements in knowledge, in man's control over nature, in the creation of new services and facilities to help conduct his affairs, have been facilitated through the adoption of standards at every stage of development.

TWO FACETS

In relation to telecommunication field, standardization has two broad facets which must be clearly distinguished. One of these deals with the standardization of materials, components and equipment and the relevant methods of test. And the other is the standardization of operations and services, and the related system assemblies. Clearly the first facet is of primary interest to manufacturers and producers while the latter to operating companies and service departments. Nevertheless, the two facets are interdependent and closely linked; and, in fact, may be considered as two contiguous parts of a continuous spectrum of activity. For example, standardization of materials of manufacture forms the foundation for the production of standardized components, which in turn go to build standard equipment. From this stage, one passes on to the assemblages of equipment constituting a part or the whole of a system, which must operate according to a standardized pattern to render a given service. Any dividing line between the two facets is, therefore, arbitrary and intended chiefly to distinguish between the fields of interest of manufacturers on the one hand and that of service enterprises on the other.

This dividing line is also convenient for dealing with the history of standardization in the field of telecommunication and its present-day international set up. Just about a generation after the Morse Code was devised, the seed was sown for the creation of what is today called the International Telecommunication Union (ITU) and which has now become the one and only forum for dealing with operational and service standardization aspects of telecommunications the world over. Early in the present century, another epoch-making bit of standardization was achieved when the distress signal SOS was adopted by 27 nations. About this same time the need for international unification of electrical terminology, service voltage and frequencies, and for standardization of electrical products began to be felt, and in 1904 the foundation was laid for the creation of the International Electrotechnical Commission (IEC). It is this latter body which today has taken over the responsibility for international standardization in the telecommunication field so far as materials, components, equipment, test methods, terminology, etc, are concerned.

These two organizations look after the two facets of standardization respectively as referred to earlier. It must, however, be emphasized that working in collaboration with each other as they do, these two organizations have perhaps contributed more than any others to the orderly development of the science and practice of telecommunication. This fact emerges even more emphatically when it is considered that national standardization in the field was practically non-existent in any country before the twenties of this century. Of course national standards movement had to develop and strengthen before international standardization could become really effective, especially in regard to the aspect concerned with manufacturing activity. It is thus interesting to discover that in the telecommunication field, international standardization *in a sense* preceded national standardization while in most other fields the reverse was the case.

Even more interesting is the fact that, though India became member of IEC as early as 1911, yet her own national standards organization, the Indian Standards Institution, was created only in 1947. In case of ITU, India appears to have joined it in 1868, yet she began to take active interest only recently. But these considerable time lags were largely due perhaps to India's own economic and political status, and had nothing in common with similar though briefer time lags elsewhere. In other countries, generally speaking, before the First World War the ' importance attached to standardization in the present-day community was neither acknowledged nor clearly perceived by industrial managers, designers, or technicians concerned with production '. Today the picture has entirely changed. The few international bodies dealing with standardization matters find it impossible to cope with the demands of the national standards bodies for international standards and recommendations. This is indicative of the importance that today's industry as also the consumer attaches to standards.

CONTRIBUTION OF ITU

The ITU works through two consultative committees and a board, namely, the International Consultative Committee on Radio (CCIR), the International Consultative Committee on Telegraphy and Telephony (CCITT) and the International Frequency Registration Board (IFRB). The CCITT of today is a combined committee of the two earlier committees, each dealing separately with telephony (CCIF) and telegraphy (CCIT). The standardized code of telegraph typewriters evolved by CCIT in 1931, which is still in use today the world over, represents an outstanding contribution to world standardization.

In the telephone field, the influence of international standards may be gauged by the accomplishment of CCIF in achieving the complete interconnectibility of over 125 million telephone sets distributed all over the world. Interconnectibility necessarily implies a measure of interchangeability and both require a high degree of standardization. All subsequent development of telephone technique has been influenced by this basic standardization and also by evolving recommendations for standards of band widths and standards of permissible distortion for speech and music transmission circuits, etc. The introduction of dimensional standards has reduced the variety in telephone plugs and jacks and considerably eased the manufacture, stocking and interchangeability of complete telephone exchange equipment.

The assignment of different frequency bands to various kinds of radio services in the different regions of the world through the International Frequency Registration Board (IFRB) may be mentioned as a unique example of international telecommunication standardization. But for this and for the standard methods of monitoring and checking the band widths supervised by the CCIR, it would not have been possible to make the most advantageous use of the limited electromagnetic spectrum which is available to mankind for the purpose.

CONTRIBUTION OF IEC

The IEC, which since 1947 has been affiliated to the International Organization for Standardization (ISO), has assumed for itself the object of facilitating the co-ordination and unification of national electrotechnical standards and co-ordinating the activities of other international organizations in the field. In the early years, IEC's work was confined mostly to electrical power engineering but about 1930 the problems of international standardization relating to telecommunication engineering began to receive serious attention. Since then this aspect of IEC work has developed rather rapidly, particularly during the last ten years during which advances have taken place at an unprecedented rate.

The earliest work of IEC, and perhaps the most important, relates to standardization of terminology and definitions of terms in the field of telephony, telegraphy and electronics. The promotion of the use of standardized uniform graphical symbols is perhaps an equally important contribution of IEC to the development of telecommunication field. More recently, IEC has been paying a great deal of attention to the climatic and mechanical durability tests. It was the demand of the Second World War which generated the scientific interest in the effects of climatic factors on the behaviour of electrical and other equipment as also that of men. Yet, the peacetime importance of this work is of particular significance to countries like India where climatic factors continue to determine to a large extent the design, behaviour and operation of telecommunication equipment.

The International Electrotechnical Commission has made equally important contributions in many other fields of electronics and telecommunications including radio receiving and transmitting equipment, electronic tubes and valves, semi-conductor devices and other electronic components, piezo-electric crystals, radio frequency transmission lines and accessories, electro-acoustical

h = Semi-web depth, mm;
I = Moment of inertia, cm^4;
k = Ratio h/b;
K, K' = Constants in local buckling formulæ;
L = Column free length, cm;
P = Applied load, kg;
P_{cr} = Critical load, kg;
P_{design} = Design load, kg;
P_{ult} = Ultimate load, kg;
P_Y = Yield load, kg;
r = Radius of gyration, mm;
t = Sheet thickness, mm;
$\overline{X}$ = Centre of gravity position with respect to XX axis, cm;
$\overline{Y}$ = Centre of gravity position with respect to YY axis, cm;
δ = Wave depth;
λ = Lagrange multiplier;
σ_{cc} = Euler buckling stress, kg/mm^2;
σ_{cr} = Local buckling stress, kg/mm^2; and
σ_Y = Yield stress, kg/mm^2.

2. SCOPE

2.1 The investigation conducted by the authors in the present series of tests is mainly directed towards achieving maximum structural efficiency or in other words to obtain structures of minimum weight. The American design practices in light gauge structures primarily guided by the findings of the Cornell University research team do not pay attention to one important aspect, namely, the optimum structural design. In UK, however, some work has been done at Bristol University and at the Royal Technical College, Glasgow, on light gauge structures designed to obtain equal strength conditions. But further efforts have not been made to offer a comprehensive series of specifications for all classes of light gauge structures. The present paper describes the method of design to obtain optimum structures or sections under axial compression and the experimental evidence and the practical limits which condition the drafting of specifications.

3. THEORETICAL CONSIDERATIONS

3.1 The structures of maximum structural efficiency are generally designed on the basis of simultaneous failure occurring in all the modes which are critical[5,6]. A direct method to obtain a structure or section of least weight is by minimizing the weight function subject to the conditions of simultaneous failure in all the critical modes[7,8,9].

3.2 Taking for example a thin-walled compression member subjected to an axial thrust, there can be, in general, three modes of failure: (a) primary buckling, (b) secondary or local buckling, and (c) material failure. It should be noted that any combination of these may occur.

3.3 Two types of formed sections — angle and channel — have been treated in the present analysis (*see* Fig. 1). The relevant formulæ* for critical stress corresponding to the above modes of failure are:

$$\sigma_{cc} = \frac{C\pi^2 E}{L^2} \times \frac{b^2k^3(4+5k+k^2)}{12(1+k)^3} \quad \text{(for angle)} \ldots\ldots\ldots \text{(1a)}$$

$$= \frac{C\pi^2 E}{L^2} \times \frac{b^2k^2(1+k/3)}{(1+k)} \quad \text{(for channel)} \ldots\ldots \text{(1b)}$$

$$\sigma_{cr} = KE(t/b)^2 \quad \ldots\ldots\ldots \text{(2)}$$

$$\sigma_Y = \frac{P}{bt(1+k)} \text{ (for angle)} \ldots \text{(3a)}$$

$$= \frac{P}{2bt(1+k)} \text{ (for channel)} \ldots \text{(3b)}$$

*The torsional-column buckling which is peculiar to thin and wide sectioned column members is not discussed at present.

3.3.1 Considering that the primary buckling and secondary buckling occur simultaneously at certain compressive load P, we have the failure conditions as:

$$KE(t/b)^2 = \frac{C\pi^2 E}{L^2} \times \frac{b^2k^3(4+5k+k^2)}{12(1+k)^3} \quad \text{(for angle)} \ldots\ldots \text{(4a)}$$

$$\text{and} \quad KE(t/b)^2 = \frac{C\pi^2 E}{L^2} \times \frac{b^2k^2(1+k/3)}{(1+k)} \quad \text{(for channel)} \ldots\ldots \text{(4b)}$$

3.3.2 If W represents the weight function and ϕ the failure condition then for optimum design:

$$\delta(W+\lambda\phi)=0 \quad \ldots\ldots\ldots \text{(5)}$$

Differentiating with respect to b and k, which are treated as variables for minimization:

$$\frac{\partial W}{\partial b} + \lambda\frac{\partial \phi}{\partial b} = 0, \text{ and}$$
$$\frac{\partial W}{\partial k} + \lambda\frac{\partial \phi}{\partial k} = 0 \quad \ldots\ldots \text{(6)}$$

Substituting for the derivatives, solutions are obtained for each type of section as below:

Angle

$$t(1+k) - \lambda \times \frac{4t^2}{b^5k^3} \times \frac{(1+k)^3}{(4+5k+k^2)} = 0$$

$$\text{and } bt - \lambda\frac{t^2}{b^4} \times \frac{(1+k)^2(12+20k+10k^2+2k^3)}{k^4(4+5k+k^2)^2} = 0$$

Eliminating λ from the equations and solving for b and k from the remaining equation together with the restraining condition:

$$k = 1{\cdot}163$$
$$t = 0{\cdot}800(P^4L^2/K^3E^4C)^{1/10}$$
$$b = 0{\cdot}819(KP^2L^6/E^2C^3)^{1/10} \quad \ldots\ldots \text{(7)}$$

Channel

Similar differentiation, as in the case of angle section yields:

$$2t(1+k) - \lambda \times \frac{4t^2}{b^5} \times \frac{(1+k)}{k^2(1+k/3)} = 0, \text{ and}$$

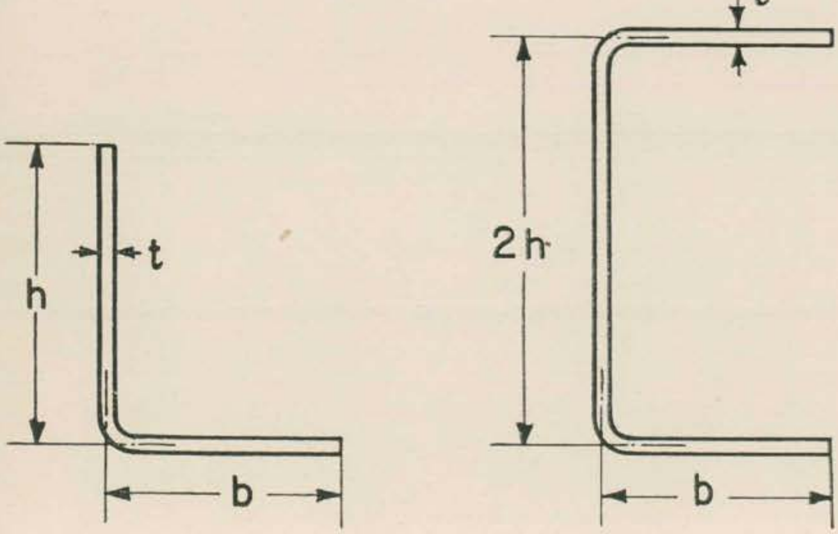

Fig. 1 Thin-Walled Angle and Channel Sections

$$2bt-\lambda\frac{t^2}{b^4}\times\frac{k^2(1+k/3)-(1+k)(2k+k^2)}{K^4(1+k/3)^2}=0$$

and the corresponding solution yields:

$$k=0{\cdot}791$$
$$t=0{\cdot}518(P^4L^2/CK^3E^4)^{1/10}$$
$$b=0{\cdot}498(KP^2L^6/C^3E^2)^{1/10} \quad \ldots . \ (8)$$

3.3.3 It can be seen from the above expressions that unless the column is long or has high slenderness ratio, primary failure will not take place simultaneously with local buckling. The tests conducted at present on short column members (SCM series) show that primary failure is not critical. The thin-walled short column members, therefore, should be designed mainly on the local buckling criterion. The failure conditions are expressed as:

$$KE(t/b)^2=KE(t/h)^2=\sigma_Y \quad \text{(for angle)} \ \ldots . .(9a)$$
$$KE(t/b)^2=K'E(t/2h)^2=\sigma_Y \quad \text{(for channel)} \ \ldots . \ (9b)$$

The above relations yield a unique solution, that is a section of minimum weight, since there is only one type of failure; and local buckling takes place at the elastic limit stress. Rewriting the above equations in terms of yield load P_Y and assuming that the 'simply supported' constant K' is equal to eight times the 'Cantiliver', constant K, we have:

$$b=h=\frac{2KE}{P_Y}\times t^3 \text{ (for angle)} \quad . .(10a)$$

$$\text{and } b=\frac{h}{\sqrt{2}}=\frac{2KE}{P_Y}\times t^3 \quad \text{(for channel)} \ \ldots \ldots \ (10b)$$

3.3.4 The yield stresses for 10 SWG and 13 SWG sheet steel are found to be 30·143 kg/mm² and 24·263 kg/mm² respectively. Taking $K=0{\cdot}45$ and $K'=3{\cdot}6$ and $E=20{\cdot}362\times10^3$ kg/mm², the dimensions for the optimum angle and channel sections of 10 SWG and 13 SWG sheet steel are computed and given below:

Angle

10 SWG

$t = 3{\cdot}226$ mm

$b = h = 5{\cdot}629$ cm

13 SWG

$t = 2{\cdot}337$ mm

$b = h = 4{\cdot}473$ cm

Channel

10 SWG

$t = 3{\cdot}226$ mm

$b = 5{\cdot}629$ cm

$2h = 15{\cdot}919$ cm

13 SWG

$t = 2{\cdot}337$ mm

$b = 4{\cdot}473$ cm

$2h = 12{\cdot}650$ cm

3.3.5 It should be appreciated that minimum weight considerations may not always be feasible in actual practice but these should be used as a guidance in arriving at a series of standard sizes for cold formed light gauge sections.

4. APPARATUS AND TEST

4.1 Cold-formed sections of intricate shape create many problems in fabrication, production and testing. There is a wide field open for expert production engineers in designing special punches, forming tools, and other appliances, combined with some measure of standardization.

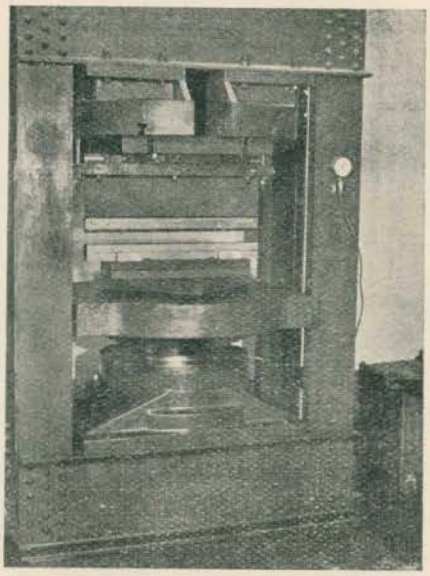

Fig. 2 A 200-Ton Hydraulic Press for Forming Short Test-Specimens

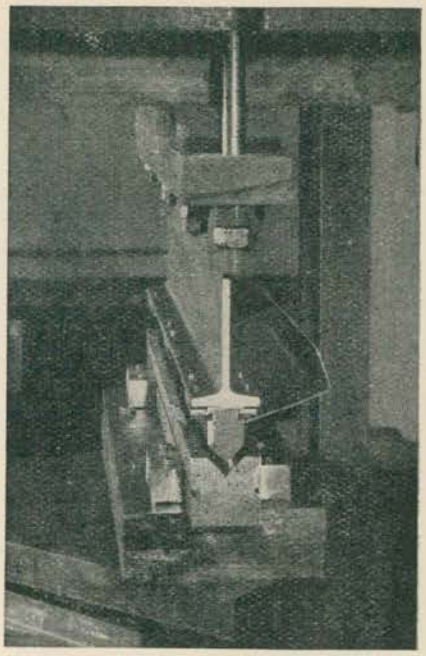

Fig. 3 Single Punch and the V-Die of the Cold Forming Press

4.1.1 *Cold-forming Presses*

Figure 2 shows a 200-ton hydraulic press fabricated for this purpose. Specimen up to one metre length can be formed in this press. A single punch with a V-die is used to form multiple bends by repeated process (*see* Fig. 3). Special guide pins are provided to obtain uniform bends without distortion. Beams up to 3 metres length are formed in a separate screw-press (*see* Fig. 4). More than one member of short and medium length can be simultaneously formed in this press.

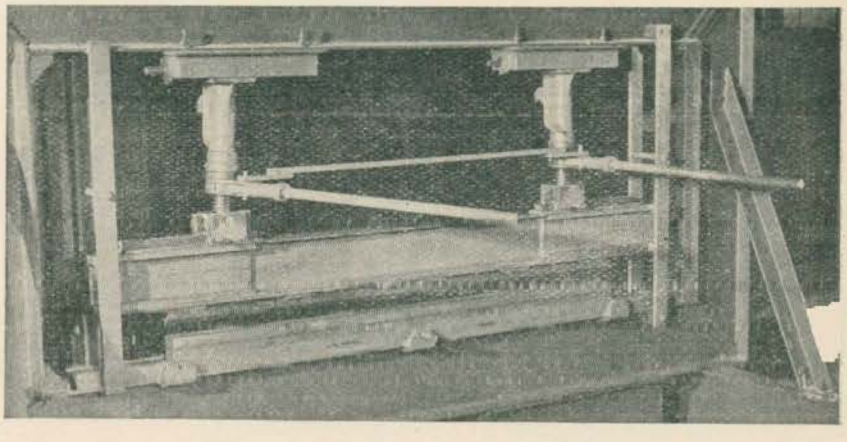

Fig. 4 Cold-Forming Press for Preparing Long Test-Specimens

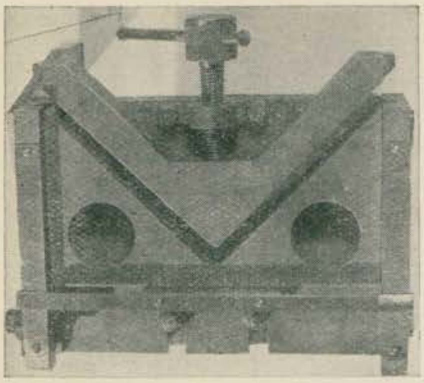

Fig. 5 End Fixture for Angle Sections

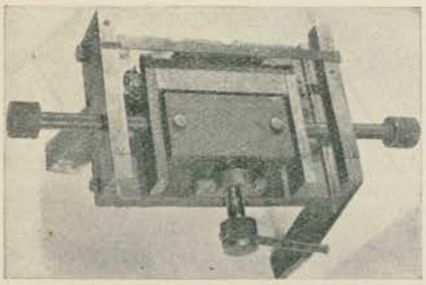

Fig. 6 End Fixture for Channel Sections

TABLE I DIMENSIONS AND PROPERTIES OF SPECIMENS

(*Clause* 4.1.2)

IA Angle

Test Sample	t mm	b cm	h cm	A cm²	I^*_{xx} cm⁴	L/r	$\overline{X}=\overline{Y}$ cm	σ_Y kg/mm²
TPO16	2·337	3·693	3·693	1·726	2·451	42·69	1·041	24·263
TPO17	2·337	4·328	4·328	2·023	3·952	36·34	1·199	24·263
TPO18	2·337	4·455	4·455	2·082	4·314	35·53	1·230	24·263
TPO19	2·337	4·963	4·936	2·319	5·962	31·75	1·357	24·263
TPO20	2·337	5·598	5·598	2·616	8·553	28·07	1·516	24·263
TPO21	2·337	6·233	6·233	2·913	11·805	25·27	1·675	24·263
TPO27	3·226	4·445	4·445	2·868	6·195	34·56	1·235	30·143
TPO28	3·226	5·554	5·554	3·583	11·541	28·30	1·549	30·143
TPO29	3·226	5·782	5·782	3·731	13·028	27·17	1·606	30·143
TPO30	3·226	6·189	6·189	3·993	15·960	25·53	1·708	30·143
TPO31	3·226	6·824	6·824	4·403	21·388	23·05	1·866	30·143
TPO32	3·226	7·459	7·459	4·812	27·925	21·08	2·025	30·143

IB Channel

Test Sample	t mm	b cm	$2h$ cm	A cm²	I_{xx} cm⁴	L/r	$\overline{Y}$ cm	σ_Y kg/mm²
TPO33	2·337	3·693	14·989	5·229	6·494	45·60	0·726	24·263
TPO34	2·337	4·333	14·846	5·492	9·164	39·35	0·913	24·263
TPO35	2·337	4·518	14·846	5·582	10·322	37·35	0·971	24·263
TPO36	2·337	4·963	14·846	5·789	13·344	33·53	1·107	24·263
TPO37	2·337	5·281	14·846	5·938	15·816	31·13	1·214	24·263
TPO38	2·337	5·559	14·846	6·068	18·202	29·33	1·307	24·263
TPO39	2·337	5·598	14·846	6·086	18·543	29·09	1·319	24·263
TPO40	2·235	5·852	14·988	5·969	20·109	27·68	1·396	23·835
TPO41	2·337	6·233	14·846	6·383	24·832	25·75	1·529	24·263
TPO42	2·226	5·237	15·088	8·246	21·460	31·49	1·233	30·143
TPO43	3·226	6·189	15·088	8·860	33·815	26·05	1·554	30·143
TPO44	3·226	6·824	15·088	9·270	44·066	23·85	1·781	30·143

*The moment of inertia is taken about the centroidal axis parallel to X-axis and not about the principal axis.

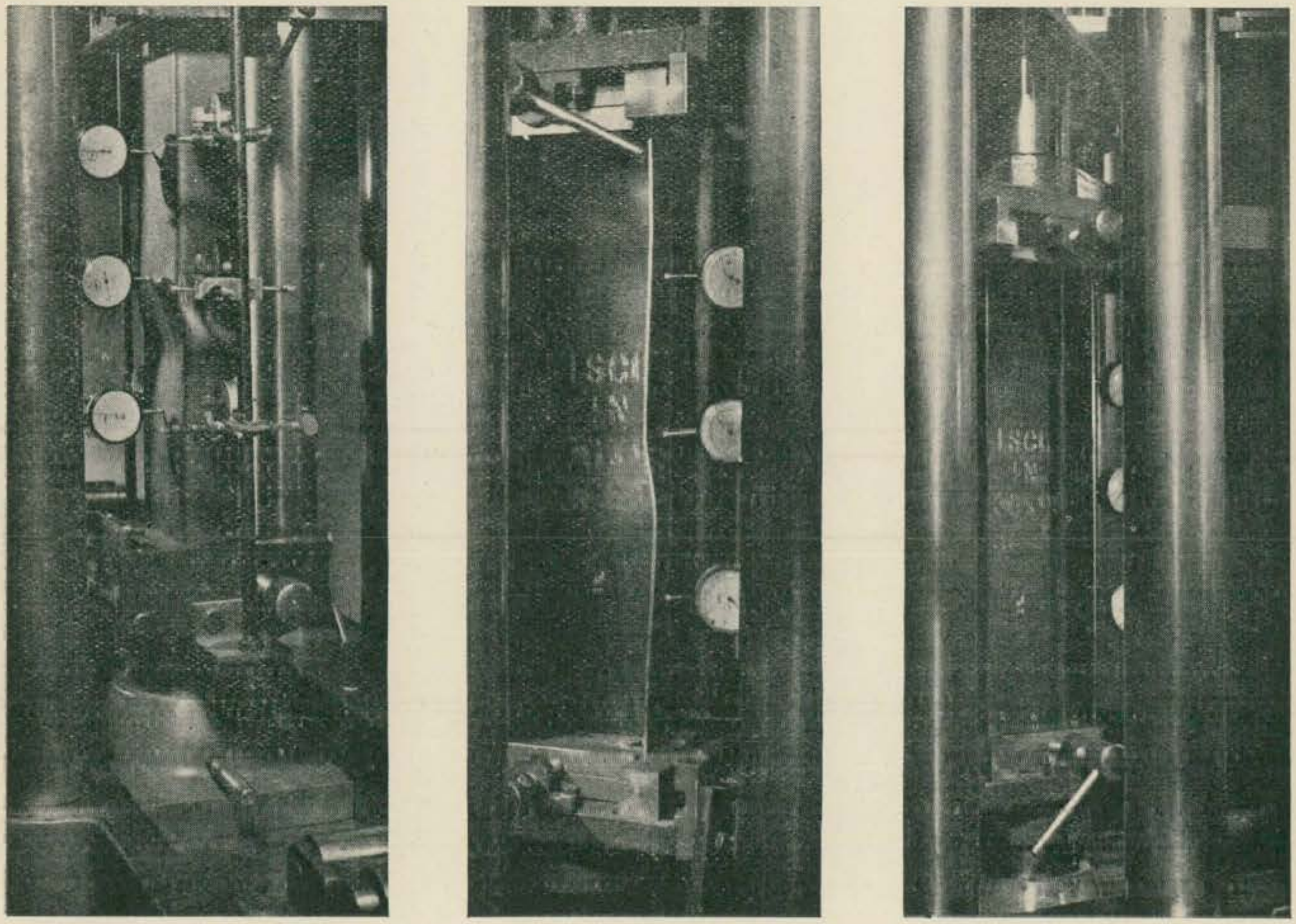

Fig. 7 A Channel Member Under Different Stages of Loading

4.1.2 *Column Test*

The column test is made in a 100-ton Amsler Universal Testing Machine. Special end fixtures are provided to ensure the loading parallel to the column axis and with minimum eccentricity introduced. A set of blocks for angle and channel sections are shown in Fig. 5 and 6. A channel member under different stages of loading is shown in Fig. 7. The details about specimens tested are given in Table I.

4.2 Experimental determination of elastic buckling stress is generally made on Southwell's assumption of hyperbolic relation between load and wave depth[10]. It is presumed that a small amount of initial imperfection is inherent in the test piece and this deviation from straight form goes on increasing with the load. According to the theoretical assumption, the load-deflection relationship is given by two straight lines, the ordinate *OA* and a horizontal line at *A* parallel to the abscissa [*see* Fig. 8 (a)], where *A* corresponds to the critical load. In practical cases, however, the

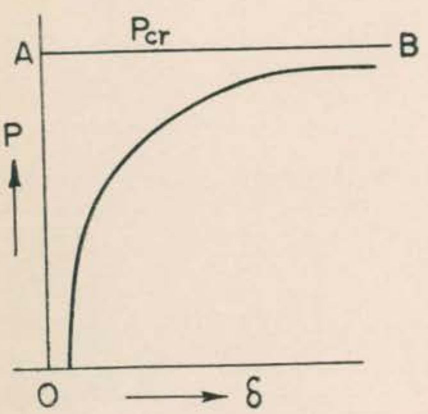

Fig. 8(a) Load-Deflection Curve

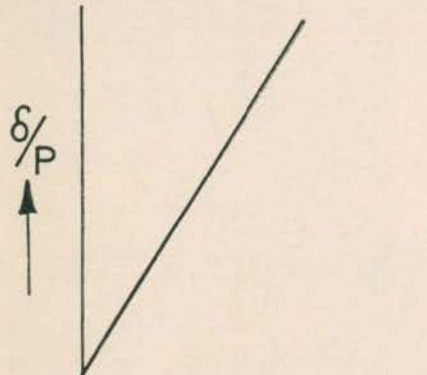

Fig. 8(b) Wave Depth/Load Against Wave Depth

TABLE II RESULTS OF LOCAL BUCKLING TESTS

(*Clause* 4.2)

IIA Angle

Test Sample	t mm	b cm	h cm	A cm^2	P_{cr} kg	P_{ult} kg
TPO16A	2·337	3·693	3·693	1·726	—	4 318
TPO16B	2·337	3·693	3·693	1·726	—	4 470
TPO17A	2·337	4·328	4·328	2·023	—	4 613
TPO17B	2·337	4·328	4·328	2·023	—	4 470
TPO18A	2·337	4·455	4·455	2·082	4 877	4 623
TPO18B	2·337	4·455	4·455	2·082	4 877	4 623
TPO19A	2·337	4·963	4·963	2·320	4 191	4 338
TPO20B	2·337	5·598	5·598	2·616	3 830	4 094
TPO21B	2·337	6·233	6·233	2·913	4 033	4 399
TPO27A	3·226	4·445	4·445	2·868	—	8 484
TPO28B	3·226	5·554	5·554	3·583	—	9 144
TPO29A	3·226	5·782	5·782	3·731	8 473	8 788
TPO30A	3·226	6·189	6·189	3·993	7 389	8 717
TPO31A	3·226	6·824	6·824	4·403	8 636	9 450
TPO32B	3·226	7·459	7·459	4·812	8 310	9 510

IIB Channel

Test Sample	t mm	b cm	$2h$ cm	A cm^2	P_{cr} kg	P_{ult} kg
TPO33A	2·337	3·693	14·989	5·229	—	10 516
TPO34A	2·337	4·333	14·846	5·492	—	11 125
TPO35B	2·337	4·518	14·846	5·582	13 542	11 582
TPO36A	2·337	4·963	14·846	5·789	11 393	11 379
TPO37B	2·337	5·281	14·346	5·938	11 125	11 328
TPO39A	2·337	5·598	14·846	6·086	10 169	11 176
TPO41A	2·337	6·233	14·846	6·383	9 144	11 989
TPO41B	2·337	6·233	14·846	6·383	8 128	10 668
TPO42A	3·226	5·237	15·088	8·246	20 623	23 063
TPO42B	3·226	5·237	15·088	8·246	21 608	24 079
TPO43A	3·226	6·189	15·088	8·860	17 391	23 165
TPO43B	3·226	6·189	15·088	8·860	16 934	23 724
TPO44B	3·226	6·824	15·088	9·270	20 833	24 536

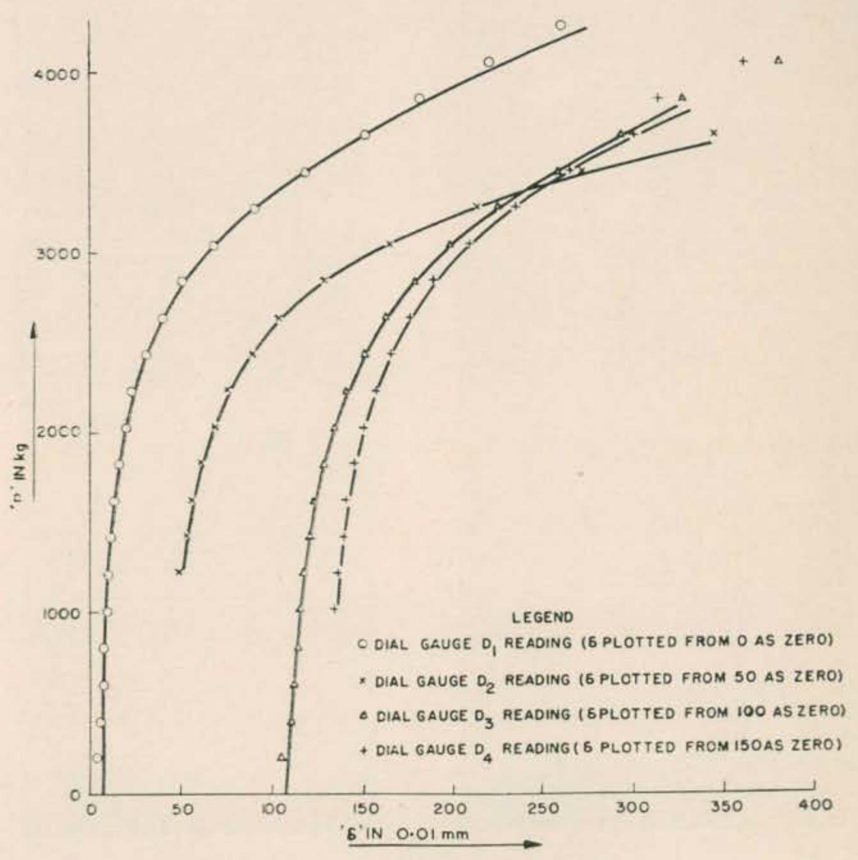

Fig. 9(a) Load-Deflection Curves for TPO2B expectation of sudden buckling at the critical load is not likely to be fulfilled. The initial ' deflections ', due to inaccuracies either of manufacture or loading, are intensified by the action of the applied forces and the load-deflection curves approximate, within the region of small deflections, to rectangular hyperbolas having as asymptotes the axis of zero deflection and the horizontal $P=P_{cr}$. Plotting δ/P against δ, where δ is the wave depth and P applied load, a straight line relationship is obtained, the inverse slope of which gives P_{cr} [*see* Fig. 8(b)]. The test results for a short column angle member TPO21B (SCAM series) plotted in Fig. 9 (a) and 9 (b) show close agreement with the results predicted by theory. Similar relationships are obtained for other Short Column Members and the results are given in Table II.

5. DESIGN CHARTS

5.1 Design charts for the SCM series tested in the present programme are constructed in Fig. 10 and 11. For a given design load, the useful range of standard sections could be determined directly with reference to these charts. For example, the design range of sections for a 13 SWG angle section to withstand a load of 4 500 kg lie between 1·868 cm² to 2·18 cm² (*see* Fig. 10). The critical section 1·78 cm² at the lower range area fail by plastic buckling and the critical sections 2·18 cm² and 3·01 cm² at the upper range by elastic instability. Sections of range 1·868 cm² to 2·18 cm² have yield loads and collapse loads higher than the design loads of 4 500 kg and should be accepted as design range.

5.2 The range of sections 2·18 cm² to 3·01 cm² is termed as failure range, since no section in this range can withstand the design load. Similarly, the lower failure range of area less than 1·868 cm² should be avoided for the same reason. The section 3·01 cm² and higher range sections can carry the design load of 4 500 kg but at a high expense of material. Design range of sections for 13 SWG short column channel members (SCCM series) are obtained similarly and a tentative list of standard sections for arbitrarily chosen loads are given in Tables III and IV.

5.3 The problem then arises to develop efficient sections for the lower and higher design loads not covered by the present charts. Referring to Fig. 10 for design loads smaller than 4 500 kg, the lower failure range seems to be efficient

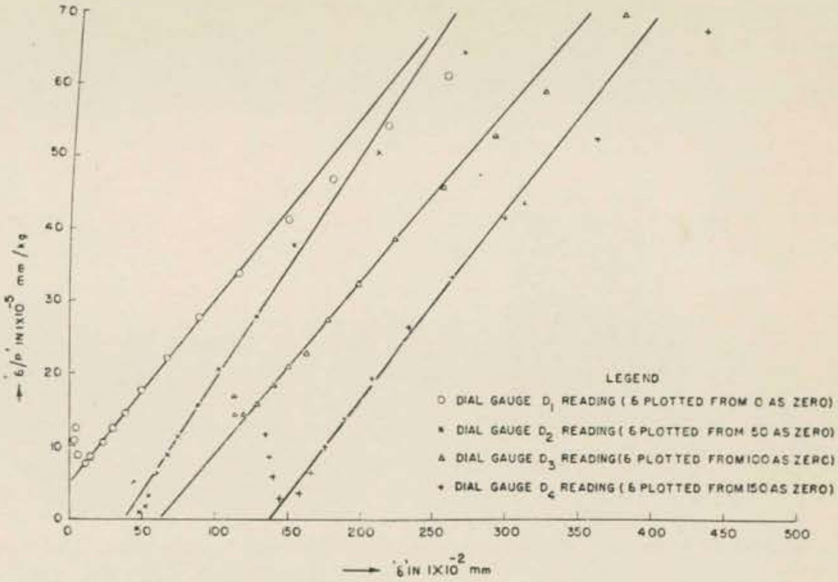

Fig. 9(b) Wave Depth/Load Against Wave Depth for TPO 21B

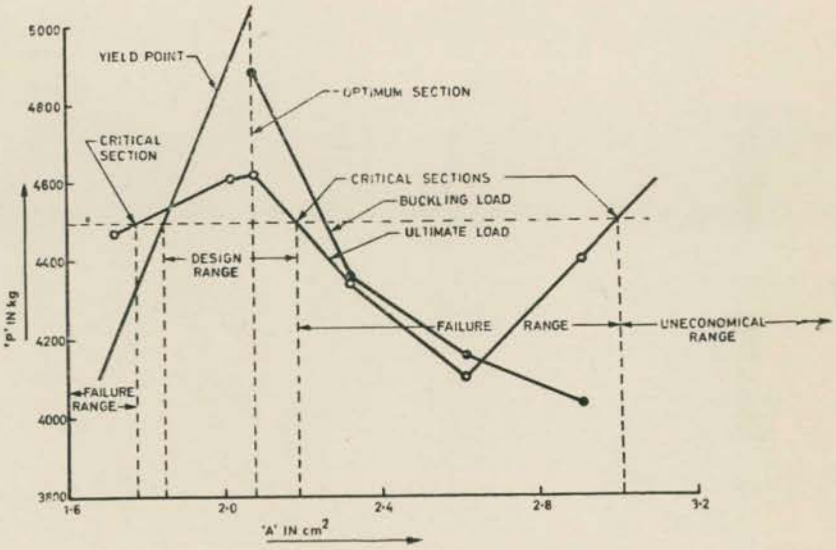

Fig. 10 Design Chart for 13 SWG Short Column Angle Member

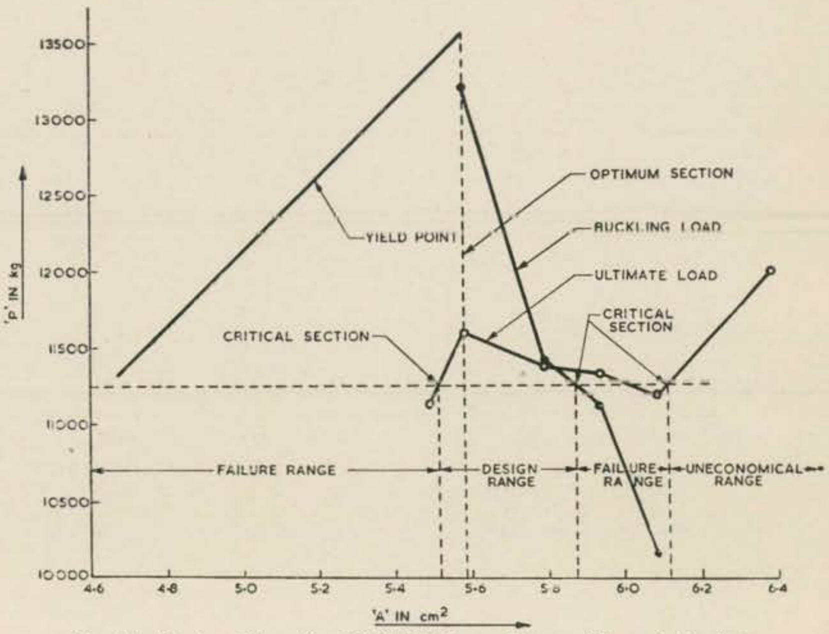

Fig. 11 Design Chart for 13 SWG Short Column Channel Member

TABLE III DESIGN RANGE OF ANGLE SECTIONS

SERIAL No.	t mm	b cm	h cm	A cm^2	P_{design} kg	P_{ult} kg
i)	2·337	3·693	3·693	1·868	4 500	4 532
ii)	2·337	4·100	4·100	1·916	4 500	4 569
iii)	2·337	4·328	4·328	2·023	4 500	4 623
iv)	2·337	4·455	4·455	2·082	4 500	4 623
v)	2·337	4·550	4·550	2·127	4 500	4 568
vi)	2·337	4·664	4·664	2·180	4 500	4 500

TABLE IV DESIGN RANGE OF CHANNEL SECTIONS

SERIAL No.	t mm	b cm	$2h$ cm	A cm^2	P_{design} kg	P_{ult} kg
i)	2·337	4·374	14·846	5·514	11 250	11 250
ii)	2·337	4·519	14·846	5·582	11 250	11 582
iii)	2·337	4·687	14·846	5·660	11 250	11 516
iv)	2·337	4·815	14·846	5·720	11 250	11 445
v)	2·337	4·963	14·846	5·789	11 250	11 379
vi)	2·337	5·132	14·846	5·868	11 250	11 345

but due to practical limitations of forming such small sections it may not be possible to adopt this range. For higher design loads one may be able to work in the non-optimum range. In that case, the member has to carry the load in the buckled state which may not be always possible and desirable. It is evident, therefore, that for lower design loads it is necessary to go for thinner sheets and for higher design loads for thicker sheets.

6. CONCLUSION

6.1 It can be seen from Table II that the optimum sections designed on the basis of equation 10 (*see* **3.3.3**) carry the maximum loads, though the test loads are lower than the theoretical simultaneous failure

(*Continued on p.* 101)

LATE SHRI G. B. PANT

We record with deep sorrow the death of Bharat Ratna Pandit Govind Ballabh Pant who was associated with ISI as its President for a short period in 1956.

Late Shri Pant, who was born in September 1887 and died on 7 March 1961, started his life as a lawyer, and was enrolled as an advocate in 1909. Seven years later, he entered politics, and in 1923 he was elected to the UP Legislative Council. In 1927, he became President of the UP Congress Committee. In pre-independence era, when general elections were held in 1937 and 1946, he won a seat in the UP Assembly and became Chief Minister of UP on both occasions. He continued as Chief Minister till 1954 when he was called upon to join the Union Cabinet where he was a tower of strength to all concerned. He was awarded the Bharat Ratna in 1957.

Pandit Pant, one of the 'Old Guards' of the Congress Party, had in him a unique combination of unusual common sense, crystal clarity, balanced judgement and devoted patriotism. He was one of those rare people who tested every idea before accepting it and carefully weighed every word before using it. When he marshalled facts and presented them, there was hardly any body who could question him. And because of these qualities there were many who went to this commanding but affectionate personality for security and guidance.

The General Council of ISI mourned his death at its sixteenth meeting held under the presidentship of Shri Lal Bahadur Shastri on 23 March 1961 by passing the following resolution and then standing in silence for a minute:

"Besides being a great fighter in the cause of national freedom Pandit Pant was an outstanding statesman and administrator. He rendered invaluable service to the country in various fields and especially in tackling the problems which had beset the nation immediately after independence and in putting her well on the road to progress."

"Pandit Pant was associated with ISI as its President for a short period during which his mature experience and wisdom were available for the guidance of Institution's affairs."

"The irreparable loss in the death of Pandit Pant that the nation has suffered is mournfully shared by the Indian Standards Institution."

ONE OF THE LAST PHOTOGRAPHS OF SHRI G. B. PANT TAKEN AT VIGYAN BHAVAN ON 24 DEC 1960 WHEN HE GAVE AWAY THE PRIZES AT THE SIXTH STATE AWARDS FOR PRINTING. THE PICTURE SHOWS THE CHIEF EDITOR ISI RECEIVING THE CERTIFICATE OF MERIT FOR ISI (*see* p. 81)

SIXTH INDIAN STANDARDS CONVENTION

It has been decided to hold the sixth Indian Standards Convention at Kanpur from 25 to 31 December 1961. Earlier conventions were held at Calcutta (Dec 1954), Bombay (Jan 1956), Madras (Dec 1957), New Delhi (Nov 1958) and Hyderabad (Dec 1959). The subjects proposed for discussion at this convention are: productivity in building design and construction; working of existing certification marks schemes for different industries and policies for purchase of certified goods; packaging; company standardization practices; adoption of metric system in design and manufacture of engineering products; adoption of universal count system in textiles; housing and preservation of documents; safe use of electricity in the home; and non-destructive testing of metals.

Standardization of Transformers

K. R. SHAH
SIEMENS ENGINEERING & MANUFACTURING CO. OF INDIA LTD.

Standardization of transformers poses, among other things, the problem of fixing optimum copper and iron losses as these have a bearing on the economical design of the transformer, which has very often, to strike a balance between the running cost as reflected by the copper and iron losses and the capital cost. In the light of continental standards, development of which is discussed in great detail in this paper, the author discusses the life of transformers, the most economical loss ratio and the trend of their standardization in India. He also pleads for standardization of various component parts of transformers, such as bushings, conductors, tap-changers, etc.

A draft Indian Standard Specification for Power Transformers is also under wide circulation (*see* p. 97). Comments on this draft, copies of which can be obtained from ISI, are invited as they will be helpful in finalizing the draft for publication — *Ed.*

0. INTRODUCTION

0.1 To evolve standards for electrical machines is rather difficult. The customer usually wants to have equipment which requires minimum maintenance, very low running cost, and is above all, cheap.

0.2 The requirement, cheap products with better characteristics, can be satisfied only with rationalized production. The most important consideration in this regard is the reduction in types or sizes and standardization in respect of their performance characteristics. There are many customers who are agreeable to the reduction in types and they order equipment as per standard, but unfortunately with a proviso that it will be altered in one way or the other to suit the conditions already prevailing with them. In the open market, salesmen are out to book orders and the customer wants his petty requirements fulfilled; thus both the customers as well as salesmen damage the cause of standardization and obstruct the process of economical production.

0.3 The British Standard (B.S. 171: 1959)[1], which is more popular here, is general in character and the performance characteristics such as losses and impedance have been left open. On the other hand, the continental standards are more specific in this respect. Also our position is more or less commensurate, if not worse, with the continental countries as far as the raw materials are concerned. It will, therefore, be advantageous to study their trend in this matter.

0.4 Further, the standards of a country must take into account the prevailing conditions in that country. They should be kept up-to-date and not remain stagnant. The development of transformer standards in Germany gives a better all-round picture in this respect and it will not be out of place if prominence to these standards is given here.

1. GERMAN STANDARDS

1.1 In Germany, the first attempt towards standardization of transformers was made in 1918-20, and a tentative standard specifying aluminium winding was prepared. In order to bring this standard nearer to its general form, the German Institution of Electrical Engineers (VDE) issued a standard[2] in 1920, with copper winding and it included 3-phase transformers with 5, 10, 20, 30, 50, 75 and 100 kVA ratings having nominal HV of 5, 6, 10 and 15 kV and LV of 400/231. Apart from this 'main series', a 'special series' of 5, 10, 15, 25, 37·5 and 50 kVA was also standardized. By using frames of the main series and altering the magnetic as well as electrical loading, customers having relatively low average loading and occasional maximum loading were given an alternative transformer, which had lower no-load losses and also lower continuous rating.

1.2 At that time, VDE laid down the system of nominal voltages[3] for the first time and 5 kV, which was being replaced by 6 kV, was deleted from the list. However, considering the then existing plants it was found necessary to keep that in the transformer standard. Things have not changed much in these 40 years and nearly equal number of 5 kV and 6 kV transformers are manufactured in Germany. On the other hand, though 15 kV was found quite often and 20 kV was not found to be so important that it might be included in the transformer standard, more and more plants began changing over to 20 kV and 15 kV has now become practically obsolete.

1.3 It is interesting to note that even at that time, remarks such as the following were made:

a) "The manufacturers have been forced by the electricity supply companies to increase the impedance in order to decrease the copper losses. Ninety five percent of the companies choose the transformers with lower iron loss if that alternative is available."

b) "The iron loss has a preference when compared to the capital outlay for the network."

c) "The question of iron loss has been exaggerated by the Supply Companies. The industry has been forced to construct transformers with the lowest iron losses. This is wrong . . . . ."

After 40 years, these words are still true and in spite of considerable advance in technology, the trend is towards low loss.

1.4 The VDE standards of 1920 were taken over by Deutscher Normenauschuss in 1923 and were designated as DIN-VDE 2600: 1923[4] and DIN-VDE 2601: 1923[5]. At the same time, transformers having HV of 20 kV were included in this standard. In 1924, a further standard DIN-VDE 2601: 1924[6] was published in which three-phase transformers from 5 to 1 600 kVA of normal transformation ratios and short circuit voltages were standardized along with a voltage of 25 kV. The losses were not mentioned till date.

1.5 One was satisfied with these three standards[4,5,6] for the time being until during the period 1934-36 the need was felt for decreasing no-load losses. Also, progress was made by rolling mills in obtaining laminations with lower losses and laminations having 1·3 W/kg and 1·1 W/kg at 10 000 gauss were available as compared to 1·6 W/kg hereto before. It took, however, a few years before the changeover was seriously taken up. Transformers up to 40 MVA, bushings and various accessories were included and at the beginning of 1942, the first standards of the series DIN 42 500 came into being.

1.6 During this work, the question of maximum flux density allowable for the transformers was thoroughly considered. The supply companies chose 13 000 gauss whereas the manufacturer had a figure of 15 000 gauss in mind. As a compromise two standards, namely, DIN 42 502: 1942[7] with normal flux density, that is, 14 000 gauss up to 100 kVA and 15 000 gauss thereafter; and DIN 42 503: 1942[8] with lower flux density, that is, 13 000 gauss were issued. Both these standards covered transformers up to 1 600 kVA and contained both the variations of the iron losses, so-called normal losses and low losses.

1.7 This was necessary due to shortage of better quality of laminations due to the outbreak of war. However, within a short time, the production of transformers with lower flux density was forbidden. Thus the primary object in the evolution of transformer standard has been economic utilization of the raw materials.

1.8 The industry had expressed a wish to have transformers having higher impedance than the usual 3·5 percent and 4 percent, because of too high stresses in the LV net prevailing under short circuit conditions and when the plant had a low reactance. For this, DIN 42 510: 1942[9] for transformers up to 1 600 kVA and with impedance of 6 percent was developed.

1.9 The aluminium winding was replaced by copper as soon as the material position of the war years was better. Hot rolled steel with 1·1 W/kg at 10 000 gauss was available. Also laminations with 0·9 W/kg were imported from America and after a while the German rolling mills were able to supply these. A step forward was made with the cold rolled steel having 0·5-0·6 W/kg which was available in small quantities from USA and later from the American aided rolling mill in France. This in turn brought forward the demand for lower loss.

1.10 As a first step, the low losses in DIN 42 502: 1949[10] and DIN 42 510: 1949[11] were termed as normal losses. Since the supply of better grade laminations was not guaranteed, it was not possible to decide in favour of still lower losses. The manufacturers thus offered normal transformers (for 1·1 W/kg laminations) 15 percent lower loss (for 0·9 W/kg) and 30 percent lower loss (for cold rolled steel). Further, a series having 40 percent lower loss than the normal but relatively expensive, was offered with cold rolled steel and special annealing treatment.

1.11 In short, during a period of 30 years, the no-load losses have been halved. On the other hand, the copper losses (V_{Cu}) have remained practically unaltered. The ratio of iron loss (V_{Fe}) to copper loss has been changed from 1 : 3·5 to 1 : 7. As a result of this, one was inclined to reduce the copper losses. Since no material with better losses has been developed, it was necessary to develop new series of transformers with a revised relationship between iron and copper weights. In order to satisfy the customers, a new standard DIN 42 503: 1959[12] with the losses reduced when compared to DIN 42 502: 1957[13] has been evolved.

1.12 In the former case, the low losses were arrived at by reducing the flux density, whereas in this case, this has been achieved by using cold rolled steel. The saturation (flux density) has not been reduced when compared to DIN 42 502: 1957, but raised a little. Even then the change is considerable. Compared to the values in DIN 42 502: 1957 the following reductions have been achieved.

	DIN 42 503: 1959	DIN 42 503: 1957
No Load Loss, percent	40 approx	22
No Load Current, percent	55-60	40-50
Copper Loss, percent	10-15	0

The relationship between the losses is 1 : 6·2.

1.13 Table I shows the losses according to the various DIN Standards. Suitable loss figures which may be adopted for India are also given.

1.14 It would, further, be interesting to note that the weights of raw materials as well as dimensions of transformers have been standardized in Germany; *see* DIN 42 517: 1949 (March), DIN 42 518: 1949 (March) and DIN 42 520: 1956 (Dec).

2. OTHER CONTINENTAL STANDARDS

2.1 In **France**, there is one prominent customer, that is, the nationalized Electricity Supply Company. Since this itself is actively interested in standardization, French manufacturers are better off. In 1958, a new standard for distribution transformers for ratings of 25, 40, 63, 100, 160, 250, 400 and 630 kVA has been made. It is to be noticed that the alternate sizes of the normal series have been dropped, thus reducing the total sizes to half. The ratio of losses is 1 : 6·4 for the small ones and it reduces to 1 : 5·2 for 630 kVA. The copper losses are similar to those given in DIN 42 503: 1957[14]. The same is the case for iron losses up to 160 kVA and for ratings higher than these, they are slightly higher. The impedance is again 4 percent.

2.2 In **Belgium**, two series have been standardized. One with normal losses and the other with reduced losses. These transformers cannot be easily compared to the transformers as per DIN standards. Firstly, because the impedance is between 4 and 5 percent, and secondly, in the latter case, the temperature rises in copper and oil have been considerably reduced. The specific loading of iron and copper is reduced.

2.2.1 The normal series has no-load losses approximately 25 percent above and the copper losses approximately 15 percent lower than the values as given in DIN 42 503: 1957. The loss ratio then lies between 1 : 4·5 and 1 : 3·5. In the series with lower losses, they are 10 percent above and 20 to 30 percent lower respectively and the ratio is between 1 : 4·8 and 1 : 3·38. The unofficial series having still lower losses has 20 percent less no-load losses and 20 to 25 percent less copper losses, the corresponding ratios lying between 1 : 6 and 1 : 4·5.

2.3 In **Italy**, no such standard exists as yet. The tentative standard for voltages up to 11 kV and 33 kV having 4·5 as well as 5 percent impedance and (for 11 kV series) 10 percent higher iron losses (for small transformers and reducing to 5 percent for the larger ones) compared to DIN 42 503: 1957 and copper losses approximately 15 percent

TABLE I COMPARISON OF STANDARD LOSSES FOR TRANSFORMERS UP TO 1 000 kVA AND 10 kV

RATING kVA	DRAFT IS SPECIFICATION FOR POWER TRANSFORMERS			DIN 42 502 : 1957			DIN 42 503 : 1957			DIN 42 510 : 1957			IS: 1180-1958		
	V_{Fe}	V_{Cu}	V_{Cu}/V_{Fe}	V_{Fe}	V_{Cu}	V_{Cu}/V_{Fe}	V_{Fe}	V_{Cu}	V_{Cu}/V_{Fe}	V_{Fe}	V_{Cu}	V_{Cu}/V_{Fe}	V_{Fe}	V_{Cu}	V_{Cu}/V_{Fe}
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	162	480	2·96
25	—	—	—	—	—	—	—	—	—	—	—	—	220	700	3·18
30	—	—	—	200	870	4·35	160	870	5·44	—	—	—	—	—	—
50	—	—	—	300	1 350	4·50	230	1 350	5·87	—	—	—	325	1 180	3·63
75	—	—	—	410	1 850	4·52	320	1 850	5·78	—	—	—	450	1 600	3·56
100	500	2 000	4·00	510	2 300	4·51	400	2 300	5·75	—	—	—	550	2 000	3·64
125	570	2 350	4·12	610	2 750	4·51	480	2 750	5·74	—	—	—	—	—	—
160	670	2 840	4·24	730	3 300	4·52	560	3 300	5·89	—	—	—	—	—	—
200	800	3 400	4·25	870	3 900	4·49	670	3 900	5·83	—	—	—	—	—	—
250	950	4 000	4·21	1 040	4 700	4·52	820	4 700	5·74	950	5 200	5·48	—	—	—
315	1 150	4 770	4·15	1 240	5 600	4·52	950	5 600	5·90	1 120	6 300	5·62	—	—	—
400	1 380	5 700	4·13	1 470	6 700	4·56	1 100	6 700	6·09	1 330	7 400	5·56	—	—	—
500	1 660	6 920	4·17	1 700	8 000	4·71	—	—	—	1 550	8 800	5·67	—	—	—
630	1 980	8 260	4·17	—	—	—	—	—	—	1 900	10 400	5·46	—	—	—
800	2 400	9 980	4·16	—	—	—	—	—	—	2 250	12 300	5·46	—	—	—
1 000	2 800	11 880	4·24	—	—	—	—	—	—	2 650	14 600	5·51	—	—	—
	Remarks			Normal Loss			Low Loss			Normal Loss Higher Impedance					

NOTE — V_{Fe} = Iron Loss; and V_{Cu} = Copper Loss.

lower (Loss Ratio 1 : 5) is being developed.

3. MOST ECONOMICAL LOSS RATIO

3.1 The question that now arises is the one of the determination of the most economical loss ratio. This depends mainly upon the annual load curve of the transformer. Since this can vary to a considerable extent, it is simply impossible to satisfy all the conditions with one standard transformer[16]. Hence, a compromise must be made and an average solution obtained.

3.2 Which physical laws exist that enable one, apart from the best loss ratio, to reduce the losses further, reduce the dimensions and also the manufacturing cost ? In order to do this, it will be necessary to obtain a simple relationship between losses and production costs. Unfortunately, this is not easy. Attempts have been made to relate the weight of the active materials and the losses to the rating, permissible specific loading of iron and copper and the following empirical equations have been suggested:

$$Wt_{Fe}.Wt_{Cu}=\frac{K_1}{\sqrt{f_{Fe}.f_{Cu}}}\left(\frac{P}{B.\delta}\right)^{1\cdot5}\times 10^{3}$$

$$W_{Fe}.W_{Cu}=\frac{K_2}{\sqrt{f_{Fe}.f_{Cu}}}\cdot W.P^{1\cdot5}.B.\delta^{0\cdot5}\cdot 10^{-6}$$

where,

Wt_{Fe} and Wt_{Cu} are the weights of active iron and copper respectively in kg;

W_{Fe} and W_{Cu} are the no-load and copper losses in kW;

P = kVA rating;

δ = Current density in A/mm²;

B = Flux density, in kilo gauss;

W = Iron loss at 15 kilo gauss in W/kg; and

f_{Fe} & f_{Cu} = Iron and copper (window) space factors.

It should be noted that $K_1=2\cdot7$ and $K^2=8\cdot0$ for 3-phase transformers, 50 c/s. (Star-Star or Delta-Star connection).

3.3 Now that much design work can be done by computers, it will be easier and quicker to study the influence of the variables and obtain more exact results so that transformers can be closely designed, and other empirical relationships developed.

3.4 It will be seen that for a certain rating, the product of the weight of active iron and copper is mainly dependent upon permissible specific loading. In order to build a lighter transformer, which is also cheaper and smaller in dimensions, one must, therefore, use highest possible values for the flux density and current density. Further, the product of no-load and copper losses for a specific rating is practically constant for a given grade of lamination and fixed values of flux density and current density.

3.5 In *Table II* a comparison of the weights as per continental standards against indigenous products has been shown.

4. TREND IN INDIA

4.1 A short remark about the trend in India will not be out of place. Uptill now, transformers with iron losses slightly lower than DIN 42 502: 1957 have been asked for. The copper losses on the other hand have been grossly reduced and this is reflected in the overall weights and dimensions of the transformers.

4.2 In IS: 1180-1958[17], an attempt has been made to specify, *inter alia*, losses. Since, maximum loss figures have been given, the choice of loss figures is left entirely to the discretion of the manufacturer or customer and much lower figures for losses have been asked for uptill now.

4.3 Another draft Indian Standard Specification for Power Transformers, covering a very wide ground is under circulation at present. This draft takes into account the recent developments and trends in this direction and it is hoped that the shortcomings of the other standards will be overcome.

5. DIMENSIONS OF TRANSFORMERS

5.1 One can now consider the question of the most economical dimensions of transformers. The value of the flux density and the current density must be fixed. Higher values will give, as is clear, lower production costs, but at the same time, higher losses and higher temperatures associated therewith, are to be tolerated. Thus, the current density has been limited to 3-4 A/mm² in the continental transformer of the oil immersed type. The saturation point of the hot rolled steel has been increased from 12 000-13 000 gauss to 14 000-

15 000 gauss. Considering the heating of the core, one can use a flux density of 17 000 gauss, but here again, the lower no-load losses and no-load current limit this to 15 000-16 000 gauss.

5.2 If we now analyze how the production costs with various loss relationships $W_{Fe}: W_{Cu}$ vary with a given value of flux density and current density and also with a constant product $Wt_{Fe} \cdot Wt_{Cu}$, we find that the cost against loss relationship curve is very flat and the difference in cost is very small between the values 1: 3 to 1: 8. Since the price of copper varies considerably, the optimum will depend upon it. Taking the present prices, the ratios of 1: 4 for hot rolled steel and 1: 6 for cold rolled steel can be adopted. These seem to be reasonable figures for India also.

5.3 What are the possibilities of reducing the losses ? It is imperative that materials with lower specific losses are used. There is nothing one can do about the copper. As far as the laminations are concerned, the Americans are trying to improve upon the cold rolled grain oriented steel. One can reduce the specific loading, but this results in more material, higher cost and increased dimensions. One can also try to improve upon the space factors. The iron space factor is already in the region of 0·9 and cannot be improved upon much. The window space factor which seems relatively low can be improved by reducing the insulation and cooling ducts and at the cost of safety margins, heating and probably also the useful life.

5.4 Comparing the size of the present transformer with that of the one approximately 40 years old, one finds that the weight of the former is lower by 60 to 70 percent and the volume approximately by 50 percent. This has not been achieved only through the increase in specific loading, but also due to the improvement of space factor. This has affected the short circuit stresses and it has been necessary for manufacturers to build stronger transformers.

6. LIFE OF TRANSFORMERS

6.1 One more question which still requires attention is the question of its useful life. A popular belief is that the older transformers were better in this respect.

6.2 The life of a transformer depends upon various factors such as the various over-voltages to which it is subjected. Enough information has been collected regarding this uptill

TABLE II COMPARISON OF WEIGHTS OF ACTIVE MATERIALS, OIL AND TOTAL WEIGHT OF TRANSFORMERS

Rating kVA	Weight of Active Materials (in *kg*) Taking DIN 42 502: 1949 as 100 Percent						Weight of Oil (in *kg*) Taking Continental Transformer as 100 Percent					Total Weight of Transformers (Including Oil) Taking Continental Transformer as 100 Percent (in *kg*)					
	DIN 42 502: 1949		Manufacture a		Percentage		Continental	Manufacture a	Manufacture b	Percentage a	Percentage b	Continental	Manufacture a	Manufacture b	Percentage a	Percentage b	Comparison With
	Fe	Cu	Fe	Cu	Fe	Cu											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
10	—	—	—	—	—	—	52	—	96	—	84·5	210	372	386	77·0	88·0	
15	71·5	32·0	72	32	—	—	—	—	123	—	105	—	454	463	54·0	57·0	20 kVA
20	92·5	42·0	—	—	—	—	60	—	—	—	—	295	—	—	—	—	
25	—	—	—	—	—	—	—	—	173	—	131	—	—	649	—	—	
30	115	50	—	—	—	—	75	—	—	—	—	330	—	—	—	—	30 kVA
50	150	70	163	72	8·5	3·0	105	195	231	86·0	120	465	692	991	49·0	113·0	
75	185	85	228	92·5	23·5	9·0	123	233	269	89·5	119	505	889	1 154	57·5	104·0	
100	215	100	256	131·0	19·0	31·0	140	257	365	83·5	161	660	1 010	1 355	53·0	105·0	
125	255	116	318	153	24·5	32·0	154	306	432	99·0	180	765	1 255	1 512	64·0	97·5	
150	—	—	348	173	12·0	33·0	—	333	548	79·0	195	—	1 345	1 888	50·0	111·0	160 kVA
160	310	130	—	—	—	—	186	—	—	—	—	895	—	—	—	—	
200	370	158	439	206	18·5	30·5	213	421	615	98·0	146	1 030	1 585	2 045	54·0	98·5	
250	435	196	606	246	39·0	25·5	345	457	692	33·0	100	1 370	1 975	2 247	44·5	64·0	
300	—	—	630	287	19·0	29·0	—	525	730	36·0	90	—	2 150	2 950	40·0	92·0	315 kVA
315	530	223	—	—	—	—	385	—	—	—	—	1 540	—	—	—	—	—
350	—	—	775	323	23·0	25·0	—	565	—	—	—	—	—	—	—	—	400 kVA
400	630	258	—	—	—	—	425	—	—	—	—	1 815	—	—	—	—	
500	775	310	940	387	21·5	24·5	485	716	1 230	48·0	154	2 065	3 110	4 030	50·5	95·0	
630	920	365	—	—	—	—	560	—	—	—	—	2 440	—	—	—	—	
750	—	—	1 385	552	26·5	29·0	—	910	—	44·0	—	—	4 880	—	69·0	—	800 kVA
800	1 095	428	—	—	—	—	630	—	—	—	—	2 895	—	—	—	—	
1 000	1 305	515	1 785	710	37·0	38·0	770	1 240	—	61·0	—	3 575	5 280	—	48·0	—	

Notes — 1. The weights in Columns 2 and 3 correspond to losses as given in DIN 42 502: 1949.
2. The corresponding loss figures for Columns 4 and 5 are: slightly lower iron loss and copper loss considerably reduced.

now, so that the insulation to be allowed to suit the various conditions can be easily determined. The present transformer is thus better. The transformer, however, though properly clamped, may suffer due to severe stresses to be withstood during the short circuit.

6.3 The usual method of determining its useful life consists of the considerations of thermal stresses due to load cycles and also due to occasional short circuit currents. In 1930, Montsinger formulated the law regarding insulation of the winding[19], which states that for each 8°C rise in temperature between 90°C and 200°C, the life will be halved. Whether this value of 8°C is correct or that it should be higher or lower, is not clear till date. The quality and the ageing of the oil plays an important role also.

6.4 Long before Montsinger's experiments, VDE regulations specified that the copper temperature rise should be 70°C (by Resistance Method) and an oil temperature rise of 60°C in the top layer. It has been proved in practice that taking an annual average ambient temperature of 20°C, with 35°C as the highest, the life of a transformer will be more than 25 years. The trend these days is to go for 65°C in copper and 55°C in oil, in order to have uniformity with the neighbouring sub-tropical countries having highest ambient temperature of about 40°C. On the international level, one is trying to give a guidance about their overloading. The VDE rules may then permit higher overloads in special cases.

7. CONCLUSION

7.1 The standardization of transformers does not mean that one should only specify the losses, impedance and temperature rises and the work done. There are so many parts — bushings, conductors, tap-changers, breathers and so on — which may also be standardized, to the advantage of manufacturers as well as customers.

7.2 Thus, it will be very necessary to give a detailed thought to the various qualities important for a good design transformer before a standard can be prepared. It will be necessary to alter our outdated ideas regarding performance and we will have to make a fresh scientific approach to this problem. It will be a grave mistake on our part not to use the experience of the other countries and thus reduce the development time, but in no case one should adopt some other countries' standard. It should be noted that it is very difficult to revolutionize a standard by introducing new technique, once it has been adopted. An effort must, therefore, be made to develop a standard after sound scientific approach and not just adopt one standard existing in some country.

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ELECTIONS TO GENERAL COUNCIL

Elections were held by postal ballot for giving representation to Sustaining Members and Sustaining Members (Associates) of the Indian Standards Institution on the ISI General Council. According to Section 2 of the Rules and Regulations of the Institution, ten representatives from Sustaining Members and two representatives from Sustaining Members (Associates) are to be represented on the General Council and one-third of the members retire at the end of every calendar year. In accordance with this rule, the following organizations have been elected to serve for a period of three years ending 31 December 1963:

Representatives of Sustaining Members

1) Associated Cement Companies Ltd., Bombay (re-elected);
2) Bengal Chamber of Commerce & Industry, Calcutta (re-elected); and
3) Imperial Chemical Industries (India) Private Ltd., Calcutta (re-elected).

Representative of Sustaining Members (Associates)

1) Faculty of Technology & Engineering, M. S. University, Baroda.

Vibratory Compaction of Tensile Briquettes for Cement Testing

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The conditions of briquette casting of cement specimens for their tensile strength test should be so specified as to eliminate error caused by personal factor of the analyst. Briquette cast by the method prescribed in IS : 269-1958 Specification for Ordinary Rapid-Hardening and Low Heat Portland Cement leads to non-uniform results which normally show a variation of ± 15 percent. It is claimed that by employing the method of vibratory compaction of briquettes with superimposed load of about 550 g, described in this paper, the range of variation can be reduced to about ± 10 percent — *Ed.*

0. INTRODUCTION

0.1 Efforts have been made in the past to improve the present Indian Standard method[1] of tensile strength test for cement. The main defect in this method is that the compactive effort for the casting of the specimen is left to the arbitrary judgement of the individual. There is more of craft than science involved in the testing method and this is contrary to the spirit of standardization, as it is difficult to get repeatable results.

1. PAST INVESTIGATIONS IN INDIA

1.0 Several methods, manual, manual-cum-mechanical and mechanical which involved the elimination of personal factor to varying degrees were investigated at the Central Road Research Institute[2,3].

1.1 The HERL Method

1.1.1 Of these, the Hyderabad Engineering Research Laboratory (HERL) method, which is based on the reasoning that a uniformly constant compaction is attained when a definite weight of material is subjected to a definite compactive effort, was found promising. The method in its final form[3] consisted of compacting the mortar got from 150 g of dry materials with 250 blows of a 3 lb (1·36 kg) cylindrical dropping weight falling through a height of 14·4 in. (36·6 cm). Compared to the other methods tried, the HERL method was found to give more uniform results. The adoption of this method in the Indian Standards was considered, but further work showed that the uniformity of the results obtained did not meet specification requirements.

1.2 The Vibratory Method

1.2.1 During the investigation[2,3], there was a method using the B.S. Vibrator, which gave unsatisfactory results. Briquettes prepared by this method weighed only about 125 g, as against 147 and 153 g by the HERL[3] and B.S. Spatula[4] methods respectively. The average 3 days' and 7 days' strengths were 82 and 142 lb/in.^{2} as against the far higher strengths obtained by using the other two methods. In this vibratory method the tensile briquette mould provided with a hopper was fixed to the vibrator. About 160 g of wet mortar was placed into the mould and vibrated for two minutes. The excess mortar was struck off without any additional ramming during the final finishing. It was considered that the small weight of mortar, the shape and small thickness of the briquette were some of the factors responsible for the poor results. During vibration, this small mass of mortar was just tossed about in the absence of any pressure from the top. Often, some of the top mortar rolled itself into spherical particles. The resulting mass was in a fairly loose state. These factors account for the failure of the vibration method which, however, involves very little personal factor, and is quite satisfactory in the preparation of the compression cubes for which a greater mass of mortar, a greater thickness and a more regularly shaped specimen mould are employed.

1.2.2 An attempt was made at the Madras Concrete & Soil Research Laboratory[5] in which a cement briquette was superimposed over the mortar in the mould during the vibration period. This, however, gave no satisfactory results, probably due to the inadequacy of the superimposed weight.

2. THE NEW VIBRATORY COMPACTION WITH SUPERIMPOSED LOAD (VCSL) METHOD

2.1 It was thought that the introduction of a suitable pressure from the top, by superimposing a briquette-shaped weight over the mortar during the vibratory compaction should make a material difference on the briquette strength. This brings about, in addition to the table vibration, some surface vibration over the specimen which is confined on all sides. Compaction under these conditions can be expected to be far better. The weight and thickness of this superimposed load have great influence on the efficiency of the method.

2.2 Optimum Weight of Superimposed Load

2.2.1 To study the effect of different weights on the compaction and tensile strength of briquettes, a briquette-shaped brass cell was made which could be filled with mercury to attain any desired weight up to one kilogram.

2.2.2 Figure 1 shows the B.S. Vibrator and base plate (*A*), briquette mould (*B*) briquette-shaped brass cell (*C*) and the hopper (*D*). The wet mortar was placed in the mould and the briquette-shaped weight was put over it. Figure 2 shows the top view of the superimposed load kept over the wet mortar just before compaction. The mortar was vibrated for one minute, after which the excess mortar was scraped off and the surface was levelled with a spatula.

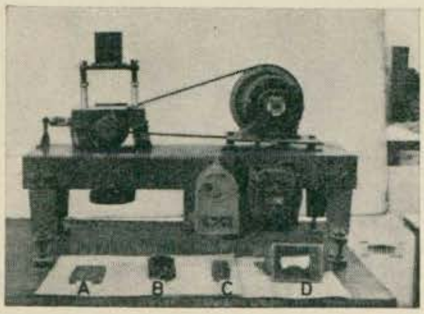


Fig. 1 B.S. Vibrator (See **2.2.2**)

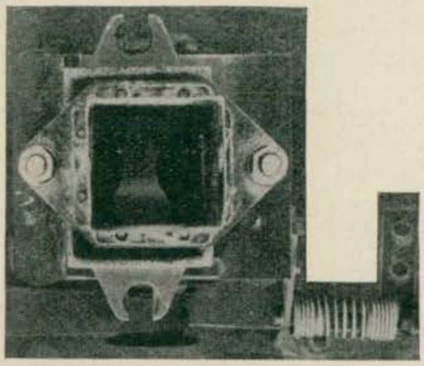


Fig. 2 Top View of the Superimposed Load (See **2.2.2**)

2.2.3 Preliminary experiments were conducted for determining the weight of mortar to be taken, moisture percent to be added and the duration of vibration. As a result of these experiments, 37·5 g of cement and 112·5 g of Ennore standard sand were used for making each briquette. The water requirement was found to be best assessed by the formula:

$$\text{Percentage of water} = \frac{0{\cdot}78}{4}p + 2{\cdot}5,$$

where p is the normal consistency. It may be noted that the percentage of water content corresponds closely with the value $\frac{p}{5} + 2{\cdot}5$ as specified in IS: 269-1958.

2.2.4 The mortar briquettes were cured for the first 24 hours under wet sacks and later, under water till the date of testing. The results are given in Table I. It is observed that vibration without superimposed load results in poor compaction as well as poor strength. Beyond 550 g of superimposed weight, there is practically no gain in strength due to increased compaction. Hence, the weight of superimposed load for the new method was fixed at 550 g. After determining this optimum load, the superimposed briquette weight used was of solid iron which weighed 542 g and had a thickness of $1\frac{3}{8}$ in. (35 mm).

TABLE I TENSILE STRENGTH OF BRIQUETTES HAVING SUPERIMPOSED LOAD

Superimposed Weight	Weight of Compacted Briquette*	Tensile Strength, lb/in.²	
		3 Days†	7 Days†
g	g		
0	128·3	184	223
300	141·5	364	424
550	142·8	372	457
800	144·0	365	458
1 050	145·2	371	456

*Each value in this column is the average of 18 briquettes.
†Each value in these columns is the average of 9 briquettes.

2.3 Use of Vibrators

2.3.1 In these tests, two different vibrators, namely, the Ve Be Vibrator and the B.S. Vibrator were used for compacting the specimens. The HERL method has already been described. The Ve Be Vibrator with its various components for the test is shown in Fig. 3.

2.4 Samples of Cement

2.4.1 The experiments were performed on three samples of cements designated as A, B and C. For ensuring a satisfactory statistical analysis of results, nine briquettes were cast for each set for 3 and 7 days' tests.

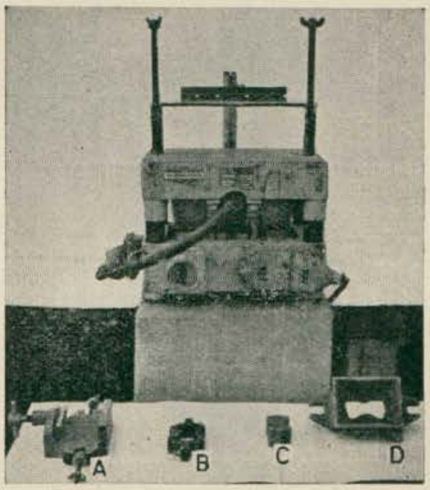


Fig. 3 Ve Be Vibrator (See **2.3.1**)

2.5 Crushing of Sand

2.5.1 Some tests were also carried out to determine the crushing of sand in the HERL and the VCSL methods. In these tests, weight of the briquette was determined as soon as it was cast and this was washed over B.S. Test Sieves 25 and 100 (IS Sieves 60 and 15 respectively) by placing the former over the latter. After thorough washing with a jet of water, the amount of material retained on each sieve was weighed after drying. Corrections for the percentage of sand passing B.S. Test Sieve 25 in the Ennore standard sand and the percentage of cement retained on B.S. Test Sieve 100 were applied (*see* Table II) and the percentage of sand

TABLE II PERCENTAGE OF CRUSHED SAND IN THE VCSL METHOD

Weight of Dried Sand Retained on B.S. Test Sieve 25	Weight of Dried Sand and Cement Passing B.S. Test Sieve 25 and Retained on B.S. Test Sieve 100	*Correction Factor	Corrected Weight of Sand Crushed	Sand Crushed
g	g		g	*percent*
(a)	(b)	(c)	(b−ac)	
96·38	0·82	0·007 2	0·13	0·13
97·81	0·88	0·007 2	0·18	0·18
96·95	0·84	0·007 2	0·14	0·14

*The correction factor can be calculated in the following way:
The standard sand had 0·45 percent material which passed through B.S. Test Sieve 25; the cement used had 0·8 percent material which was retained on B.S. Test Sieve 100. A mixture of 100 g cement and 300 g sand will leave $300 - 0{\cdot}45 \times 3 = 298{\cdot}65$ g sand on B.S. Test Sieve 25. Similarly, $0{\cdot}45 \times 3 + 0{\cdot}8 = 2{\cdot}15$ g of the material passed B.S. Test Sieve 25 but was retained on B.S. Test Sieve 100. Hence, the correction factor is

$$\frac{2{\cdot}15}{298{\cdot}65} = 0{\cdot}007\,2.$$

TABLE III COMPARISON OF VCSL AND HERL METHODS WITH THREE SAMPLES OF CEMENT

METHOD (*See* 3.1)	CEMENT A						CEMENT B						CEMENT C					
	3 Days			7 Days			3 Days			7 Days			3 Days			7 Days		
	Average strength *lb/in.²*	Maximum deviation *percent*	Variance	Average strength *lb/in.²*	Maximum deviation *percent*	Variance	Average strength *lb/in.²*	Maximum deviation *percent*	Variance	Average strength *lb/in.²*	Maximum deviation *percent*	Variance	Average strength *lb/in.²*	Maximum deviation *percent*	Variance	Average strength *lb/in.²*	Maximum deviation *percent*	Variance
VCSL-Ve Be	374	−2·4 to +2·9	49	459	−6·3 to +3·5	197	304	−4·6 to +3·6	63	349	−4·0 to +4·6	92	356	−4·5 to +3·9	92	455	−4·4 to +5·6	231
VCSL-B.S.	409	−4·6 to +3·9	127	508	−5·5 to +3·3	226	326	−4·9 to +4·3	74	376	−4·3 to +3·7	72	389	−6·2 to +4·1	186	473	−3·8 to +3·6	138
HERL	410	−7·3 to +6·1	331	457	−9·2 to +6·1	544	324	−7·4 to +6·5	261	376	−9·6 to +6·4	309	375	−8·0 to +10·7	531	451	−9·1 to +6·4	517

TABLE IV COMPARISON OF FISHER TEST VALUES IN THE VCSL AND HERL METHODS

F VALUES OF METHODS (*See* 3.1)	CEMENT A		CEMENT B		CEMENT C	
	3 Days	7 Days	3 Days	7 Days	3 Days	7 Days
HERL & VCSL-Ve Be	6·76	2·76	4·15	3·36	5·78	2·24
HERL & VCSL-BS	2·60	2·40	3·53	4·30	2·86	3·75
VCSL-Ve Be & BS	2·59	1·15	1·18	1·28	2·02	1·67

passing B.S. Test Sieve 25 solely due to crushing during the test was calculated as shown in Table II.

3. RESULTS

3.1 Table III gives the average tensile strength results, the maximum percentage of deviation from the mean and the variance figures for each set of briquettes by the following three methods:

a) VCSL method using Ve Be Vibrator,
b) VCSL method using B.S. Vibrator, and
c) HERL method.

3.2 The average tensile strength by method **3.1** (a) is slightly lower than that by the method **3.1** (b) or **3.1** (c); but the variance is generally the least by method **3.1** (a), thus indicating a better degree of reproducibility of results. Both the percentage deviation and the variance for the HERL method are much higher than those of the VCSL methods.

3.3 Thus a general idea is got that, comparatively, the HERL method gives greater variation or spread of results than the VCSL methods. But the question arises whether this variation is significantly different from those obtained by the vibration methods. To solve this, the Fisher's test was applied. Table IV shows the F values while comparing the variances of methods **3.1**(a), (b) and (c). The F values were calculated after referring to the appropriate statistical tables as per the usual methods.

3.3.1 Taken a 5 percent level of comparison, F should be less than 3·5 if the variances of the two methods compared are not significantly different. Results for **3.1**(a) and **3.1**(c) as also for **3.1**(b) and **3.1**(c) indicate that three out of the six comparisons show a significant difference of the variance. In addition, Table III shows that variance of the HERL method is always greater than the variance obtained by the VCSL methods. Hence the VCSL methods are superior to the HERL method because of better reproducibility and uniformity of results.

3.3.2 Comparison of variance of the methods **3.1**(a) and (b) shows that the F value is in all cases much less than 3·5 and that there is no significant difference in variance. In other words, there is not much to choose between B.S. Vibrator and Ve Be Vibrator.

4. ADVANTAGES OF VCSL METHODS OVER HERL METHOD

4.1 The VCSL methods have the following additional advantages over the HERL method:

a) The VCSL methods are quicker to perform with lesser human error.
b) The crushing effect on sand, which is prevalent to some extent in the HERL method is almost absent in the VCSL methods. In the CRRI studies on HERL method, it was found that the percentage of sand crushed was 4·5 by using 150 blows with a 2·5 lb (1·36 kg) weight falling through 14·4 in. (36·6 cm). However, with the use of the VCSL methods, on an average only 0·15 percent of sand was crushed (*see* Table II).
c) Using the VCSL methods, the allowable range of results from the mean can safely be reduced to ±10 percent instead of the present ±15 percent.
d) In the VCSL methods, the present B.S. Vibrator can be utilized. This will eliminate the purchase of additional equipment in case this method is specified. In this respect, B.S. Vibrator has an advantage over Ve Be Vibrator.

5. CONCLUSION

5.1 So long the briquette test for determining the tensile strength of cement finds its place in the specification for cement testing, the replacement of the present method by the VCSL methods, as described in this paper and which eliminates

(*Continued on p.* 100)

Second Meeting of ISO/TC 34— Agricultural Food Products

THE second plenary meeting of the Technical Committee on Agricultural Food Products of the International Organization for Standardization (ISO/TC 34) was held on 29 October 1960 at Budapest under the chairmanship of Dr. L. Telegdy-Kovats, Professor, Technical University, Budapest. More than 80 delegates representing 19 countries attended the meeting. India was represented by Dr. D. V. Karmarkar, Deputy Director (Agriculture and Food), ISI.

The Committee noted that, at the 1960 meeting of ISO Council, the title of ISO/TC 34 had been changed from 'Agricultural Products' to 'Agricultural Food Products' and its scope defined as follows:

> 'To standardize products of agricultural origin used for human and for animal feeding purposes, including stimulants (including tea, coffee, spices), either in their natural, transformed and/or processed form. To standardize propagation material for all these agricultural products.'

Further, it was noted that according to the decision of ISO Council, the subject of raw tobacco could be dealt with by a separate technical committee of ISO to be set up when a specific proposal in this regard is made by any of the member bodies.

The Indian delegate pointed out that stimulants were not at present included in the programme of any of the subcommittees and indicated that India was ready to undertake the work. The Committee considered stimulants as a primary urgency and agreed that India should start work on stimulants and the scope and the title of ISO/TC 34/SC 7 Spices and Condiments, for which India holds the Secretariat, may be amended suitably at its first meeting to include stimulants.

The Indian delegate also suggested that poultry and eggs may be included under Meat and Meat Products. It was agreed by the Committee that Germany, which holds the Secretariat of SC 6 Meat and Meat Products of ISO/TC 34, will deal with poultry only within SC 6 as long as nobody raised the question of forming a new subcommittee for poultry and eggs. The subject of eggs called for different experts.

Earlier, 3 Subcommittees of ISO/TC 34 had met as follows:

SC 2 Oil Seeds (and Vegetable Oils) — 24 to 25 October;

SC 3 Fruits and Vegetables — 26 to 28 October; and

SC 4 Cereals and Pulses — 26 & 28 October.

The important decisions taken by these subcommittees and approved by ISO/TC 34 are given below.

SC 2 Oil Seeds (and Vegetable Oils)

The title of this Subcommittee was changed to 'Oleaginous Seeds and Fruits', and in the revised scope it was clarified that SC 2 would deal with oil seeds, oleaginous fruits and their primary derived products, thereby including vegetable oils and oil cakes also. Coconut was included as an oil seed in the list.

The Subcommittee agreed that the determination of bulk density of oil seeds or mass per 1 000 seeds was not of interest to international trade and, therefore, decided to delete this item. During the discussion, it was felt that the characteristics for which the methods of test are required should be laid down, Hence, it was agreed that the draft proposals for the determination of oil content, impurities, acidity, and proportions of husk and kernel should be prepared by Roumania, which holds the Secretariat for SC 2.

Two temperatures, namely 103°C and 130°C, were suggested for the determination of moisture for crushed and uncrushed seeds respectively. It was decided that comparative results should be obtained on uncrushed seeds dried at two temperatures, and a working group was given the task of carrying out this comparative study.

There was considerable discussion on the methods of sampling, and a Working Group was formed with UK as the Secretariat.

SC 3 Fruits and Vegetables

The Subcommittee endorsed resolutions drafted at the meetings of the working groups. These resolutions mainly related to the preparation of a single list of names of fruits and vegetables, a further draft proposal on sampling and methods of test of fresh fruits and vegetables, and fresh draft proposals on the determinations of Vitamin C and of inorganic impurities.

SC 4 Cereals and Pulses

There was considerable discussion on the title and the scope of this Subcommittee. In the end it was agreed that the title should remain as it is but the scope was enlarged to read as follows:

> 'Cereals and their derived products with the exception of starch and its derivatives which are included in the scope of ISO/TC 93 Starch (Including Derivatives and By-Products); and pulses and their derived products dealing with only dry pulses which are physiologically fully matured.'

The method for the determination of moisture was considered and it was agreed that the methods adopted by the International Association for Cereal Chemistry should form the basis for any method for the determination of moisture. For the present, two methods were laid down, a practical method and a fundamental method. Members of the Subcommittee were requested to check the practical method (drying at 130°C) with the fundamental method (drying under vacuum) at lower temperature.

As regards the method for the determination of ash, France wanted a tolerance of ±50°C for ashing at 600°C. Some delegates suggested ±10°C only. The Indian delegate stated that the tolerance specified in Indian Standards was ±20°C and this was accepted by the Subcommittee as the fundamental method for ashing. A practical method of ashing at 920°±20°C was also adopted.

On the question of test weight, it was agreed that a reference should be made to all the members of SC 3 to find out whether they considered unnecessary the standardization of the test weight determination even if this aspect has been mentioned in international contracts. As regards

(*Continued on p.* 95)

STANDARDS NEWS

Micro-Module Concept in Electronics

The trend towards miniaturization has been underway in the electronics industry for nearly a decade, the latest noteworthy advance towards it being the Micro-Module Concept.

This Concept is based upon the construction of electronic components in a wafer-like shape, approximately 3/10 in.^{2} (or 8 mm^2), and 1/100 in. (or 0·25 mm) thick. By processing of suitable passive or active substances, these micro-wafers assume the characteristics of basic electronic components, such as, resistors, capacitors and transistors; these are then called micro-elements. A group of these micro-elements, after being combined according to the circuit desired, are interconnected and encased, and lose their identity as individual components. The small cube-shaped solid thus formed is the Micro-Module. It is actually a complete aggregate, ready to function as an amplifier, oscillator, filter, etc, according to its circuit design. Micro-Modules, in turn. can be connected in combinations to make a wide variety of electronic assemblies — ten times smaller than present construction methods allow.

The Radio Corporation of America and many components manufacturers in USA are carrying out a complete programme for the development of Micro-Modules to meet military specifications. The advantage of small size and weight in military electronic devices is obvious. Micro-Modules offer other equally desirable goals. These include high reliability, durability and performance under extreme conditions, and flexibility in application.

After a few years from now, when modularized equipment will have become common, field depots and spare parts inventories will not have to contain millions of discrete types, sizes and shapes of parts. Instead, there will be relatively a smaller number of Micro-Modules, easily replaceable with a minimum of servicing time and skill. Reducing the number of items in inventory and simplifying the training requirements for maintenance personnel will bring a significant reduction in the military budget required to maintain equipment in the field.

Standardization in Textile Industry

In the National Productivity Council Report Number 5, published in December 1960, the Productivity Study Team for Cotton Textile Industry has pointed out that standardization abroad in the textile industry has helped in simplification, that is, reduction of varieties. Because of simplification, ' the inventories of the units are maintained at reasonable levels and the purchase of the required cotton and other necessary raw materials can be arranged in advance as it can be estimated with a fair degree of accuracy. Standardization and variety reduction have also helped in maintaining proper use of the machines and training of workers in specialized skills required to manufacture the fabric '.

These observations were made by the Team comprising S/s Prabhu V. Mehta, Bansi Dhar, R. V. Deshmukh, M. K. Ladola, C. K. Narayanan, N. C. Ghosh and A. K. Basu after the Productivity Study Tour during Sep-Oct 1959 to France, Japan, Switzerland, USA and West Germany. The Team found that ' in Japan and USA the industry has undertaken a programme of standardization of basic qualities to progress towards simplification of product and ultimately gain better control over quality and to achieve higher machine and labour productivity. The mills visited have, according to their own market evaluation and considerations of plant facilities, decided on production programmes of limited varieties of fabrics of standard construction. It is the practice in Japan that some of the qualities which form the bulk volume of production of cotton fabrics are standardized. Many units manufactured these qualities and are identified by a standard number which all the mills use. Inspection is done on the basis of specified standards. Such standardization of basic qualities of fabric has helped in developing a proper understanding and appreciation of the fabric quality offered to the trade by individual units '.

The Report adds: ' Even in export markets, standardization has helped Japanese industry in giving the foreign buyer a proper appreciation of the quality without the necessity of sending samples of basic qualities of every transaction to be approved. A foreign buyer has only to order specifying the design and colour. It is obvious to see that such a system contributes to the ease with which a transaction can be made with buyers thousands of miles away and with which an exporter can avail himself of the supplies of basic material from any of the manufacturing units to keep to the delivery schedule '.

Industrial Safety

With a view to co-ordinating and executing the work of various divisions in the field of industrial safety, it has been recommended that Indian Standards Institution should set up an Industrial Safety Advisory Committee. This recommendation, which will be considered by the ISI Executive Committee at its next meeting, was formulated at a consultative meeting held on 9 January 1961 at Manak Bhavan at which the Chief Inspector of Mines; Chief Adviser, Factories; Technical Adviser, Boilers; Central Water & Power Commission; and Indian Airlines Corporation were represented.

At the international level, some interest has been taken in recent years in regard to certain aspects of industrial safety; work on protective helmets, fire tests on building materials and structures, and more recently on personal safety, protective clothing and equipment has been initiated in the International Organization for Standardization. An International Occupation Safety and Health Information Centre has also been set up.

At the national level, ISI has already issued the following Indian Standards:

- IS: 302-1951 General Requirements for Electrical Appliances for Domestic Use;
- IS: 616-1957 Code of Safety Requirements for Mains-Operated Radio Receivers;
- IS: 659-1955 Safety Code for Air-Conditioning;
- IS: 660-1955 Safety Code for Mechanical Refrigeration;
- IS: 661-1955 Code of Practice for Insulation and Safe Operation of Cold Storages;
- IS: 818-1957 Code of Practice for Safety and Health Requirements in Electric and Gas

Welding and Cutting Operations;
- IS: 1179-1957 Equipment for Eye and Face Protection During Welding;
- IS: 1255-1958 Code of Practice for Installation, Operation and Maintenance of Impregnated Paper Insulated Solid Type Lead-Sheathed Power Cables Up to and Including 33 kV;
- IS: 1260-1958 Code of Symbols for Labelling of Dangerous Goods;
- IS: 1286-1958 Pictorial Markings for Handling Instructions for Non-Dangerous Goods;
- IS: 1301-1958 Code of Safety Requirements for Electric-Mains Operated Audio Amplifiers; and
- IS: 1446-1959 Classification of Dangerous Goods.

Besides these 12 Indian Standards, standards under preparation cover: firemen's helmets; breathing apparatus for fire brigade use; lightweight helmets for providing safety in certain industries, for example, quarrying, mining, etc; gloves (gauntlets) for handling various industrial chemicals, surgical purposes, and electrical purposes; protective sheaths; protective filters for welding and other purposes; safety glass; code of practice for earth leakage protection in mines and similar other locations; safety code for grinding wheels; safeguards for cotton textile machinery; safety in use of machine tools; definitions of major hazards included in the handling of dangerous goods; details regarding size and colour of labels and text that may be used internally in the country; river water and trade effluents; and miners' boots.

Certified Structural Welders

Over fifty certified structural welders have been made available to the industry by the Government Test House (GTH), Calcutta, at which a unit* for testing and granting certificates to qualified welders was established recently. These welders were tested in accordance with IS: 817-1957 Code of Practice for Training and Testing of Metal Arc Welders and IS: 1181-1957 Qualifying Tests for Metal Arc Welders (Engaged in Welding Structures Other Than Pipes). The principal objectives of instructions covered by the two codes are to coach the trainee:

a) to understand and apply the fundamental techniques and safe practices of metal arc welding,
b) to acquire enough skill in welding to pass the qualification tests prescribed in this code, and
c) to have a basic knowledge of welding theory.

The GTH has also certified 45 boiler welders after conducting the tests in accordance with the Indian Boiler Regulations.

*See ISI Bull., Vol 12, No. 4, p. 183 (1960).

Enforcement of Indian Standards

While inaugurating the sixteenth Annual Convention of Oil Technologists' Association of India in Kanpur, Shri Lal Bahadur Shastri,

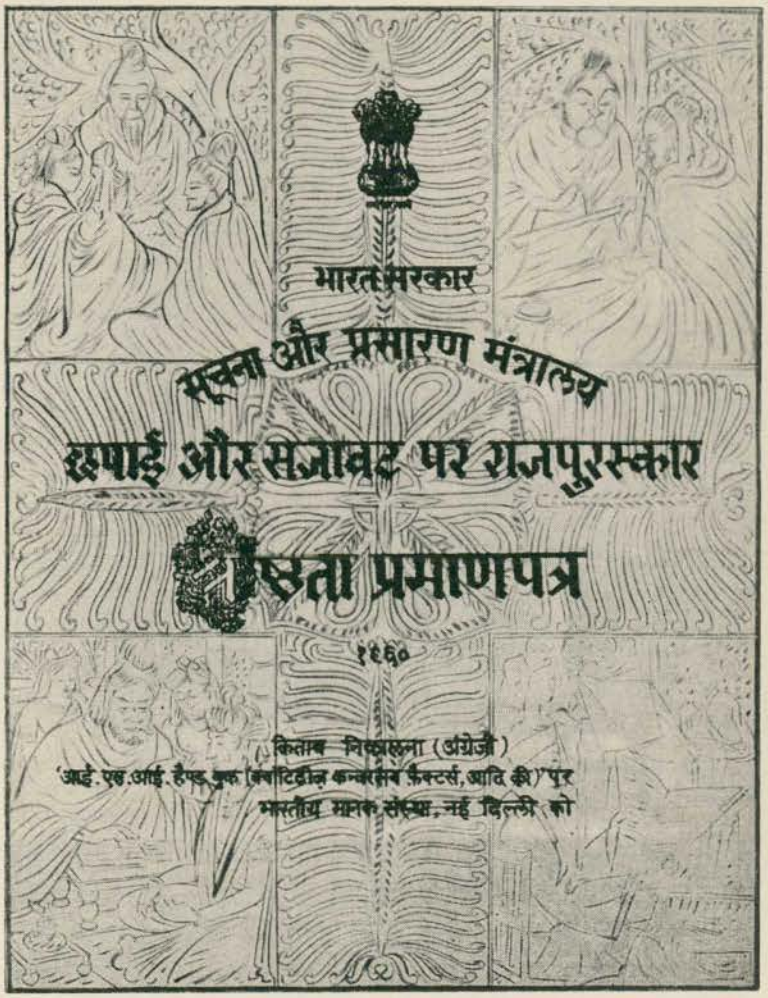
(Continued on p. 106)

ISI WINS CERTIFICATE OF MERIT FOR EXCELLENCE IN PRINTING

Indian Standards Institution was awarded a Certificate of Merit at the sixth State Awards for excellence in printing and designing of books and other publications, 1960. The award was made under category No. 5 — Book Production (English), in respect of the publication, ISI Handbook of Quantities, Conversion Factors, Formulae and Tables (size A5, pp 163, Price Rs 7·50) printed last year at Sree Saraswaty Press Ltd., Calcutta. The awards were given away by Pandit Govind Ballabh Pant, Union Home Minister and a former President of Indian Standards Institution.

It may be recalled that state awards for this purpose were instituted by the Ministry of Information & Broadcasting in 1955 in recognition of the rapid progress made by the printing industry and other graphic arts in India, and as a measure of encouragement for further improvement in technique and workmanship.

The ISI Handbook deals with: (a) quantities, units and conversion factor tables; (b) physical and chemical constants; and (c) mathematical formulae and tables. It is mainly intended to help students, engineers, research workers, technologists and others think in terms of metric system of weights and measures which is being gradually introduced in the country.



Implementation of Indian Standards

The following Government purchasing or consuming departments have adopted the Indian Standards listed under them during the period 16 September to 15 November 1960. Up to 15 November 1960, 1 507 Indian Standards were in force, of which 1 271 had been adopted by various Government departments.

Directorate General of Supplies & Disposals

IS: 929-1959 Hook Ladder for Fire Fighting Purposes
IS: 945-1959 1 800-l/min (or 400-gal/min) Motor Fire Engine
IS: 946-1959 3 200-l/min (or 700-gal/min) Motor Fire Engine
IS: 948-1959 Water Tender, Type A, for Fire Brigade Use
IS: 949-1959 Emergency Tender for Fire Brigade Use
IS: 950-1959 Water Tender, Type B, for Fire Brigade Use
IS: 1116-1957 Glass Globes for Hurricane Lanterns
IS: 1137-1959 Thicknesses of Sheet and Diameters of Wire
IS: 1199-1959 Methods of Sampling and Analysis of Concrete
IS: 1238-1958 Hurricane Lanterns
IS: 1275-1958 Rules for Making Alphabetical Indexes
IS: 1300-1959 Phenol-Formaldehyde Moulding Powder
IS: 1373-1959 Tinned Mild Steel Milk Cans
IS: 1377-1959 Method for Determination of Mean Fibre Length of Wool
IS: 1387-1959 General Requirements for the Supply of Metals and Metal Products
IS: 1388-1959 Reagent Bottles
IS: 1389-1959 Methods for Testing Cotton Fabrics for Resistance to Attack by Micro-Organisms
IS: 1399-1959 Glossary of Terms Used in Optical Technology
IS: 1406-1959 Rectangular Tins
IS: 1407-1959 Round Paint Tins
IS: 1410-1959 Hawser-Laid Coir Rope
IS: 1411-1959 Shroud-Laid Coir Rope
IS: 1412-1959 Cable-Laid Coir Rope
IS: 1422-1959 Cotton Duck, Scoured, Dyed or Waterproofed
IS: 1423-1959 Cotton Gaberdine, Bleached
IS: 1424-1959 Cotton Canvas, Scoured, Dyed, Waterproofed
IS: 1425-1959 Rayon Crepe
IS: 1430-1959 Rayon Crinkle Georgette or Crinkle Chiffon
IS: 1431-1959 Cotton Mosquito Netting, Round Mesh, Dyed
IS: 1438-1960 Crane Weighing Machines
IS: 1450-1959 Handloom Cotton Floor Durries
IS: 1451-1959 Handloom Cotton Drills, Bleached or Dyed
IS: 1452-1959 Rayon Taffeta
IS: 1455-1959 Rayon Jacquard Fabrics
IS: 1459-1959 Kerosines
IS: 1465-1959 Methods of Test for Plastic Buttons (Thermosetting)
IS: 1494-1959 Glass Containers for Preserved Fruits Industry
IS: 1505-1959 BHC Smoke Generators
IS: 1511-1959 Chaff Cutter Blades
IS: 1531-1960 Cloth, Blanket
IS: 1533-1960 Serge, Drab Mixture, Water Resistant
IS: 1535-1960 Cotton Lining Cloth, Dyed

Research Designs & Standards Organization, Ministry of Railways

IS: 1079-1958 Light Gauge Structural Quality Hot Rolled Carbon Steel Sheet and Strip
IS: 1239-1958 Mild Steel Tubes and Tubulars
IS: 1357-1959 Printing Metal

Controller General of Defence Production, Ministry of Defence

IS: 867 (Part II)-1959 Methods of Sampling and Test for Phenolic Moulding Materials, Part II
IS: 919-1959 Recommendations for Limits and Fits for Engineering
IS: 929-1959 Hook Ladder for Fire Fighting Purposes
IS: 933-1959 Portable Chemical Fire Extinguisher, Foam Type
IS: 996-1959 Small AC and Universal Electrical Motors with Class 'A' Insulation
IS: 998-1959 Methods of Chemical Analysis of Soft Solder
IS: 999-1959 Methods of Chemical Analysis of Brazing Solder
IS: 1090-1959 Compressed Hydrogen
IS: 1137-1959 Thicknesses of Sheet and Diameters of Wire
IS: 1301-1958 Code of Safety Requirements for Electric Mains-Operated Audio Amplifiers
IS: 1302-1958 Methods of Measurements on Audio Amplifiers
IS: 1359-1959 Electro-Tin Plating
IS: 1360-1959 Engineers' Pattern Tee Squares
IS: 1362-1959 Dimensions for Screw Threads for General Purposes
IS: 1373-1959 Tinned Mild Steel Milk Cans
IS: 1377-1959 Method for Determination of Mean Fibre Length of Wool
IS: 1384-1959 Oil Pressure Lanterns
IS: 1388-1959 Reagent Bottles
IS: 1389-1959 Methods for Testing Cotton Fabrics for Resistance to Attack by Micro-organisms
IS: 1394-1959 Glossary of Terms Relating to Metal Containers Trade
IS: 1395-1959 ½ Percent Molybdenum Steel Covered Electrodes for Metal Arc Welding
IS: 1402-1959 Braided Cotton Cord for Aeronautical Purposes
IS: 1403-1959 Method for Reverse Bend Test for Steel Sheet and Strip Less Than 3 mm Thick
IS: 1406-1959 Rectangular Tins
IS: 1407-1959 Round Paint Tins
IS: 1410-1959 Hawser-Laid Coir Rope
IS: 1415-1959 Electric Hand Lamps

(*Continued on p.* 103)

ISI Certification Marks

New and Renewed Licences

During the two months, which ended on 15 Nov 1960, marking fees were revised in respect of Drums for Paints (IS: 442-1954) and Pruning Knives, Hooked and Curved (IS: 619-1955).

The marking fee for drums has been reduced from the flat rate of 6 nP* per drum to 1 nP per drum for the first 500 000 drums with a minimum of Rs 5 000 for production during a calendar year; for production over 500 000 drums, the fee has been reduced to 0·5 nP per drum. The revised rates shall also be applicable to steel drums and kegs covered by IS: 1549-1960 which will supersede IS: 442-1954 and IS: 618-1956 with effect from 1 April 1961; in the meantime all the three standards are in force.

For pruning knives, hooked and curved, though the marking fee has been kept at the same level, that is, 40 nP† per unit (a dozen), a minimum of Rs 500·00 for production during a calendar year has been specified.

During the two months, ISI also specified standard marks and prescribed marking fees in respect of 5 products, granted 19 licences and renewed 33 for the use of standard marks; particulars of all these are given below:

*See ISI Bull., Vol 11, No. 5, p. 220 (1959).

†See ISI Bull., Vol 10, No. 3, p. 132 (1958).

STANDARD MARKS AND MARKING FEES

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard Specification	Unit	Marking Fee per Unit
Salt-Glazed Stoneware Pipes and Fittings	IS:651 ISI IS:651 ISI TESTED	IS: 651-1955 Salt-Glazed Stoneware Pipes and Fittings	One ton	50 nP per unit with a minimum of Rs 1 000·00 for production during a calendar year
Coal Tar Disinfectant Fluids	IS:1061 ISI 1 IS:1061 ISI 2 IS:1061 ISI 3	IS: 1061-1957 Coal Tar Disinfectant Fluids, Black and White	One thousand gallons	Rs 15·00 per unit with a minimum of Rs 1 875·00 for production during a calendar year
Bicycle Bottom Bracket Adjustable Cup	IS:1132 ISI	IS: 1132-1958 Bicycle Bottom Bracket Adjustable Cup	One gross	70 nP per unit with a minimum of Rs 1 000·00 for production during a calendar year

(Continued on next page)

STANDARD MARKS AND MARKING FEES — *Contd*

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard Specification	Unit	Marking Fee per Unit
Bicycle Bottom Bracket Fixed Cup	IS:1133 ISI	IS: 1133-1958 Bicycle Bottom Bracket Fixed Cup	One gross	70 nP per unit
Bicycle Bottom Bracket Locking Nut	IS:1134 ISI	IS: 1134-1958 Bicycle Bottom Bracket Locking Nut	One gross	50 nP per unit with a minimum of Rs 1 000·00 for production during a calendar year

LICENCES RENEWED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-16 25-9-1956	27-9-1960	26-9-1961	The Kandivli Metal Works, Bombay	Wrought Aluminium and Aluminium Alloy Utensils (IS: 21-1959)
CM/L-20 24-10-1956	24-10-1960	23-10-1961	M/s Shree Digvijay Cement Co. Ltd., Sikka	Ordinary Rapid-Hardening and Low Heat Portland Cement (IS: 269-1958)
CM/L-34 4-11-1957	16-11-1960	15-11-1961	The National Insulated Cable Co. of India Ltd., Calcutta	Hard-Drawn Copper Solid and Stranded Conductors (IS: 282-1951)
CM/L-35 4-11-1957	16-11-1960	15-11-1961	do	Bare Annealed Copper Wire (IS: 396-1953)
CM/L-36 4-11-1957	16-11-1960	15-11-1961	do	Hard-Drawn Stranded Aluminium and Steel-Cored Aluminium Conductors for Overhead Power Transmission Purposes (IS: 398-1953)
CM/L-37 4-11-1957	16-11-1960	15-11-1961	do	Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting (for Working Voltages Up to and Including 11 kV) (IS: 434-1953)
CM/L-38 4-11-1957	16-11-1960	15-11-1961	do	Cotton-Covered High-Conductivity Annealed Round Copper Wire (IS: 450-1953)
CM/L-39 4-11-1957	16-11-1960	15-11-1961	M/s Rashtriya Metal Industries Ltd., Bombay	Wrought Aluminium and Aluminium Alloy Utensils (IS: 21-1959)
CM/L-40 4-11-1957	16-11-1960	15-11-1961	do	Wrought Aluminium and Aluminium Alloy Sheets, Strips and Circles (IS: 21-1959)
CM/L-96 18-9-1958	1-10-1960	30-9-1961	M/s Travancore Titanium Products Ltd., Trivandrum	Titanium Dioxide for Paints, Anatase (Type A) (IS: 411-1953)
CM/L-98 18-9-1958	1-10-1960	30-9-1961	M/s Tata-Fison Private Limited, Cochin	BHC Dusting Powders (IS: 561-1958)
CM/L-99 18-9-1958	1-10-1960	30-9-1961	do	DDT Dusting Powders (IS: 564-1955)
CM/L-100 18-9-1958	1-10-1960	31-9-1961	The Central Trading Co. Private Ltd., Calcutta	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-101 18-9-1958	1-10-1960	31-9-1961	Travancore Timber & Products, Kottayam (Kerala State)	do
CM/L-104 7-10-1958	1-11-1960	31-10-1961	The East India Distilleries & Sugar Factories Ltd., Madras	Rectified Spirit, Grade 1 (IS: 323-1959)
CM/L-105 31-10-1960	17-11-1960	16-11-1961	M/s Sylvan Plywood Mills, Kottayam (Kerala State)	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-106 4-11-1958	17-11-1960	16-11-1961	The Mysore Chemical Manufacturers Ltd., Chikbanavar P.O., Bangalore District	Copper Sulphate, Technical (IS: 261-1950)
CM/L-107 4-11-1958	17-11-1960	16-11-1961	The Assam Veneer & Saw Mills Ltd., Calcutta	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-108 4-11-1958	17-11-1960	16-11-1961	The Asiatic Plywood Industries, Calcutta	do
CM/L-109 4-11-1958	17-11-1960	16-11-1961	M/s Savlar Paint & Varnish Works, Bombay	1) Oil Paste for Paints, Zinc Oxide (IS: 98-1950) 2) Oil Paste for Paints, Zinc Oxide Reduced (IS: 99-1950)
CM/L-141 24-9-1959	1-10-1960	30-9-1961	M/s Tata-Fison Private Ltd., Calcutta	DDT Dusting Powders (IS: 564-1955)

(*Continued on next page*)

LICENCES RENEWED — *Contd*

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-142 24-9-1959	1-10-1960	30-9-1961	M/s Tata-Fison Private Ltd., Calcutta	BHC Dusting Powders (IS: 561-1958)
CM/L-143 24-9-1959	1-10-1960	30-9-1961	The Travancore Plywood Industries, Punalur (Kerala State)	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-144 28-9-1959	16-10-1960	15-10-1961	M/s Bharat Pulverising Mills Private Ltd., Bombay	BHC Dusting Powders (IS: 561-1958)
CM/L-145 28-9-1959	16-10-1960	15-10-1961	do	DDT Dusting Powders (IS: 564-1955)
CM/L-146 28-9-1959	16-10-1960	15-10-1961	do	BHC Water Dispersible Powder Concentrates (IS: 562-1958)
CM/L-147 28-9-1959	16-10-1960	15-10-1961	do	DDT Water Dispersible Powder Concentrates (IS: 565-1955)
CM/L-148 28-9-1959	16-10-1960	15-10-1961	M/s Flintrock Products Private Ltd., Bombay	BHC Dusting Powders (IS: 561-1958)
CM/L-149 25-9-1959	1-10-1960	30-9-1961	M/s Enco Plywood & Saw Mill Industries, Siliguri, Darjeeling	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-150 15-10-1959	1-11-1960	31-10-1961	The Packing Material Corporation, Bombay	Waterproof Packing Paper (IS: 293-1959)
CM/L-152 15-10-1959	1-11-1960	31-10-1961	The Alkali & Chemical Corporation of India Ltd., Calcutta	BHC Dusting Powders (IS: 561-1958)
CM/L-153 15-10-1959	1-11-1960	31-10-1961	do	BHC, Technical (IS: 560-1955)
CM/L-154 15-10-1959	1-11-1960	31-10-1961	M/s Mysore Commercial Union Ltd., Bangalore	Tea-Chest Plywood Panels (IS: 10-1953)

NEW LICENCES GRANTED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-222 16-9-1960	1-10-1960	30-9-1961	M/s Industrial Supplies Corporation, Bombay	Rubber Insulated Cables for C.T.S. 250 Volt Grade (IS: 434-1953)
CM/L-223 16-9-1960	1-10-1960	30-9-1961	M/s Prabhat Electric Equipment Corpn., Bombay	Threephase Induction Motors Up to 10 H.P. (IS: 325-1959)
CM/L-224 16-9-1960	1-10-1960	30-9-1961	M/s Swaraj Plywood Works, Kottayam (Kerala State)	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-225 16-9-1960	1-10-1960	30-9-1961	M/s Veneer Mills (P) Ltd., Tinsukia, Assam	do
CM/L-226 16-9-1960	1-10-1960	30-9-1961	M/s Sulekha Works Limited, Calcutta	Dye Based Fountain Pen Inks) Blue, Green and Red) (IS: 1221-1957)
CM/L-227 16-9-1960	1-10-1960	30-9-1961	M/s P. Govindaraj & Sons Private Ltd., Madras	Threephase Induction Motors Up to 5 H.P. (IS: 325-1959)
CM/L-228 16-9-1960	1-10-1960	30-9-1961	M/s Republic Engineering Corporation Limited, Calcutta	Bicycle Bottom Bracket Adjustable Cups (IS: 1132-1958)
CM/L-229 16-9-1960	1-10-1960	30-9-1961	do	Bicycle Bottom Bracket Locking Nuts (IS: 1134-1958)
CM/L-230 16-9-1960	1-10-1960	30-9-1961	M/s Bengal Chemical & Pharmaceutical Works Ltd., Calcutta	Coal Tar Disinfectant Fluids (IS: 1061-1957)
CM/L-231 27-9-1960	1-10-1960	30-9-1961	M/s Bharat Pulverising Mills Private Limited, Bombay	BHC Dusting Powders (IS: 561-1958)
CM/L-232 17-10-1960	1-11-1960	31-10-1961	M/s Assam Plywood Products, Dibrugarh, Assam	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-233 18-10-1960	1-11-1960	31-10-1961	M/s Great Eastern Cutlery Works, Calcutta	Pruning Knives, Hooked and Curved (IS: 619-1955)
CM/L-234 18-10-1960	1-11-1960	31-10-1961	M/s Hind Galvanizing & Engg. Co. (P) Ltd., Howrah	Drums for Paints (IS: 442-1954)
CM/L-235 18-10-1960	1-11-1960	31-10-1961	The Vegetable Soap Works, Calcutta	Toilet Soap (IS: 284-1951)
CM/L-236 18-10-1960	1-11-1960	31-10-1961	M/s Republic Engg. Corpn. Limited, Calcutta	Bicycle Bottom Bracket Fixed Cups (IS: 1133-1958)
CM/L-237 18-10-1960	1-11-1960	31-10-1961	The Stoneware Pipes (Madras) Ltd., Trivellore	Salt-Glazed Stoneware Pipes and Fittings (IS: 651-1955)
CM/L-238 28-10-1960	15-11-1960	14-11-1961	M/s Research Chemical Laboratories, Bangalore	Ferro-Gallo Tannate Fountain Pen Ink (IS: 220 1959)
CM/L-239 28-10-1960	15-11-1960	14-11-1961	do	Dye Based Fountain Pen Inks (Blue, Green and Red) (IS: 1221-1957)
CM/L-240 28-10-1960	15-11-1960	14-11-1961	M/s Research Chemical Laboratories, Madras	do

ISI ACTIVITIES

EXECUTIVE COMMITTEE

The sixty-seventh meeting of the ISI Executive Committee, EC, was held at Manak Bhavan on 5 December 1960 under the chairmanship of Lala Shri Ram.

Based upon the recommendation of the Finance Committee, which had met earlier in the day, EC approved the revised budget estimates for the year 1960-61 and the budget estimates for the year 1961-62.

The Committee set up a Building Planning Committee under the chairmanship of Shri S. Ranganathan (*Alternate*: Shri K. V. Venkatachalam) for the construction of a second building of the Institution.

The Committee accorded its approval to the admission of 3 Sustaining Members (Associates) and 4 Ordinary Members. The membership position as on 5 December 1960, after these admissions, stood at 1 317 Sustaining Members, 387 Sustaining Members (Associates) and 257 Ordinary Members, the total being 1961.

Dr. Lal C. Verman gave a brief resumé about the IEC Meetings held in India during 30 Oct to 12 Nov 1960 for the information of the Committee which appreciated the very efficient services rendered and the valuable contribution made by the ISI Directorate in making the IEC Meetings a great success.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Glucose

The sixth meeting of the Glucose Sectional Committee, AFDC 9, was held on 23 September 1960 after a period of three years. It was presided over by its new Chairman, Shri S. K. Borkar, Ministry of Health. The Committee passed a resolution placing on record the valuable services rendered by Shri P. M. Nabar, the former Chairman of AFDC 9.

The Committee decided that the colour requirements for liquid glucose be specified on the basis of extinction coefficient determined by photo-electric colorimeter instead of the lovibond units; a Panel with the Director, National Sugar Institute, or his representative as the Convener, was set up to investigate the possibility of suggesting appropriate limits.

The Committee also decided to reduce the permissible limit of arsenic from 10 to 2 parts per million and to incorporate a new test for less soluble sugars and dextrins in dextrose monohydrate. Limits for heavy metals in liquid glucose were also made parallel to that of dextrose monohydrate.

In view of these amendments, it was agreed to revise the Indian Standard Specifications for Liquid Glucose (IS: 873-1956) and Dextrose Monohydrate (IS: 874-1956).

Edible Starches, Confectionery and Cereal Products

The Edible Starches, Confectionery and Cereal Products Sectional Committee, AFDC 10, met for the eleventh time on 24 September 1960 in New Delhi. The Chairman of the Committee Dr. K. Mitra presided over the meeting.

Two draft Indian Standard Specifications for Toffees and Lozenges were finalized at the meeting after taking into consideration the comments received as a result of wide circulation.

One of the points of controversy, while finalizing the draft standard for toffees, was the question of addition of tartaric acid, which is used as an acidulating agent during the manufacture of toffees. It was felt that the addition of tartaric acid should be avoided. After considerable discussion the Committee decided that, in view of its prevalent use in toffees all over the world, it may be added in the list of optional ingredients; this is subject to confirmation by the Central Committee for Food Standards.

The Committee also finalized draft Amendments No. 1 to IS: 1009-1957 Specification for *Maida* and IS: 1011-1957 Specification for Biscuits (Excluding Wafer Biscuits).

At the meeting, the Cocoa Products Subcommittee, AFDC 10: 4, was enlarged by the addition of the Public Analyst to the Government of Punjab.

Some Members of the Glucose Sectional Committee, AFDC 9, at Its Sixth Meeting Under the New Chairman, Shri S. K. Borkar (Extreme *r*)

Dr. K. Mitra (Fourth from *r*), Chairman of the Edible Starches, Confectionery and Cereal Products Sectional Committee, Addressing Its Eleventh Meeting

The meeting of AFDC 10 was preceded by a meeting of the Confectionery Subcommittee, AFDC 10: 2, on 23 September 1960, at which Shri S. N. Gundu Rao, Director, National Sugar Institute, Kanpur, presided

Tobacco Products

The fourth meeting of the Tobacco Products Sectional Committee, AFDC 13, was held on 15 December 1960 at Bangalore. This was presided over by Dr. M. S. Patel, Chairman of AFDC 13.

At the meeting, the draft Indian Standard Specifications for (a) Cigars and Cheroots, and (b) *Chuttas* (Country Cheroots) were finalized for adoption as Indian Standards. The proposed draft specification for *Bidis* was approved for being sent into wide circulation. The Committee decided that Hindi version of this draft should also be sent into wide circulation.

The Committee also decided to issue amendments to IS: 1577-1960 Cigarettes (from Indian Tobacco) and IS: 1578-1960 Smoking Mixtures, regarding the tobacco grades specified and some changes in the methods of test.

It was suggested that the work on the formulation of Indian Standards for the construction of tobacco curing barns, the equipments employed therein and the technique employed for the flue-curing of tobacco should be taken up. It was, therefore, decided to set up a Flue-Curing Tobacco Barn Construction and Equipment Subcommittee, AFDC 13: 5, with the Director of Tobacco Research, Central Tobacco Research Institute, as the Convener.

Food Colours

The third meeting of the Food Colours Sectional Committee, AFDC 19, was held along with its Coal Tar Food Colours Subcommittee AFDC 19: 2, at Manak Bhavan on 9 November 1960 under the chairmanship of Shri T. R. Sathe. Draft specifications for the following items were finalized for adoption as Indian Standards:

a) Tartrazine;
b) Sunset Yellow FCF;
c) Amaranth;
d) Erythrosine; and
e) Indigo Carmine.

A separate Indian Standard Methods of Sampling and Test for Coal Tar Food Colours was also finalized for adoption.

Often, the food colours are diluted for convenience in use. The Committee, therefore, decided to formulate another draft Indian Standard Specification for Food Colour Preparations and Diluents; this task was assigned to AFDC 19: 2.

In the light of comments received from various organizations concerned, the Committee considered the recommendation made by AFDC 19: 2 for the removal of the coal tar colours — Red 6B, Red FB, Acid Magenta II, Brilliant Black BN, and Blue VRS, from the list of coal tar colours permitted under the Prevention of Food Adulteration Rules, 1955, Ministry of Health, Government of India. After thorough discussion, the Committee made the following recommendations to the Central Committee for Food Standards, Union Ministry of Health:

a) The three red colours — Red 6B, Red FB and Acid Magenta II be deleted from the permitted list.
b) Brilliant Black BN be retained for the present on the permitted list. But as some recent research work had created doubts about its absolute safety, further work should be carried out to find out whether the colour is harmful or not.

Dr. M. S. Patel (Second from *l*), Chairman of the Tobacco Products Sectional Committee, Initiating Discussion During the Fourth Meeting of the Committee

c) Blue VRS be retained on the permitted list for the present but efforts should be continued to find out a suitable blue colour to substitute it.

In addition, it was recommended that work should be undertaken on those colours which had been permitted under category A in UK but had been excluded from the Indian list, and their safety and suitability for inclusion should be investigated.

Farm Implements and Machinery

The second meeting of the Farm Implements and Machinery Sectional Committee, AFDC 20, was held on 29 October 1960 at Manak Bhavan. Dr. J. S. Patel, Agricultural Commissioner, Government of India, presided over the meeting.

The Committee considered the two proposed draft Indian Standard Specifications for: (a) Paddy Weeder, Rotary Type; and (b) Sugar Cane Crusher, Bullock-Driven Type. These were referred back respectively to Subcommittees AFDC 20: 2 Farm Machinery, and AFDC 20: 1 Agricultural Implements, for making changes in the light of the views expressed by the members of AFDC 20, and then sending them into wide circulation.

The Committee set up a Co-ordinating Subcommittee, AFDC 20: 3, with Shri V. Ramiah as the Convener. The Subcommittee, at present, consists of only engineers and it would, in the first instance, consider all the subjects in the programme of work of AFDC 20 and decide on what lines the Indian Standard Specifications should be prescribed for each implement or machine. A Horticultural Implements Subcommittee, AFDC 20: 4, was also set up and Shri S. C. Bhatnagar was appointed as its Convener.

BUILDING DIVISION

Soil Engineering

The Soil Engineering Sectional Committee, BDC 23, held its fifth meeting on 11 October 1960 in New Delhi under the chairmanship of Prof. S. R. Mehra, Director, Central Road Research Institute, New Delhi.

The Committee examined the draft Indian Standard Specification for Soil Cement Blocks Used in General Building Construction in the light of comments received and finalized it for adoption and printing.

The Committee approved for wide circulation the draft Indian Standard Method of Load Test on Soils.

The Committee also authorized the Subcommittee for Site Exploration and Investigation for Foundations, BDC 23:2, to finalize for wide circulation the draft Code of Practice for Site Exploration for Foundations.

Electrical Installation and Illumination

The third meeting of the Electrical Installation and Illumination Sectional Committee, BDC 26, was jointly held with the Street Lighting Subcommittee, BDC 26: 1, on 13 October 1960 under the chairmanship of Shri H. P. Chatterjee, Chief Electrical Engineer, Durgapur Steel Project, at Manak Bhavan, New Delhi.

The Committee considered the comments received during the wide circulation of the draft Code of Practice for Design of Street Lighting Installations and, after incorporating the modifications, agreed to approve it for adoption as an Indian Standard.

The Committee noted that work on draft codes of practice for: (a) protection of buildings against lightning, and (b) interior illumination, was in progress. With regard to the latter, the Committee agreed that this draft may be confined to industrial or commercial buildings only since illumination in private buildings should be left to individual tests and requirements. During further discussion, it was emphasized that only the comfort levels of illumination for different tasks and the general principles should be covered.

CHEMICAL DIVISION

Standing Working Committee

The sixteenth meeting of the Standing Working Committee of Chemical Division Council was held at Manak Bhavan on 11 October 1960. As Dr. A. Nagaraja Rao, Chairman SWCC, could not attend the meeting, Dr. G. P. Kane, Senior Industrial Adviser (Chem), Development Wing, Ministry of Commerce & Industry presided.

The Committee noted with satisfaction the progress of work of Chemical Division of ISI in almost all the important fields of chemical industry in India. In view of the extension of activities of CDC 11 Essential Oils, it was decided to redesignate it as the Essential Oils & Allied Products Sectional Committee. The expansion of work under the Petroleum Measurements Subcommittee, CDC 22: 6, was also considered and it was found to be of interest to the industry. Also, because of the restricted scope of work of Petroleum Products Sectional Committee, CDC 22, under which CDC 22: 6 functioned, SWCC agreed to raise the status of CDC 22: 6 to Petroleum Measurements Sectional Committee, CDC 32.

An important discussion took place on the subject of standardization of designs and formulation of specifications covering chemical industry. Explaining the background of the problem, Dr. Lal C. Verman, Director, ISI, stated that the ISI Directorate had been receiving requests from different quarters that the Institution should not lay down standards for designs of parts of machinery. As a result of detailed scrutiny of all such requests, it was felt that it should not be the function of the national standards organization to freeze designs and formulations. This could, no doubt, form a part of company standardization. Standards should prescribe only (a) the dimensions that were essential for ensuring interchangeability, safety and performance; (b) raw materials and processes wherever considered essential; (c) minimum performance requirements; and (d) methods of test for determining the specified requirements. The Committee discussed a note prepared by the ISI Directorate in this regard and it was decided that the note may be studied, in detail, by various members and their views sent to ISI for preparing a revised note for the guidance of the members of various sectional committees, subcommittees, and panels under CDC.

The Committee decided that the work of metricization of chemical standards be expedited and also approved of the recommendation that IS: 533-1954 Specification for Gum Spirit of Turpentine (Oil of Turpentine) (*Tentative*) may be confirmed as a firm Indian Standard.

Fine Chemicals (Organic & Inorganic)

In the absence of Dr. V. Ranganathan, Chairman of the Fine Chemicals (Organic & Inorganic) Sectional Committee, CDC 4, Shri R. A. Shah presided over its thirteenth meeting held on 27 and 28 October 1960 at Bombay. The Committee finalized for publication draft specifications for the following:

a) Benzene, Reagent Grade;
b) Toluene, Reagent Grade;

NEW INDIAN STANDARDS

Indian Standards recently published are briefly described here

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Rapid Examination of Milk

At milk collecting centres, rapid examination of milk has to be carried out for routine check with the object of ensuring purity of milk, its hygienic quality and fitness for acceptance as raw milk for further processing. In order to provide uniform methods for this purpose, such of the methods as can be rapidly employed where facilities of well-equiped laboratory are not available, have been compiled in the Indian Standard Methods of Test for Dairy Industry, Part I: Rapid Examination of Milk [IS: 1479 (Part I)-1960].

Accurate methods of analysis for specific purposes, namely, chemical tests; bacteriological examination; determination of freezing point; and analysis of other ancilliaries in dairy plant control like washing solutions, sterlizing solutions, water, etc, are intended to be covered respectively in Parts II, III, IV and V of this standard.

Tapioca Flour for Animal Feed

The formulation of Indian Standard specifications for tapioca products was undertaken at the instance of the Tapioca Market Expansion Board, Government of Kerala. Three specifications covering tapioca chips, flour and starch meant for human consumption have already been published. With regard to tapioca products for animal feed, the following two specifications have been published:

IS: 1509-1959 Tapioca Chips for Animal Feed, and

IS: 1510-1959 Tapioca Flour for Animal Feed.

The new Indian Standard (IS: 1510-1959) prescribes the particle size and specifies the contents of moisture, total ash, acid insoluble ash, crude fibre, hydrocyanic acid, alcoholic acidity, crude protein and crude fat or other extract in the tapioca flour for animal feed.

Cigarettes

As appreciation of any brand of cigarettes depends on individual taste, it is difficult to lay down a fixed standard for this class of product. However, the range of different types of cigarettes produced in the country is so wide that it is difficult for the common consumer to determine a type of cigarette which would give him the required smoking quality. Virginia tobacco, which is preferred for cigarettes, is now grown in the country on a large scale and blue-cured virginia tobacco is now available, graded under the Agricultural Produce (Grading and Marking) Act, 1937. The Directorate of Marketing & Inspection of the Ministry of Food & Agriculture has prescribed different grades of tobacco and the Indian-grown tobacco is now available in accordance with the grades so specified. An attempt has, therefore, been made in IS: 1577-1960 Specification for Cigarettes (from Indian Tobacco) to formulate specifications according to which if cigarettes are produced, they should generally satisfy a smoker.

Smoking Mixtures

The Indian Standard Specification for Smoking Mixtures (IS: 1578-1960) prescribes the requirements, method of sampling and methods of test for smoking mixtures made from a blend of tobacco processed in India. The requirements covered relate to freedom from mould and weevil attack, freedom from harmful substances and additives, and tobacco blend. The methods of test include determinations of width of tobacco shreds, moisture and nicotine content, total ash, sand and silica, potash, sulphur, arsenic and lead.

BUILDING DIVISION

Steel Bars and Wire for Concrete Reinforcement

The Indian Standard Specification for Mild Steel and Medium Tensile Steel Bars and Hard-Drawn Steel Wire for Concrete Reinforcement (*Revised*) is the Revision of IS: 432-1953. The Revision became necessary in view of the considerable experience gained by both manufacturers and users during the last seven years. Furthermore, in view of substantial quantities of untested steel being on the market, it has been found necessary to bring this category of concrete reinforcement under a separate grade having a lower ultimate tensile strength. Such a step is likely to pave the way towards better utilization of the available supplies of concrete reinforcement.

Another important change that has been incorporated in IS: 432-1960, the revised standard, is that concrete reinforcement having an ultimate tensile strength of not less than 58 kg/mm^2 and not more than 90 kg/mm^2 has been categorized under the name 'Medium Tensile Steel' as compared to the originally adopted name of 'High Tensile Steel' which covers steels of strength in a very much higher range.

Wooden Separators for Lead-Acid Storage Battaries

Current developments in battery design for higher performance, more power and less room capacity necessitated a review of IS: 652-1955. The revised Indian Standard Specification for Wooden Separators for Lead-Acid Storage Batteries (IS: 652-1960) introduces some flexibility in the manufacture of separators by omitting the thickness of webs and number of ribs per separator. Recent investigations indicated that though wooden battery separators always contained some traces of iron which, within limits, had no harmful effect on the performance of the battery as a whole. As a result, in this Revision, a maximum limit of iron content in separators has been prescribed.

Extenders for Use in Synthetic Resin Adhesives for Plywood

Extenders are largely used along with adhesives as diluents with a view to lessening the cost of adhesives and also to obtaining certain desirable properties in the glue-mix to facilitate spreading of the glue. Extenders have to be such as not to affect glue adhesion adversely both in regard to its strength as well as its durability and resistance to attack by micro-organisms. The effectiveness of the glue-mix will depend largely on a proper selection of the extender to be used along with the glue and its method of use. Keeping all these things in view, the Indian Standard Specification for Extenders for Use in Synthetic Resin Adhesives (Urea-Formaldehyde) for Plywood (IS: 1508-1960) covers materials like wheat flour, rice flour, tamarind kernel powder, tapioca flour, sunn hemp, seed powder and various starches, and other vegetable starch and protein based materials.

Requirements and tests are specified in respect of fineness of granules, and moisture, ash and nitrogen content.

Design of Library Buildings

Considerable experience has been gained by librarians in the use of libraries under the conditions obtaining in India during the last 50 years and similar experience is available in the West specially in regard to the functional design of library buildings, fittings and furniture. This accumulated knowledge has been utilized in the Indian Standard Code of Practice Relating to Primary Elements in the Design of Library Buildings (IS: 1553-1960).

In preparing this code, cognizance has been taken of the advances made by library science during the past three decades; the research data available with regard to the habits of the reading public; the facilities necessary to create awareness of libraries, and attractions necessary to make the non-library minded to become library minded; and the directives of the Planning Commission to achieve maximum economy in the design of buildings. It is hoped that this code, will be widely implemented while considering the setting up of new libraries in various parts of India.

Asbestos Cement Pressure Pipes

The Indian Standard Specification for Asbestos Cement Pressure Pipes (IS: 1592-1960) specifies requirements for manufacture, classification, dimensions and acceptance tests. The standard mainly follows ISO Draft Recommendation No. 149 relating to asbestos cement pressure pipes. The agreements reached at the international level on the sizes and pressure ratings of these pipes have been incorporated in this standard and test requirements together with the methods of test have also been aligned with the international standard.

CHEMICAL DIVISION

Chemical Analysis of Iron and Steel

The Indian Standard Methods of Chemical Analysis of Pig Iron, Cast Iron and Plain Carbon and Low-Alloy Steels (IS: 228-1959) is a revision of the standard first published in 1952. For the purpose of this standard, low-alloy steels are those which contain chromium not more than 1·0 percent, nickel not more than 5·0 percent, copper not more than 0·50 percent, titanium not more than 0·25 percent, molybdenum not more than 0·30 percent, and vanadium not more than 0·10 percent.

The prescribed methods of analysis shall be useful as reference methods in case of dispute; suitable alternate methods have also been given for determination of some elements. Due consideration has been given in the preparation of this standard to the facilities available in the country for such analysis.

Mutton Tallow

Tallow is obtained from the body-fats of cattle, sheep and goats. Of these, the fat derived from sheep, namely, mutton tallow, is widely used in India whereas the quantities of beef and goat tallow used are comparatively small. Hence, IS: 887-1960 Specification for Mutton Tallow prescribes requirements of mutton tallow only.

This standard has been issued with a view to encouraging the production of mutton tallow in India of a quality that is acceptable to the textile industry. The standard has been so formulated as to meet other industrial uses of mutton tallow also, such as manufacture of soaps and fatty acids.

Mineral Gypsum

The purpose of the Indian Standard Specification for Mineral Gypsum for Ammonium Sulphate and Cement Industries (IS: 1290-1960) is to guide the trade for using right quality of gypsum in the manufacture of ammonium sulphate and cement. The quality of mineral gypsum available in India is inconsistent and the sulphate percentage in any single deposit varies. The ratio between the high grade gypsum above 80 percent sulphate content and the rest is generally 1 : 3. Consequently, a huge amount of low grade gypsum, for which economical beneficiation arrangements are not available at present, remains untapped causing considerable difficulty to the mining industry. To offset this huge national waste, it is essential that a particular industry should derive its supply of the necessary quality of gypsum and not of a higher or lower quality.

Kraft Paper

There is considerable variation in the quality of kraft paper produced in India. It is hoped that IS: 1397-1960 Specification for Kraft Paper will help achieve uniformity in production and assist consumers to obtain material of desired quality.

Packing Paper

Bitumen laminated waterproof packing paper is produced in the country in fairly large quantities. The demand for this packing material is increasing with the increase of exports. A variety of sizes and qualities is being manufactured, making it difficult for consumers to select the correct quality for their purpose. Though the country's production is sufficient to meet the internal demand, export market cannot be built up for want of proper standards. The Indian Standard Specification for Packing Paper, Waterproof, Bitumen Laminated (IS: 1398-1960) is expected to help manufacturers in improving the quality of the material and consumers in obtaining a quality product.

Separating Funnels

The Indian Standard Specification for Separating Funnels (IS: 1575-1960) prescribes the requirements and methods of test for four types of separating funnels suitable for normal laboratory use: conical; cylindrical, plain; cylindrical, graduated; and spherical. The requirements covered relate to pattern, material and workmanship, construction and finish, graduation, dimensions, nominal capacity, and limits of alkalinity. Requirements regarding packing and marking have also been included.

Cylinder Oil

The Indian Standard Specification for Oil, Cylinder (IS: 1589-1960) prescribes the requirements and methods of test for four grades of cylinder oil suitable for lubrication of cylinder of steam engine. The grades are distinguished in respect of the service conditions and which the material is to be used.

This standard supersedes the following six Indian Standard specifications for cylinder oils which have been withdrawn:

IS: 311-1951 Oil, Cylinder, Pure Mineral, Ordinary;
IS: 312-1951 Oil, Cylinder, Compounded, Ordinary;
IS: 313-1951 Oil, Cylinder, Pure Mineral, Super Heat;
IS: 314-1951 Oil, Cylinder, Compounded, Super Heat;
IS: 315-1951 Oil, Cylinder, Pure Mineral, Filtered; and
IS: 316-1951 Oil, Cylinder, Compounded, Filtered.

The revision and amalgamation of these specifications became necessary in view of the latest developments and added experience in the working of these standards during the past nine years.

Glass Filter Flasks

The latest addition to the series of Indian Standard specifications for laboratory glassware is IS: 1590-1960 Specification for Glass Filter Flasks. Other standards published so far in this series cover measuring cylinders, graduated flasks, pipettes, boiling flasks, reagent bottles and glass filter funnels.

The present standard covers requirements for pattern, material and workmanship, construction and finish, capacity, dimensions, limit of alkalinity and thermal shock endurance for two types of flasks, namely, conical and pear shaped. Methods of sampling and tests, and criterion for conformity of the flasks to the prescribed requirements have also been included.

Fuel Oils

While preparing the Indian Standard Specification for Fuel Oils (IS: 1593-1960), due consideration was given to the pattern of demand, production of the fuel oils in the country and their economics. It was realized that substantial portion of the existing demand for low viscosity fuel oils could be substituted by high viscosity fuel oils with minor adjustments. However, in view of the existing demand and difficulties of small consumers in switching over to the high viscosity fuel oils, it has been felt desirable to retain the low viscosity grade of fuel oils for the time being which may be withdrawn at the next revision of IS: 1593-1960.

The present standard, therefore, prescribes the requirements and methods of test for fuel oils, essentially residual in character, for industrial and marine uses. These fuel oils are primarily intended for oil fired furnaces.

ELECTROTECHNICAL DIVISION

Ballasts for Fluorescent Lamps

The object of IS: 1534 (Part I)-1960 Specification for Ballasts for Fluorescent Lamps, Part I: For Switch Start Circuits, is to lay down a uniform basis for the performance and testing of various types of ballasts for fluorescent lamps. This standard covers ballasts of inductive and capacitive types for use up to 250 V (preferred voltages being 230 V and 240 V) alternating current supply at 50 cycles per second, associated with fluorescent lamps of rated wattages 20, 40 and 80, with pre-heated cathodes when used in switch start circuits.

Electrical Apparatus Comprising Resistors

With a view to assisting the indigenous industry in regulating the quality of its product, the Indian Standard Specification for Electrical Apparatus Comprising Resistors (IS: 1565-1960) has been issued. The standard covers the type approval requirements for three grades of electrical apparatus mainly comprising resistors for commercial and laboratory use in association with terminals, switches, plugs, etc. Such apparatuses are: Resistance Boxes, P.O. Boxes, Wheatstone Bridges, Kelvin Bridges and other similar apparatus. The standard covers only the apparatus with components of accuracy between 0·01 and 5 percent (both inclusive).

Glossary of Terms for Electrical Cables and Conductors

With the progressive formulation of Indian Standard Specifications for many types of cables and conductors, the need for following uniform definitions in all the standards was felt. With a view to facilitating this and to avoiding repetition of definitions of terms in each standard, the Indian Standard Glossary of Terms for Electrical Cables and Conductors (IS: 1591-1960) has been issued. While preparing this glossary, the definitions recommended by the International Electrotechnical Commission (IEC) have also been taken into consideration.

Metric Copper Wires and Accessories

With a view to guiding the electrical cable industry to evolve rational sizes for wires and conductors in the metric system, the Indian Standard Metric Sizes of Copper Wires and Conductors for Electrical Purposes (IS: 1594-1960) has been prepared. The standard prescribes diameters of copper wires for electrical purposes in metric system. It also includes the sectional areas with the number and diameter of wires of copper conductors for use in insulated cables and for overhead transmission purposes.

The present cable manufacturing practices in this country follow mostly the British practices and the existing Indian Standards, based on corresponding British Standards, are in the fps system. The conductor sizes specified in this standard are derived from the CEE series as well as the sizes in vogue at present in India. This step has been taken with a view to bringing about the minimum amount of dislocation in the cable industry in this country in changing over to the metric system, although the advantages of adopting a series which follows a geometric progression are fully realized. It is, however, hoped that with the efflux of time, the needs in this country will tend towards an ideal series and that at a later date, it will be possible to delete many of the sizes representing the present practice.

ENGINEERING DIVISION

Beam Scales

A series of Indian Standard specifications for commercial weighing instruments is being prepared by ISI at the instance of the Standing Metric Committee, Government of India, in connection with the introduction of metric system of weights and measures in the country. The latest addition to this series is the Indian Standard Specification for Beam Scales (IS: 1433-1960). Other standards published in this series already cover general requirements for beam instruments and specifications for counter machines, platform weighing machines, weighing bridges, crane weighing machines and steelyards.

This standard recognizes four classes of beam scales and the trades for which these classes are intended to be used are given below:

A — Assay purposes, fine weighments and for weighing precious stones, jewels, pearls, etc;
B — Bullion, precious metals, saffron and similar expensive commodities, chemists & druggists, perfumery, etc;
C — Base metals and relatively costlier commodities, such

as cereals, tea, coffee, tobacco, jute, dry fruits, spices, oil-seeds, etc; and

D — Weighment of relatively cheaper commodities, such as scrap iron, fuel, wood, charcoal, cotton waste, vegetables, etc.

Type Testing of Variable Speed Internal Combustion Engines

When major modifications are made in the design or materials or both of an existing type of engine, or when an entirely new design is evolved and is to be introduced in the market, it is necessary to have the type testing of the new or modified design under rigorous operating conditions in order to prove its reliability. The Indian Standard Code for Type Testing of Variable Speed Internal Combustion Engines for Automotive Purposes (IS: 1602-1960) is intended to serve as a guide in carrying out such type tests. The standard applies to type testing of normally aspirated variable speed internal combustion engines of the following types:

a) Compression ignition engines, and
b) Carburettor type engines.

STRUCTURAL AND METALS DIVISION

Fixing and Glazing of Metal Doors, Windows and Ventilators

The purpose of the Indian Standard Code of Practice for Fixing and Glazing of Metal (Steel and Aluminium) Doors, Windows and Ventilators (IS: 1081-1960) is to provide essential guidance to persons engaged in such type of work. The utility of metal doors, windows and ventilators depends very largely on the manner in which fixing and glazings are carried out. Close adherence to the practices detailed in this code will greatly assist in getting the job correctly done.

Chemical Analysis of Printing Metals

Various indigenous laboratories, where printing metals are analysed, follow different methods and, therefore, the results of analysis are often not concordant. To avoid this discrepancy, the need has been felt for prescribing standard methods of chemical analysis which would be useful as reference methods. These are included in the Indian Standard Methods of Chemical Analysis of Printing Metals (IS: 1345-1960).

Ferro Alloys

The following three specifications cover general requirements, chemical composition, methods of sampling and supply for the respective materials:

IS: 1466-1960 Ferro Vanadium,
IS: 1470-1960 Silico Manganese, and
IS: 1471-1960 Ferro Phosphorus.

These standards belong to a series of Indian Standard specifications for ferro alloys. Standards covering ferro silicon, spiegeleisen, ferro chromium, ferro manganese, ferro tungsten, ferro titanium and ferro molybdenum have already been published.

Sizes and Shapes for Firebricks

There is a great need for dimensional standardization for refractories in this country. This subject has assumed great importance in view of the large-scale programme of industrial expansion anticipated during the next few years and also because of the decision of the Government of India to change over to the metric system. Consequently, IS: 1526-1960 Specification for Sizes and Shapes of Firebricks has been issued.

The standard specifies nominal sizes and shapes for firebricks of 230 mm series and is limited to those shapes which are mostly used in steel plants and those which are common to several other industries. Indian Standard specifications for sizes and shapes of 300 mm (or 12 in.) and higher series of firebricks and for silica bricks are under preparation.

Basic Principles of Lot Sampling

Controlling the quality of products so as to maintain it at a given level and within specification limits is a major problem with all producers. To assist producers in tackling such problems in a scientific manner, the Indian Standard Method for Statistical Quality Control During Production by the Use of Control Chart (*Tentative*) (IS: 397-1952) was published earlier. Similarly, inspection of lots of products so as to get assurance about the quality of goods to be purchased is a mojor problem with consumers. With an increase in the manufacturing capacity inspection of each and every unit of production is neither economical nor possible. The only alternative method available is sampling inspection. To assist consumers in tackling their problems through sampling methods, wherever possible, there is a great need for a document explaining the various concepts involved in sampling inspection. The Indian Standard Manual on Basic Principles of Lot Sampling (IS: 1548-1960) is expected to serve that need. It is also hoped that this manual would contribute towards increased use of sampling techniques by producers for purposes of improving and maintaining quality.

Rockwell Hardness Test for Steel

The Indian Standard Method for Rockwell Hardness Test (B and C Scales) for Steel (IS: 1586-1960) is based on draft ISO Recommendation No. 119 Rockwell Hardness Test (B and C Scales) for Steel which represents consensus of international opinion on the subject. The principle of the prescribed test is that a penetrator of standard type (cone or ball) is forced into the surface of a test piece in two operations and the permanent increase of depth of indentation '*e*' of this penetrator is measured under specified conditions. The unit of measurement for '*e*' is 0·002 mm from which a number known as the Rockwell hardness is deduced.

TEXTILE DIVISION

Scouring Loss in Grey and Finished Cotton Textile Materials

It is hoped that the Indian Standard Method for Determination of Scouring Loss in Grey and Finished Cotton Textile Materials (IS: 1383-1960) will be used as an aid in judging the performance characteristics of cotton textile materials. Methods of test for determining separately moisture, total size, ash and fatty matter have already been prescribed in IS: 199-1957.

The method prescribed in this standard is generally applicable to grey and finished cotton textile materials wherein only starch or tamarind kernel powder or both, and water-soluble or easily removable finishing agents, such as oils, fats, china clay, etc, have been used and which would normally be removed during the scouring process.

Handloom Cotton Twills Silk Dhoties and Shirting

With a view to helping producers of handloom materials in manufacturing goods of a defined quality, the following three specifications have been issued:

IS: 1579-1960 Handloom Cotton Twills, Bleached or Dyed;
IS: 1583-1960 Handloom Silk Dhoties, Loomstate; and
IS: 1584-1960 Handloom Silk Shirting, Loomstate.

These standards prescribe constructional details and other particulars of different varieties of the material covered by each. They do not specify the general appearance lustre or feel of the cloth.

Cotton Fibre Immaturity Count

The Indian Standard Method for Cotton Fibre Immaturity Count — Polarized-Light Method (IS: 1611-1960) prescribes a method for estimating the percentage of immature fibres in a sample of cotton. This method is intended to be an alternative to sodium hydroxide swelling method prescribed in IS: 236-1954 Method for Determination of Cotton Fibre Maturity Count.

In the sodium hydroxide swelling method, fibres are classified as (a) mature fibres, (b) half-mature fibres, and (c) immature fibres, on the basis of the ratio of width of their lumen to the width of their wall, both being determined after the fibres have swollen in 18 percent caustic soda solution. But, in the polarized-light method prescribed in this standard, fibres are classified as (a) immature fibres, and (b) non-immature fibres, on the basis of the colour observed under polarized-light. For the same sample of cotton, the percentage of immature fibres determined by polarized-light method may differ slightly from the corresponding value determined by caustic soda swelling method.

Buffer Bands

A buffer band is an endless double leather belt provided with runners which are either loose or riveted. It is used on cop changing automatic looms only. The band fits in a ring frame and checks the momentum of the picking stick before it strikes the buffer.

The Indian Standard Specification for Buffer Bands for Cop Changing Automatic Looms (IS: 1619-1960) prescribes the methods of sampling and tests, and the requirements regarding material, shape and size, dimensions, substance (or thickness), splices, tensile strength and elongation, chemical requirements, etc, for the material.

AMENDMENT SLIPS

Amendment slips were issued during the period 16 September to 15 November 1960 to the following Indian Standards:

No. and Date of Amendment	No. and Title of Indian Standard
No. 1 March 1960	IS: 193-1956 Specification for Soft Solder (*Revised*)
No. 2 October 1960	IS: 203-1958 Specification for Leclanchè Type Dry Batteries for Flashlights (*Revised*)
No. 1 October 1960	IS: 393-1952 Specification for Ink, Stamp-Pad
No. 1 September 1960	IS: 395-1959 Specification for Lead-Acid Storage Batteries (Light Duty) for Motor Vehicles (*Revised*)
No. 3 October 1960	IS: 434-1953 Specification for Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting (for Working Voltages Up to and Including 11 kV) (*Tentative*)
No. 1 August 1960	IS: 484-1958 Specification for Silica Refractories for General Purposes (*Revised*)
No. 1 September 1960	IS: 606-1955 Code of Practice for Construction of Food Grain Storage Structures Suitable for Trade and Government Purposes for the *Eastern* Region
No. 2 September 1960	IS: 607-1955 Code of Practice for Construction of Food Grain Storage Structures Suitable for Trade and Government Purposes for the *Southern* Region
No. 1 September 1960	IS: 608-1955 Code of Practice for Construction of Food Grain Storage Structures Suitable for Trade and Government Purposes for the *Coastal* Region
No. 1 September 1960	IS: 1010-1957 Specification for *Suji* or *Rava* (Semolina)
No. 1 August 1960	IS: 1110-1957 Specification for Ferro Silicon
No. 1 September 1960	IS: 1148-1957 Specification for Rivet Bars for Structural Purposes
No. 1 September 1960	IS: 1149-1957 Specification for High Tensile Rivet Bars for Structural Purposes
No. 1 August 1960	IS: 1180-1958 Specification for Outdoor Type Three-Phase Distribution Transformers Up to and Including 100 kVA 11kV

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the weight of 1 000 grains, it was agreed to retain this. There was, however, an interesting discussion whether it should be called 'weight' or 'mass' and a solution was found by using the word 'mass' and putting in brackets the words 'sometimes erroneously called weight'. No new work was undertaken by the Subcommittee which agreed to limit itself to the programme of work in hand.

DRAFT INDIAN STANDARDS

Brief reviews are given here of draft Indian Standards issued recently for wide circulation to elicit comments from interested parties in India and abroad. Comments are considered by the Sectional Committee concerned at the stage of finalization of the drafts.

Titles of draft Indian Standards which are due to be issued in wide circulation in the near future are also given at the end; some of these might have been circulated while this issue was under print.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Bacteriological Analysis of Milk

Part III of the draft Indian Standard Methods of Test for Dairy Industry covers bacteriological analysis of milk. This draft specifies methods commonly used for detailed bacteriological examination of milk; it also includes methods which are used for special purposes.

The physical, chemical and bacteriological methods of analysis which are used for assessing rapidly the quality of raw milk for processing and manufacture have already been published as IS: 1479 (Part I)-1960. Part II which covers the methods for detailed chemical analysis of milk has already been finalized. Parts IV and V are under preparation and would cover respectively: (a) Methods of Determination of Freezing Point of Milk, and (b) Methods of Dairy Plant Control.

Spices and Condiments

Three draft Indian Standard Specifications for the following prescribe requirements, methods of test and grades for spices belonging to genus indicated against each:

a) Cardamom (*Chhoti Elaichi*) — *Elettaria cardamomum*;
b) Black Pepper (*Kalimirch*) — *Piper nigrum* Linn; and
c) Ginger (*Saunth*) — *Zingiber officinale* Roscoe.

Another draft specification for curry powder, used as a flavouring material, has also been issued. Methods of sampling and test, and terminology for spices and condiments are included in two separate draft specifications.

BUILDING DIVISION

Venetian Blinds for Windows

Protection against excessive daylight and glare inside buildings without restricting ventilation is one of the problems confronting an architect. While a certain minimum area of window space is necessary from the point of view of adequate natural ventilation during daytime, the required window space creates often excessive glare and discomfort in the room. Window blinds, curtains, coloured glass and similar devices have been adopted to reduce glare and cut down excessive daylight.

The draft Indian Standard Specification for Venetian Blinds for Windows deals with such blinds made of either wooden or aluminium slats. The draft covers material, constructional details, sizes and test requirements of open-head venetian blinds.

Manufacture of Lime in Mixed-Feed Kilns

Lime is an important material for building construction, but the technique of manufacture of building lime is still not well-established in this country. Several essential characteristics are required in building lime with regard to its slaking and subsequent performance in mortars, which will be satisfactorily developed only if limestone is calcined in the kiln at the right temperature and with the right type and proportion of fuel. At present, lime is manufactured in many parts of this country in a haphazard manner in small country-kilns, and it is difficult to obtain dependable supplies of quality lime for building construction.

For improving this state of affairs, the manufacturing industry would need guidance for which the draft Indian Standard Code of Practice for Manufacture of Lime in Mixed-Feed Kilns, Vertical Type, has been prepared.

Crude Coal Tar, Road Tar and Coal Tar Pitch

Crude coal tar for general use, road tar and coal tar pitch had been covered respectively in IS: 212-1950, IS: 215-1951 and IS: 216-1951 published earlier. With the publication of IS: 1201-1958 to 1220-1958 Methods of Testing Tar and Bitumen, it became necessary to revise these standards by deleting the methods of test given and making a reference to the relevant Indian Standard Method. Hence, draft Revisions of the three Indian Standards mentioned above have been prepared.

Masonry Walls and Foundations

There are varying practices in the design and construction of masonry walls. An attempt has been made in the draft Indian Standard Code of Practice for Structural Safety of Buildings: Masonry Walls, to unify these practices keeping in view the ultimate safety and economy of the structure and its satisfactory performance in service. The draft deals with the general structural recommendations, such as the minimum thickness, slenderness, permissible stresses, etc, for both load bearing and non-load bearing masonry walls.

Another part of the draft code deals with foundations. This part covers terminology, general consideration for design, loads, allowable bearing pressure, stability against overturning and sliding, depth and particular requirements for various types of foundations. Recommendations contained in this draft have been made to ensure the safety of foundations and thus the safety of the whole building.

Library Furniture and Fittings

The draft Indian Standard Specification for Library Furniture and Fittings covers the items of wooden furniture and fittings meant for use in a library, namely, unit book rack, catalogue cabinet, classifier's table, accession table, reading room table, periodicals table, control region fittings, catalogue card box, primary issue tray, secondary issue tray, charging tray, catalogue card works tray, book trolley, study tables, bay guide holder and chairs.

Dimensions and other features of the furniture required for a library have been so prescribed as to cover only essential functional requirements of each item; enough scope has been left for the designer to vary the actual shape, design, etc.

Portland Blast Furnace Slag Cement

The draft Indian Standard Specification for Portland Blast Furnace Slag Cement is a Revision of the earlier standard on the same subject published in 1953. The draft Revision incorporates certain important changes. The use of Leighton Buzzard Sand which was prescribed for testing of cement has been replaced by the Indian Standard Sand conforming to IS: 650-1955. The compressive strength test which was formerly an optional test has been made compulsory, and the tensile test has been made optional. In regard to the determination of fineness, the Wagner's Turbidimeter and Blaine's Air Permeability apparatus have been excluded in preference to Lea & Nurse apparatus and its modified form, namely, Rigden's apparatus. In the case of soundness test, the original Le Chatelier method has been supplemented by an optional test using the autoclave expansion method.

Portland Pozzolana Cement

The manufacture, and physical and chemical requirements of a type of blended hydraulic cement in which a part of the portland cement is substituted by a pozzolanic material are covered in the draft Indian Standard Specification for Portland Pozzolana Cement.

This cement can generally be used wherever ordinary portland cement is used. But it should be noted that the addition of pozzolana does not contribute to strength at early ages; only at later ages can one expect strength similar to those for ordinary portland cement.

Bitumen

Digboi type cutback; cutback, blown type, and straight run bitumen had been covered respectively in IS: 454-1953, IS: 217-1951, IS: 702-1955 and IS: 73-1950. With the publication of IS: 1201-1958 to 1220-1958 Methods of Testing Tar and Bitumen, it became necessary to revise these standards by deleting the methods of test given and making a reference to the relevant Indian Standard method. Consequently, draft Revisions for the four types of bitumen have been circulated.

CHEMICAL DIVISION

Alumino-Ferric

The draft Revision of IS: 299-1951 Specification for Alumino-Ferric covers only one grade of the material instead of the two grades specified earlier. Requirements and test methods for arsenic and lead have also been included for the material required for water purification.

Magnesium Powder

The following three grades of material, according to their particle size and bulk density, have been prescribed in the draft Indian Standard Specification for Magnesium Powder for Explosives and Pyrotechnic Compositions:

a) High density grade — 0 (heavy), 3 (heavy) and 5 (heavy);
b) Medium density grade — 14/44, 0, 3 and 5; and
c) Low density grade — 2, 2A, 4 and 6.

Requirements, methods of sampling and clauses on packing and marking are also included in the draft.

Vegetable Tanned Hydraulic Leather

The draft Revision of IS: 581-1954 Specification for Vegetable Tanned Hydraulic Leather incorporates the amendment in respect of the fat and oil content of leather. In addition, requirements for tanning and other characteristics, especially those which are laid in the series of standards concerning heavy leather, have also been included.

Urea Formaldehyde Moulding Powder

The draft Indian Standard Methods of Test for Urea-Formaldehyde Moulding Powder prescribes the methods for determining apparent powder density, density of moulding and bulk factor, shrinkage, water absorption, boiling water absorption, degree of cure, tensile strength, impact strength, plastic yield, cross-breaking strength, electric strength at 90°C, surface resistivity, volume resistivity, powder factor and permittivity, and resistance to tracking of the material.

Thinners and Primers

With the rapid growth of the aircraft manufacturing industry in this country, the need for formulating standard specifications for paints and allied materials for use in this industry has been keenly felt. Keeping in view the urgent need for such standards right at the initial stages of this industry and the special responsibility associated with all facets of aircraft manufacture, three draft Indian Standard Specifications for the following have been circulated:

a) Thinner for Synthetic Paints and Varnishes for Aircrafts;
b) Thinner for Cellulose Nitrate Based Paints, Dopes and Lacquers for Aircrafts; and
c) Ready Mixed Paint, Zinc Chrome, Priming (Synthetic) for Light Alloys for Aircrafts.

These prescribe the requirements and the methods of test for the respective materials.

ELECTROTECHNICAL DIVISION

Silvered Mica Capacitors

The draft Indian Standard Specification for Fixed Silvered Mica Capacitors specifies the tests and requirements for judging the mechanical, electrical and climatic properties of fixed mica dielectric capacitors with deposited silver electrodes. These are used in telecommunication receiving equipment and similar applications in other electronic equipment.

The capacitors covered are capable of handling a reactive power not exceeding 200 VA and a current not exceeding 0·5 A.

Power Transformers

The importance of designing transformers for the appropriate impulse withstand levels and to have them type tested to those levels, and of laying down a reference ambient temperature truly representative of the conditions prevailing in India is recognized in the draft Indian Standard Specification for Power Transformers. The draft covers oil-immersed transformers with class 'A' insulation (*see* IS: 1271-1958), rated 1 kVA and above for single-phase and 15 kVA and above for polyphase operation.

Codes of Practice for the Maintenance of Insulating Oil, and Installations and Maintenance of Power Transformers are under preparation.

ENGINEERING DIVISION

Coated Abrasives, Glue Bond

At the request of some of the manufacturers, the draft Revision of

IS: 715-1957 Specification for Coated Abrasives, Glue Bond has been prepared. The main modifications incorporated in the draft Revision are:

a) metricization of the standard; and
b) recasting of the table for allowable limits for the sizing of abrasive grains.

A separate standard for waterproof quality coated abrasives is also intended to be prepared.

Screwing Taps

Screwing taps of both head and machine variety are extensively employed for cutting threads for both production and maintenance purposes. The draft Indian Standard Specification for Screwing Taps specifies metric screw threads and covers the commonly used types of screwing taps, for example, hand taps, machine taps and machine nut taps for general engineering purposes. A separate standard for screwing dies is under preparation.

STRUCTURAL AND METALS DIVISION

High Silica Sand

With a view to meeting the requirements of iron and steel foundries the draft Indian Standard Specification for High Silica Sand for Use in Foundries has been circulated. The quality of sand available in this country and known to be commercially exploited at present, has been kept in view while preparing the draft which specifies three grades of sand with regard to chemical composition and six grades according to the distribution of sand grains.

Sodium-Base Bentonite

A number of materials is mixed with sand to impart plasticity to it in the presence of moisture. Their fine particle size and high moisture absorption property give bond strength or adhesion to the mass of sand grains. The draft Indian Standard Specification for Sodium-Base Bentonite for Use in Foundry (*Tentative*) covers sodium-base bentonite which is used as a binder in mould and core sand mixtures and in the preparation of mould and core washes. It is composed chiefly of the minerals of the Montmorillonite family in which the ratio of sodium to calcium ions in the base exchange is approximately 1·7 to 1.

Mild Steel Plate, Flats and Bars

Nominal sizes and weights have been prescribed in three Indian Standard Specifications for the following:

a) Mild Steel Plate, Sheet and Strip for General Engineering Purposes;
b) Mild Steel Flats for General Engineering Purposes; and
c) Mild Steel Bars — Round and Square for General Engineering Purposes.

A general guidance with regard to the selection of these sizes had been given in IS: 1138-1958 Sizes of Metal Strip, Sheet, Bars (Round and Square), Flats and Plate (for Structural & General Engineering Purposes). But, it has now become necessary to issue separate standards for plates, flats and bars. After these standards are published it is intended to withdraw IS: 1138-1958.

Steel Bars for Stays

The draft Indian Standard Specification for Steel Bars for Stays covers the requirements for the bars for use in boilers, and includes clauses relating to manufacture; chemical composition; freedom from defects; sulphur print test; tolerances; calculation of weight; selection of test samples; tensile, dump, bend and izod impact tests; retests; and rust protection.

Carbon Molybdenum Steel Forgings

Two grades of carbon molybdenum steel forgings have been specified in the draft Indian Standard Specification for Carbon Molybdenum Steel Forgings. The maximum carbon content of Grades 1 and 2 has been prescribed as 0·20 and 0·30 percent respectively. Composition with regard to the contents of silicon, manganese, nickel, chromium, molybdenum, copper, sulphur and phosphorus has also been prescribed but it will be the same for the two grades.

Steel Plates for Pressure Vessels

The draft Indian Standard Specification for Steel Plates for Pressure Vessels Covers the requirements for two grades of steel plates for the fabrication of fusion welded fired pressure vessels. The draft includes clauses on supply of material; terminology; manufacture; chemical composition; heat treatment; freedom from defects; tolerances; calculation of weight; selection of test samples; tensile, bend, temper bend, homogeneity tests; retests; rust protection and marking.

Line Pipes

With the establishment of a number of refineries in the country and proposals to develop the oil industry, it became necessary to formulate the draft Indian Standard Specifications for: (a) Line Pipe, and (b) High-Test Line Pipe. In view of the fact that pipes conforming to specifications published by American Petroleum Institute (API), USA, have long been used in the country and these specifications are being accepted in many of the other countries, it was felt that these drafts should be based on the API Specifications.

Metallic Silicon

Silicon metal is mostly used in the non-ferrous metals industry, particularly in the manufacture of aluminium and copper alloys. Addition of silicon improves physical properties. It is also used for the manufacture of organo-silicon compounds. Low calcium silicon metal is used in the production of high aluminium silicon alloys requiring a low calcium value. Low aluminium silicon metal is used in the manufacture of copper base silicon alloys where a minimum aluminium content is required.

The draft Indian Standard Specification for Metallic Silicon covers requirements for four grades of this material: standard, low calcium, low aluminium and purified.

Metallic Chromium

Chromium metal is used in the production of chromium bearing electrical resistance alloys, high temperature and corrosion resistant alloys, chromium bronze, etc. The draft Indian Standard Specification for Metallic Chromium covers requirements for three grades of this material: high carbon, low carbon and electrolytic.

TEXTILE DIVISION

Cotton Thread and Lining Cloth

The draft Indian Standard Specifications for the following prescribe constructional details and other particulars of the materials covered by each:

a) Cotton Embroidery Thread, Bleached or Dyed; and

b) Cotton Lining Cloth (Warp Faced Satin), Dyed

Handloom Cotton Mootus

The draft Indian Standard Specification for Handloom Cotton Mootus, Striped or Checked includes clauses on sampling, general and specific requirements, marking and packing. General requirements cover yarn and cloth; specific requirements are in respect of varieties, ends and picks, weight, breaking load, colour fastness, scouring loss, shrinkage, width, length, etc.

Door Mats, Creel, Bit and Fibre

The draft Indian Standard Specification for Door Mats, Creel, Bit and Fibre prescribes the requirements of plain, stencilled and fancy inlaid mats described in the title. Specific requirements laid down in the draft relate to varieties, construction, chains and picks, pile height, weight and dimensions.

MISCELLANEOUS

Layout of Periodicals

The draft Revision of IS: 4-1949 Practice for Make-Up of Periodicals is entitled as Guide for Layout of Periodicals. One of the main modifications made in this draft is to restrict its scope to cover learned periodicals only. Requirements for various other items especially those concerning the cover-page and the title-page have generally been relaxed in view of the artistic and aesthetic considerations involved.

The purpose of this standard has been to enable editors and publishers to so shape their periodicals as to facilitate their use by readers and librarians.

Title-Page of a Book

The draft Indian Standard Specification for Title-Page and Back of Title-Page of a Book covers draft Revisions of the following two tentative Indian Standards issued in 1956:

IS: 792-1956 Specification for Title-Leaf of a Book; and

IS: 793-1956 Practice for the Author Statement in the Title-Page of a Book.

The draft takes note of the ratification of the International Copyright Convention by the Government of India and recommends that the prescribed copyright statement be given on the back of the title-page. Further, IS: 792-1956 covered the entry statement for personal authors only. The revised standard has been made more comprehensive in this respect also by including a few additional clauses on the rendering of the entry statement for corporate authors. The draft standard has also been provided with a set of definitions of the various technical terms used in the text of the standard.

DRAFT INDIAN STANDARDS TO BE CIRCULATED

During the period under report, the following draft Indian Standards were being processed to be put into wide circulation in the near future:

1) Specification for Stainless Steel Milk Cans.
2) Method of Determination of Freezing Point of Milk.
3) Schedule of Unit Weights of Building Materials.
4) Code of Practice for Use of Structural Steel in General Building (Revision of IS: 800-1956).
5) Specification for Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting.
6) Specification for Braided Cables with Copper Conductors for Overhead Transmission Lines.

NEW PREMISES OF CALCUTTA BRANCH OFFICE

The Calcutta Branch Office of the Indian Standards Institution has been shifted from P-11 Mission Row Extension, to:

11 Sooterkin Street
Calcutta 13

ISI STALL AT THE ALL INDIA INDUSTRIAL AND COMMERCIAL EXHIBITION, MADRAS

The Indian Standards Institution participated in the All India Industrial and Commercial Exhibition organized by the Southern India Chamber of Commerce, Madras, in commemoration of its golden jubilee year. The exhibition, which was inaugurated by Shri K. Kamaraj Nadar, Chief Minister of Madras State, on 9 January 1961, was the first of its kind in the South. The industrial progress during the last two 5-year plan periods was exhibited in many of the public and private sectors which had their stalls in this exhibition.

In the ISI stall, the aims and objects of the Institution, the functions of standards and the advantages of standardization were suitably brought out through glass paintings, cartoons, posters, charts, etc. The progress and fields of activities of ISI were also illustrated. In addition, a cross-section of articles for which Indian Standards have been formulated was displayed. A separate enclosure was devoted exclusively to the display of certified products bearing the ISI Certification Mark. Corresponding Indian Standards were placed along with the articles.

The ISI stall covered an area of some 2 200 ft² (205 m²) which was given free of charge to ISI by the Southern India Chamber of Commerce.

Front View of the ISI Pavilion in the All India Inddustrial and Commercial Exhibition at Island Grounds, Madras

New Subjects Approved for Formulating Indian Standards

The following list gives the new subjects approved by the Division Council concerned or its Standing Working Committee during October, November and December 1960 for formulation of Indian Standards.

Agricultural and Food Products Division

Plough Complete (Including Blades)
Interculturing Implements
Bund Former
Seed Drills
Honey
Comb Foundation Mill
Gram Chuni
Gram Husk

Building Division

Approximate Dimensions of Lifts, Lift Pits, etc

Chemical Division

Kattha
Cutch
Inorganic Thermal Insulating Materials (such as Magnesia, Glass Wool and similar inorganic products)
Sodium Aluminate for Water Treatment
Screwed Neck Finish for Glass Bottles
Safety Glass (Heat Treated)
Marble-Stoppered Aerated Water Glass Bottles
Methods of Test for Quality of Glass
Bottles for Transfusion Fluids
Glass Mirrors
Water Colours
Untrimmed Sizes of Paper
Standard Substances of Paper
Cigarette Tissue Paper
Paper for Multi-Walled Bags
Hunters' Boots (Jungle Boots)
Rice Bran Oil

Engineering Division

Code of Practice for Installation of Tubewells
Tropic Proofing of Instruments
School Type Instrument Boxes (Geometry Boxes)
Taper Keys, Woodruff Keys and Tangential Keys

Structural and Metals Division

Code of Practice for Training and Test of Metal Arc and Gas Welders for Specialized Jobs
Welding of Mild Steel Bars Used in Reinforced Concrete Work

VIBRATORY COMPACTION OF TENSILE BRIQUETTES FOR CEMENT TESTING — *Continued from p. 78*

personal factor to a greater degree, is quite preferable. Such a test will give more uniform results thereby meeting the specification requirements better.

6. ACKNOWLEDGEMENT

6.1 The authors wish to acknowledge the suggestion of Mr. S. Venkataratnam to use a superimposed load during the vibratory compaction. They also wish to acknowledge the keen interest shown by Dr. M. L. Puri and the Director, CRRI, in carrying out this work.

7. REFERENCES

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OBITUARY

We announce with great regret the death of Sarvashri S. G. Krishnan and M. B Gidvani.

SHRI S. G. KRISHNAN

S. G. Krishnan (b. 16 Mar 1909 — d. 9 Nov 1960) was Chief Mining Adviser of the Eastern and South Eastern Railways, and associated with ISI as a member of the Coal Sampling Subcommittee.

In 1937, he entered the Railway service as mine surveyor. During a brilliant record of service he became the first Indian Mining Adviser in 1949. In 1958, he became the Chief Mining Adviser, the post which he held with credit and distinction till his death.

Late Shri Krishnan was a renowned expert on coal and mining. He had been actively associated with several committees of the Central Fuel Research Institute, Central Mining Research Station, Indian School of Mines and Applied Geology, etc.

M. B. Gidvani (b. 12 Aug 1904 — d. 26 Dec 1960) represented Bright Brothers Private Ltd. on the Plastics (CDC 17) and Brushware (CDC 31) Sectional Committees of ISI. Also, he was a member of 3 subcommittees of CDC 17, namely Thermoplastics, Methods of Test for Finished Mouldings, and Polyethylene Film and Laminated Products.

Late Shri Gidvani was an engineer from Battersie Polytechnic, London, and was actively associated with the All India Plastics Manufacturers' Association of which he had been the President in 1958-59. He had also led the Indian delegation of Plastics and Linoleums Export Promotion Council to West Africa and Middle-East Countries in 1959.

New ISI Members

Enrolled during the period 1-10-60 to 30-11-60

Sustaining Members

All India Oil Mill Machinery Mfrs' Association, New Delhi
All India Printing Ink Mfrs' Association Ltd., Bombay
Berar Oil Industries, Akola (M.S.)
Enamelled Wires Private Ltd., Bombay
Hindustan Tin Works, Ghaziabad
Indian Re-inforcing Co., Madras
India Tin Industries (Private) Ltd., Bangalore
Industrial Machinery Manufacturers Private Ltd., Ahmedabad
Kesavan, P. & Co., Ernakulam
Kosangas Co., Bombay
Lederle Laboratories (India) Private Ltd., Bombay
Lyallpur Engineering Co., Ghaziabad
Master Engineering Works, Jullundur City
Metropolitan Architects & Engineers Private Ltd., Calcutta
Novus Engineering Works, Bombay
Omega Insulated Cable Co., (India) Ltd., Madras
Phoolson Agricultural Industries (Regd), New Delhi
Punjab Oil Expeller Co., Ghaziabad
Rajasthan Electro Conductors Manufacturing Corporation, Jodhpur
Renown Biscuit Co., Bombay
Spencer & Co. Ltd., Madras
Spunpipe & Construction Co. of India Ltd., Bombay
Sylvex Cable Co., Bombay
Thermo-Plastic Industries, Bombay
Universal Radiators, Coimbatore

Sustaining Members (Associates)

Balakrishnan, L. G. & Bros. Private Ltd., Coimbatore
Birla Institute of Technology, Mesra, Ranchi
Bubna Soap Mills, Delhi
Eastern Industries (India) Private Ltd., Kanpur
Fabricators India, Varanasi
Indian Flexible Tube Manufacturing Co. Private Ltd., Bombay
Malaviya Engineering Works, Kanpur
Mighty Scale Co., Wadakancheri
Rockhard, Bombay
Roof Rite Private Ltd., New Delhi
Sakun Engineering Works, Delhi
Saran Brothers, Kanpur
Sree Rama Cement Concrete Products Co., Vijayawada
Zech Engineers Private Ltd., Ghaziabad

Ordinary Members

Bahl, Des Raj, New Delhi
Bansal, Shant K., Lucknow
Dokras, M. N., New Delhi
Juneja, Abnash Chand, Guntur (A.P.)
Menon, N. D., Dalmiapuram (S.I.)
Mitra, Gopal Chandra, Allahabad
Subhaiah, Vudath, Dowlaishwaram (East Godavari District)

COLD-FORMED LIGHT GAUGE STEEL SECTIONS—*Continued from p. 70*

loads. The test pieces are formed from commercial stock as delivered and hence the non-uniformity in thickness and quality reduced the ultimate load. However, a relative comparison of test results reveals that simultaneous failure conditions afford a rational and sound basis to fix a design range of sections which are most economical and efficient.

6.2 The design charts conclusively prove that there is a definite range of efficient sections for a definite design load for each gauge sheet. For other light gauge sheets similar design charts should be constructed and tables of standard sections should be drawn on the lines of the sample Tables III and IV given in this paper.

7. ACKNOWLEDGEMENTS

7.1 Tests and conclusions reported here are part of an extensive investigation of cold-formed light gauge steel structural members sponsored jointly by the Indian Standards Institution and the Council of Scientific & Industrial Research, and are published with the permission of the Director, NPL. The authors wish to express their thanks to Mr. B. S. Krishnamachar and his associates of ISI for all the co-operation received during the course of this investigation and also for useful suggestions in programming the work.

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ABOUT OUR STAFF

Dr. Sadgopal, Deputy Director (Chemicals) and officer-in-charge of the Chemical Division of ISI, has been re-elected as a Vice-President of the Oil Technologists Association for the year 1961.

Shri D. Das Gupta, Assistant Director (Chemicals), has been elected a Fellow of the Institute of Petroleum, London. Shri Das Gupta is at present the secretary of 6 ISI Sectional Committees, namely, CDC 2 Alcohol and Allied Products; CDC 6 Rubber Products; CDC 22 Petroleum Products; CDC 29 Methods of Test for Petroleum, Petroleum Products and Lubricants; CDC 32 Petroleum Measurements; and CEDC 1 Lubricants.

The Petroleum Products Sectional Committee has so far published six Indian Standards, covering kerosines, diesel fuels, vaporizing oils, aviation turbine fuels and fuel oils In the preparation of these standards, the contribution of Shri D. Das Gupta has been significant.

Draft Standards from Commonwealth Countries

The following draft standards from Commonwealth Countries were received for comments during the period 16 September to 5 December 1960. Copies of these documents are available in the ISI Library for reference.

Australia

- Doc-498 Concrete Fence Posts for Rural Use
- Doc-501 and 502 Exterior Finishing Enamel and Undercoat for Exterior Finishing Enamel
- Doc-506 Keys and Keyways
- Doc-507 Under Cuts and Runouts for Screw Thread
- Doc-508 to 511 Slotted Grub Screws; Hexagon Sockets Screws and Wrench Keys; Screwed Studs for General Purposes; and Unified Black Square and Hexagon Bolts Screws, Nuts and Plain Washers
- Doc-512 Dimensions of Conduit Dies
- Doc-513 Rolled Sheet Metal Screw Threads and Associated Threads in Moulded Plastics and Die — Cast Materials For General Purposes
- Doc-514 General Purpose Acme Screw Threads
- Doc-515 Medicine Glasses
- Doc-516 Abrasion of Coarse Aggregate
- Doc-517 Vacuum Regulators for Milking Machine
- Doc-518 End-of-Milking Indicators
- Doc-519 Flexible Regulators for Milking Machine
- Doc-520 Identification Colours for Portable Fire Extinguishers

New Zealand

- D 6145 Safety Requirements for Electric Mains Supplied Radio or Other Electronic Apparatus
- D 6206 Components and Filter-Units for Radio - Interference Suppression
- D 6297 The Repair of Electrically Heated Blankets for Domestic Use
- D 6355 Timber Construction

Rhodesia and Nyasaland

- D(BC 5)12 Method of Testing Clay Building Bricks
- D(CH 3)3 Pharmaceuticals

United Kingdom

- AA(ELE)1392-93 Silk Covered and Rayon Covered Copper Conductors
- AA(ELCP)2241 Code of Practice on the Use of Electronic Valves
- AA(MEE)2243 Cast Iron Gate Valves for General Purposes
- AA(P)2390 Glass Carbogs and Carbogs Hempers
- AA(M)2408 Part 3 A Special Requirements for Assualt Pds of B.S. 3191
- AA(SFE)2413 Measurement of Smoke Emission From Industrial Boilers Coal fired Shell Boilers with Various Types of M.C.
- AA(TIB)2427 Information About Plywood
- AA(AGE)2454-57 Wheels for Agricultural Machinery Implements and Trailers Part 1. Wheel and Hub Countre Dimension
- AA(M)2516 Ophthalmic Lenses and Spectacle Frames
- AA(LBC)2573 Design of Glass Vacuum Desiccators
- AA(SFE)2775 Symbols for Coal Preparation Plant
- AA(SFE)2776 Principles and Conventions for Flow Sheets for Coal Preparation Plant
- AA(MEE)2784 Drawing Sizes
- AA(MEE)2785 Gauging and Inspections
- AA(LEC)2797 Split Hide Leather for Gas Meters Diaphragms
- AA(LIT)2819 Tarpaulins for Tropical Use
- AA(MEE)2962 Vicker's Hardness Test: Part 1
- AA(CIC)2963-64 Aluminium Potassium Sulphate, Photographic Grade; Sodium Tetraborate, Photographic Grade
- AA(MEE)2976 Wrought Aluminium Terms
- AA(TLS)2984 Shields for Electronic Tubes and Valves Part 2: Data Sheets for Shields
- AA(MEE)3028 Transmission Steel Rollers Chains and Chains Wheels
- AA(CHE)3072 Zinc Coatings on Articles Other Than Wire: Part 2
- AA(CHE)3073 Zinc Coatings on Articles Other Than Wire
- AA(MEE)3074 Wire Coil Flat Slings
- AA(DIC)3075 Black and White Disinfectant Fluids
- AA(PLC)3137 Low Density Polythene Moulding and Extrusion Compounds
- AA(SFE)3138 Back Boiling for Use in Domestic Solid Fuel Appliances
- AA(CIC)3159 *Sodium Tetraborate, Anhydrous Sodium-Tetraborate, Boric Acid* and Basic Oxide Technical Grades
- AA(MEE)3201 Drawing Filling Equipment
- AA(PHC)3234 Speed and Exposure Index of Photographic Negative Material (Revision) in BS: 138
- AA(B)3327 General Building Terms
- AA(MEE)3373 Ships Cargo Blocks
- AA(LBC)3537 Reference Thermometers for Field Use
- AA(LBC)3558 Clinical Maximum Thermometers
- AA(LBC)3572 Haemacytometer County Chambers and Dilution Pipettes
- AA(ELE)3593 Dimensions of Fractional Horsepower Motors
- AA(ELE)3621 Relation of Resistance to Temperature of Alloy Wire for Precision Resistors
- AA(SAB)3672 Vitreous China Sanitary Appliances
- AA(M)3673 Performance Requirements for Venetian Blinds
- AA(ACE)3674 Light Duty Hose-Clips for Aircraft
- AA(DNC)3858 Dental Amalgam Alloy
- AA(SAB)3859 Wastes for Sanitary Appliances and Bath Overflows Part 2: Skeleton Sink Wastes
- AA(SAB)3860 Drawn Lead Taps (Revision of BS: 504)
- AA(P)3957 Crown Bottle Openers
- AA(M)3988 Coated-Fabrics
- AA(M)3989 PVC Proofed Fabrics (Cotton and Viscose) for Foul Weather Clothing
- AA(DNC)4026 Dental Zinc Phosphate Cement

AA(TLE)4043 Glossary of Terms Used in Automatic Data Processing
AA(PLC)4051 Expoxide Resin Systems for Low Pressure. Fibre Reinforced Plastics
AA(PLC)4108 Unplasticized PVC Pipe (Type 1140) for Cold Water Supply
AA(BDM)4112 Woollen Felt and Woollen Mixture Felt for Bedding Up Holstery and Similar Purposes
AA(BDM)4113 Quality of Filling for Bedding, Up Holstery, etc. [Part I Washed Flock for Use in Bedding; Part II Curled Hair and Curled Hair Fibre Mixtures (Revision of BS: 2894 of Part I and II)]
AA(LBC)4132 Testing the Chemical Resistance of Glasses Used in the Production of Laboratory Glassware
AA(LBC)4133 Thermal Shock Tests on Laboratory Glassware
AA(LBC)4134 Density Composition Tables for Aqueous Solutions of Sodium Hydroxide (Revision BS: 824)
AA(ACE)4228 Coupling Dimensions for Aircraft Toilet-Flushing Chemical Recharging Draining Connections
AA(GLC)4387 BS: 952 Glass for Glazing: Classification and Terminology
AA(PSM)4428 Rubber Safety Boots
AA(DHC)4673 Orthodontic Wire Tape and Ligature Wire Made of Stainless Steel
AA(PEE)4704 Electrically Bonded Hose and Hose Assemblies for Kerbenside Dispensing Pumps
AA(ACM)4705 Gramophone Record and Reproducing Equipment
AA(PTC)4995 Oil Fuels: Domestic Fuel Class C
AA(PVC)5048 Tung Oil

NATIONAL INSTITUTE'S AWARD TO DR. ATMA RAM

We congratulate Dr. Atma Ram, Director, Central Glass & Ceramic Research Institute, Calcutta, for being the first recipient of Shanti Swarup Bhatnagar Medal for 1959. The medal has been instituted by the National Institute of Sciences in memory of Late Dr. S. S. Bhatnagar D.Sc., F.R.S., to recognize contributions in the field of applied sciences. Dr. Atma Ram is actively associated with ISI work as the Chairman of the Glassware and Ceramicware Sectional Committees of ISI. Besides, he has also been a member of the Sanitary Appliances and Water Fittings Sectional Committee and also of the Mica Sectional Committee of ISI.

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I, Jainath Kaul, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd. Jainath Kaul

Date: March 1, 1961 — *Signature of Publisher*

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IS: 1431-1959 Cotton Mosquito Netting, Round Mesh, Dyed
IS: 1432-1959 General Requirements for Weighing Instruments
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IS: 1465-1959 Methods of Test for Plastic Buttons (Thermosetting)
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IS: 1492-1959 Metric Surveying Chains
IS: 1499-1959 Method for Charpy Impact Test (U-Notch) for Steel
IS: 1500-1959 Method for Brinell Hardness Test for Steel

Posts & Telegraphs Department

IS: 1415-1959 Electric Hand-Lamps
IS: 1441-1960 Insulator Stalks for Telegraph and Telephone Lines

STANDARDS ADDED TO ISI LIBRARY

The list includes standards received in ISI Library during 16 *September to* 15 *November* 1960. *Full titles of only those standards are given which, besides being accessioned in the Library, are also stocked by ISI for sale. Numbers of all other standards are listed under their respective general classification headings. Readers, who are interested in obtaining their titles or any other information concerning them, are requested to address the Librarian.*

The standards are in the official language(s) of the country of origin.

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Netherlands: NEN 1395

354.14 Badges

India-Ministry of Defence: IND/GS/DRG 2308

526.913.2 Theodolite

Japan: JIS B 7902: 1957 Theodolite

53 Physics and Mechanics

Belgium: NBN 537
Japan: JIS L 1049: 1960 Testing Method of Colour Fastness to Water of Textiles and Dyestuffs
JIS L 1050: 1960 Testing Method of Colour Fastness with Hypochlorite Bleaching of Textiles and Dyestuffs
Poland: PN N-01103; -03023; -99300
UK: BS 1041: Part 3: 1960 Code for Temperature Measurement: Industrial Electrical Resistance Thermometers
UK-Ministry of Supply: SDM(L) 223/8
USA-Scientific Apparatus Makers Association: SAMA RC 5-10; 6-10; 7a-9; 9-11
USSR: GOST 9110

54 Chemistry

France: NF B 35-303; T67-101; T73-011 to-013; T90-017; X02-108
India-Ministry of Defence: IND/SL 5901, 02; IND/SL/QMG 4811
Israel: SI 249 Part 107
Japan: JIS K 1453: 1960 Analysis of Metallic Sodium
Poland: PN Z-04058, 059
UK-Ministry of Defence: DEF 109; 110
USSR: GOST 9111

614.8 Accident Prevention. Safety

Canada: CSA C104.1; 61-GP-1b
France: NF X08-003

615.47 Medical and Surgical Instruments

Canada: 67-GP-1, -2
Poland: PN Z-78000, 001, 009, 039, 064, 073, 082, 111, 114
UK: BS 3259: 1960 Peters' Aural Specula

620.1 Materials Testing

Japan: JIS H 0501: 1957 Method for Grain Size Test of Wrought Copper and Copper-Base Alloys

621-1/-9 Machinery Details

France: NF M87-109; -170
Japan: JIS B 2602: 1957 Handle and Grip
Switzerland: DEF 12B; 104

621.3 Electrical Engineering

Australia: SAA C 164: 1960 Approval and Test Specification for Electric Blankets
Belgium: NBN 546
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Germany: TGL 6339Bl. 1 & 2, 40; VDE Heft 6-10; 0101, 18; 0255; 0860 Part 3-0
India-Department of Post & Telegraph: ITD/S/45-1; ITD-S/WS-100B
Japan: JIS C 1609: 1960 Illuminometers with the Selenium Photocell
JIS C 3206: 1960 Fibre-glass Covered Copper Wire
JIS C 8332: 1960 Bushings (for Steel Conduit Tubes)
JIS C 8335: 1960 Universal Fittings (for Steel Conduit Tubes)
JIS C 8336: 1960 Outlet Boxes for Conduit Wiring
JIS C 8337: 1960 Switch Boxes for Conduit Wiring
JIS C 8338: 1960 Concrete Boxes for Conduit Wiring
JIS C 8339: 1960 Box Covers for Conduit Wiring
JIS C 8340: 1960 Circular Surface Boxes (for Steel Conduit Tubes)
JIS C 8341: 1960 Surface Switch Boxes (for Steel Conduit Tubes)
JIS C 8342: 1960 Service Elbow
JIS C 8344: 1960 Terminal Caps
JIS C 8345: 1960 Entrance Caps
JIS C 8842: 1959 Flush Type Switches for Marine Use (Non-Water-tight Type)
Poland: PN S-76054; T-06401
UK: BS 3253: 1960 Phenolic-Resin Bonded Asbestos-Paper Sheets for Electrical Insulation at Power Frequencies
BS 3255: 1960 Presspaper for Electrical Purposes
UK-Ministry of Defence: DEF 5001; 5121, 22, 43, 67, 93; 5321 and 34
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USA-American Institute of Electrical Engineers: AIEE 1D
USA-American Society for Testing Materials: ASTM STP 265
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Belgium: NBN 504; 560
France: NF M88-250; -610
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Japan: JIS K 6342: 1960 Chemical Hose
JIS K 6343: 1960 Oil Hose, Wrapped Type
JIS K 6344: 1960 Brewing Hose
JIS K 6345: 1960 Diving Hose
JIS Z 9102: 1959 Identification of Piping Systems
Netherlands: NEN 422
UK- BS 487: Part 1: 1960 Fusion-Welded Steel Air Receivers. For Pressures not Exceeding 500 lb/sq in.
BS 1099: 1960 Small Fusion-Welded Steel Air Receivers
BS 3251: 1960 Hydrant Indicator Plates
BS 3256: 1960 Small Fusion-Welded Air Reservoirs for Road and Railway Vehicles
UK-Ministry of Defence: DEF 1057
UK-Ministry of Supply: DTD 251
USA-American Society for Testing Materials: ASTM D 1220

621.7 : 744 Technical Drawing

UK-Ministry of Supply: SDM(L) 166/4

621.74 Foundry Work

France: NF A72-113
Germany: TGL 6286
USA-Association of Iron & Steel Engineers: AISE 9

621.753 Gauging. Tolerance

Austria: ONORM M1366
France: NF M87-105 to -107

621.791 Welding

Japan: JIS C 9301: 1956 A.C. Arc Welders
JIS C 9303: 1956 Spot Welders for Steel Sheet
JIS C 9304: 1958 Shape and Size of Electrode Tip for Spot Welder
JIS G 3503: 1957 Wire Rod for Core Wire of Arc Coated-Electrodes
Poland: PN-M6 9411; -7 0002

621.798 Packing and Dispatch

France: NF M88-16
Germany: TGL 5628
Japan: JIS Z 0706: 1960 Packaging and Packing of Optical Surveying Instruments for Export

621.833 Gears

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621.876 Elevators

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621.88 Means of Attachment. Fastenings

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Japan: JIS A 5501: 1960 Steel Hinge
JIS A 5502: 1960 Steel Spring Hinge
JIS C 8333: 1960 Lock Nuts (for Steel Conduit Tubes)
JIS F 3021/22: 1959 Ships' Steel Pipe Securing Bands and Steel Pipe Securing U-Bolt
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Japan: JIS L 5141: 1960 Emery Fillet
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USA: ASA B 80.1: 1959 Throw Away Carbide Inserts for Cutting Tools
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624.154 Pile Foundation

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629.113 Automobile Engineering

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Germany: TGL 5536
Japan: JIS D 0002: 1959 Standard Form of Specification of Motor Graders
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UK-Ministry of Supply: DTD 861

668.41 Gum

India-Ministry of Defence: IND/SL 8105

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Japan: JIS G 3502: 1960 Piano Wire Rods
JIS G 3505: 1960 Mild Steel Wire Rods
JIS G 3506: 1960 Hard Steel Wire Rods
JIS G 4303-09: 1959 Stainless Steel
UK: BS 1706: 1960 Electroplated Coatings of Cadmium and Zinc on Iron and Steel
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BS 3228: Part I: 1960 Procedures for obtaining Properties of Steel at Elevated Temperatures: Proof Stress
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669.2/.8 Non-Ferrous Metallurgy

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JIS L 1020: 1960 Testing Method of Cotton Tyre Cord and Cord Fabrics for Automobile
JIS L 1037: 1960 Testing Method of Acetate Filament Yarn
JIS L 2102: 1960 Cotton Plied Yarn for Fishery
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JIS L 3404: 1960 Ramie Canvas
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JIS L 5110: 1960 Warp Bobbin
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JIS L 5112: 1960 B.E.P. Bobbin for Warp and Weft
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JIS L 5116: 1960 Roving Bobbin
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JIS L 6452: 1960 Spool Bobbin (for Woollen and Worsted Loom)
Poland: PN P-04928; -81302; -82013, 016, 258, 259; and -84251
UK: BS 3257: 1960 Description of Fabrics
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UK-Ministry of Supply: DTD 5502, 06

678 Rubber and Plastic

Japan: JIS K 6221: 1960 Testing Method of Carbon Black for Rubber
JIS K 6329: 1960 Reclaimed Rubber Tyre
Netherlands: NEN 1395; 1514
UK-Ministry of Defence: DEF 101; 102
Uruguay: UNIT 137

681.2 Instrument

USA-Scientific Apparatus Manufacturers Association: SAMA RC3-12

687.1 Clothing Ready Wear

Japan: JIS L 4102: 1960 Shirts, Cotton, Open Collar
JIS L 4103: 1960 Cotton Collared White Shirt
JIS L 4104: 1960 Socks
JIS L 4107: 1960 White Clothing Uniform

69 Building Industry, Materials, Trades, Construction.

Ceylon: CS 13
France: NF P14-101; -301; -303; -404 to -406
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Japan: JIS A 4602: 1960 Wooden Fittings (glass door)
JIS A 5208: 1960 Clay Roof Tiles
JIS A 5401: 1960 Cement Roof Tiles
JIS A 5402: 1960 Pressed Cement Roof Tiles
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JIS A 5514: 1960 Fittings for Sanitary Wares
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77 Photography and Cinematography

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JIS K 7521: 1960 Dimensions for X-ray Film
JIS K 7524: 1960 Dimensions for Printing Papers for X-ray Photography
JIS K 7525: 1960 Dimensions for Photographic Printing Paper for Special Use
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JIS K 7553: 1960 Dimensions for 16 mm Cinema film (Nega)
JIS K 7554: 1960 Dimensions for 8 mm Cinema film (Nega)

796.93 Skiing

India-Ministry of Defence: IND/GS 991; IND/GS/DRG 2310

STANDARDS NEWS — *Continued from p. 81*

Union Minister for Commerce & Industry and President ISI, said:

" I entirely agree that there should be standards in oil products, paints, etc. It is good both for the country and much more so for exports. We are, if I might use that word, very backward in this regard as compared to other countries. It is unfortunate that the Indian Standards Institution established in Delhi, which is a non-official body but adequately helped by Government, is not taken full advantage of. They have standardized several products of industry and as they have to be adopted on a voluntary basis the industry and trade do not feel it incumbent upon themselves to accept those standards and adopt and act up to them. I have recently been considering that if there is no satisfactory response we may have to enforce the standards through law as is the case, say, in Japan†."

Steel Consumption to Conform to Indian Standards

' Steel consumption should be more and more to Indian Standard Specifications. ' This was urged by Sardar Swaran Singh, Union Minister for Steel, Mines & Fuel, at the second meeting of the Iron and Steel Advisory Council held in New Delhi on 29 December 1960. Referring to the metric sections, the Union Minister said: ' All the mills in the new steel works are designed to produce only metric sections and rightly so because the country has taken to the metric system. It is now everybody's duty and it is in everybody's interest to place indents only on the metric sections. The steel produced will, thus, be more and more to the Indian Standard Sections '.

The Indian Standards Institution has published the following three Indian Standard Specifications on the subject:

IS: 808-1957 Rolled Steel Beam, Channel and Angle Sections;
IS: 1173-1957 Rolled Steel Sections, Tee Bars; and
IS: 1252-1958 Rolled Steel Sections, Bulb Angles.

Besides, a Handbook for Structural Engineers in several parts has been planned to be issued by ISI, Part I covering Structural Steel having been printed already.

The following drafts have also been finalized for adoption as Indian Standards:

a) Rolling and Cutting Tolerances for Hot Rolled Steel Products; and
b) Cold Formed Light Gauge Steel Structural Sections.

The drafts, which are under different stages of preparation, cover rolled steel bulb plates; mild steel plate, sheet, strip, flats and bars for general engineering purposes; rolled steel piling sections; structural sections in aluminium and aluminium alloys; special steel sections; tubular steel poles for traction telecommunication purposes; and overhead power lines.

Engineering Export Promotion Council and Indian Standards

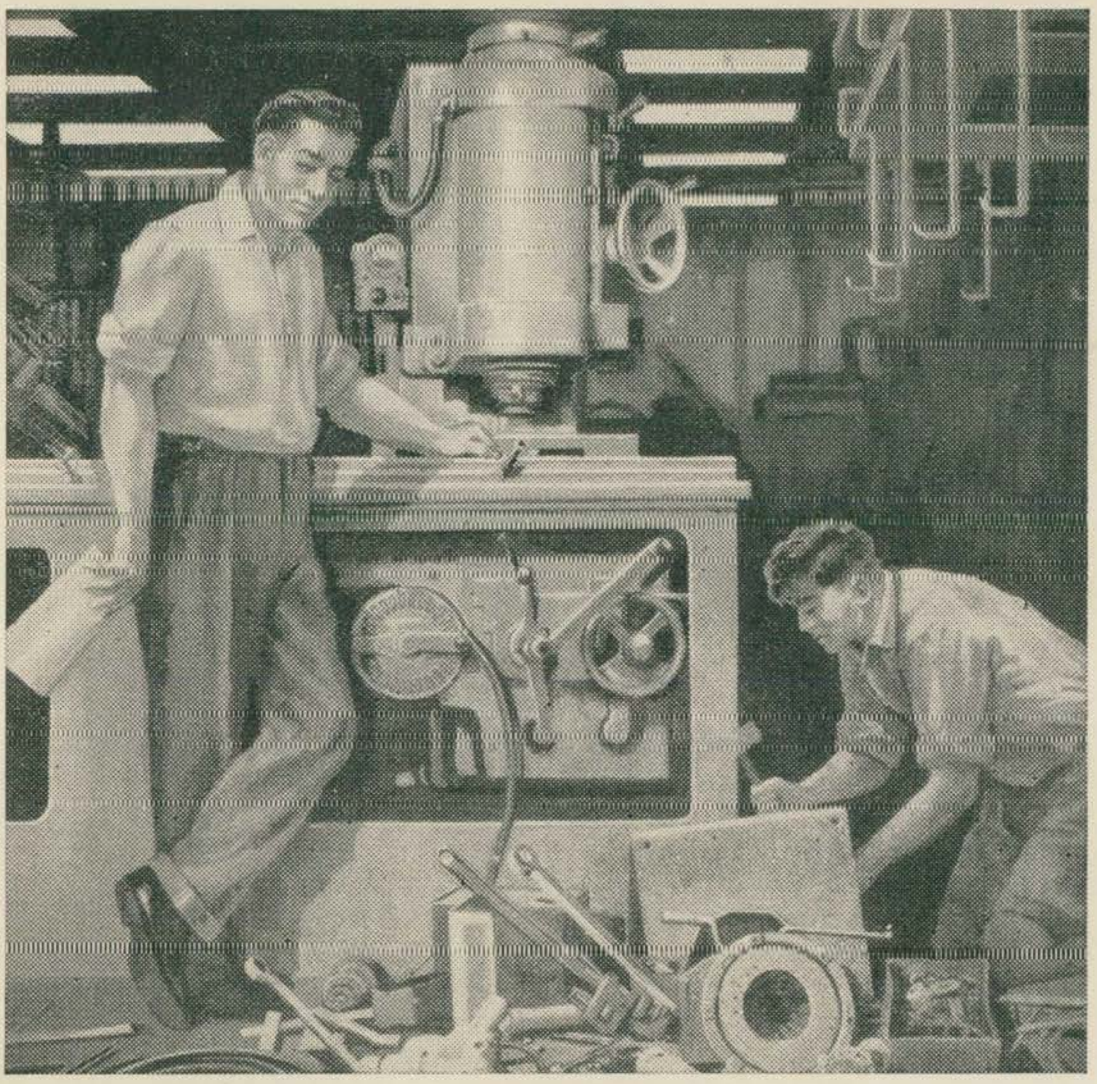
Delivering the inaugural address at the fifth annual general meeting of the Engineering Export Promotion Council, held at Calcutta last December, Shri Satish Chandra, Union Deputy Minister for Commerce & Industry, said that in order to popularize Indian products in foreign markets and to ensure an increasing supply, it was essential that the high standard of quality should be maintained. In this connection, he referred to the function of the Indian Standards Institution which had laid down standards for a large number of items exported from India. He also advised the Council to evolve a suitable scheme of quality control in regard to export goods which should be enforced, and also recommended the Council to draft a code on quality control.

Seventh Annual General Meeting of ITE

Standardization, uniformity, reliability, mechanization, etc, of printed wiring technique were illustrated by Shri R. N. Mittal of Philips India Ltd., Calcutta, at the technical session of the Seventh Annual General Meeting of the Institution of Telecommunication Engineers (ITE) held on 24 and 25 December 1960. This was one of the 22 research papers which were presented at the session. Other papers dealt with radiophysics, ionospheric propagation, control systems, transistor techniques and allied subjects.

The meeting was inaugurated by Dr. B. V. Keskar, Union Minister for Information & Broadcasting, who in his opening address stressed the importance of electronics and telecommunication in research investigations in all scientific subjects and in every day life. Dr. Keskar emphasized the need of fundamental research in this country.

†*See* Quality Control in Japan for Exported Goods. *ISI Bull.* Vol 11, No. 4, p. 147 (1959).



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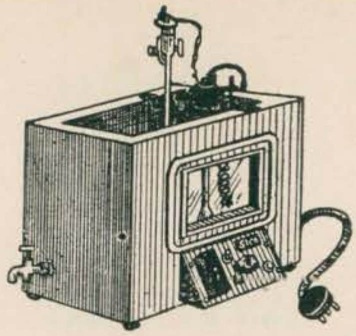

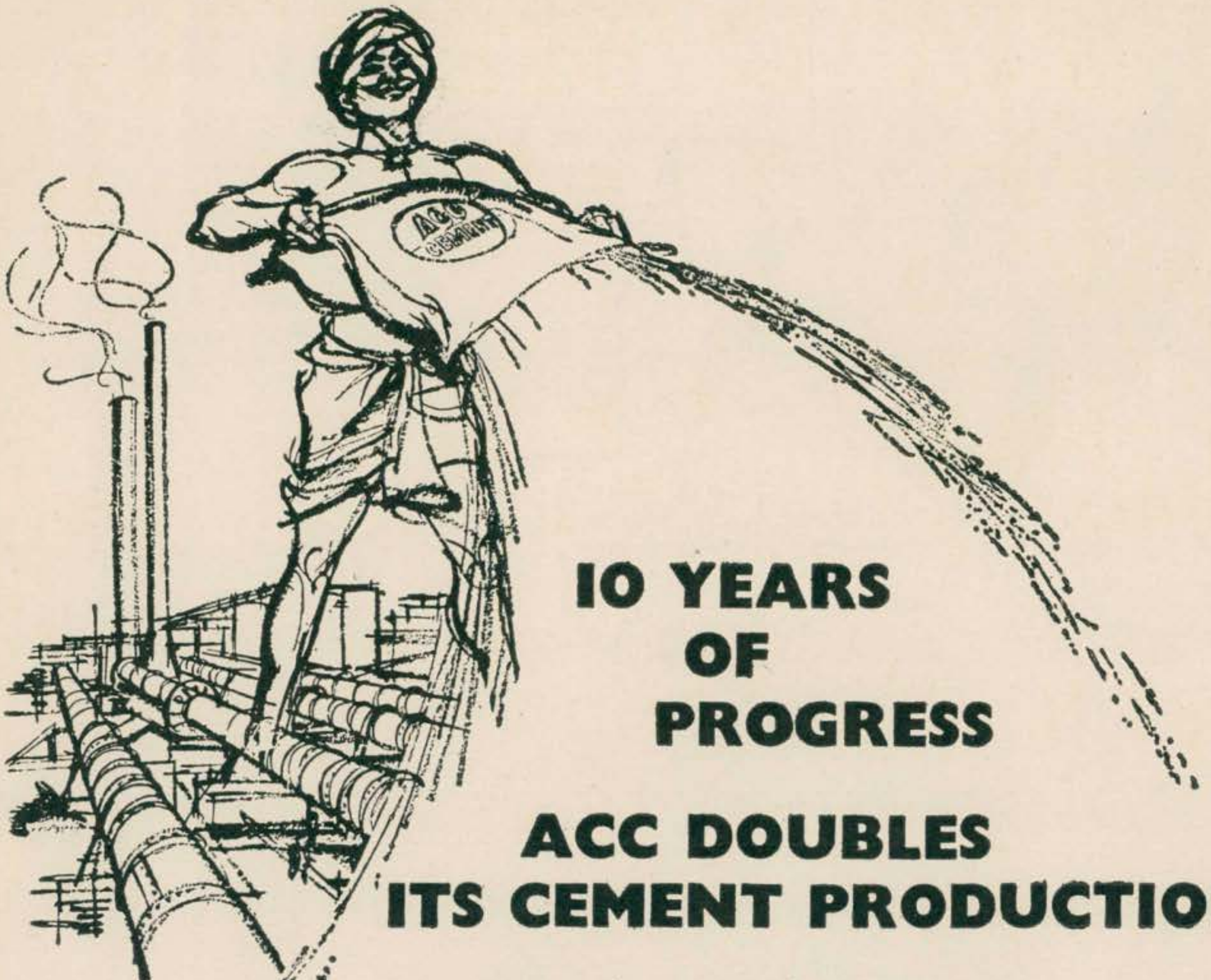

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A general review and detailed reports of these meetings appear on pp. 111 to 116

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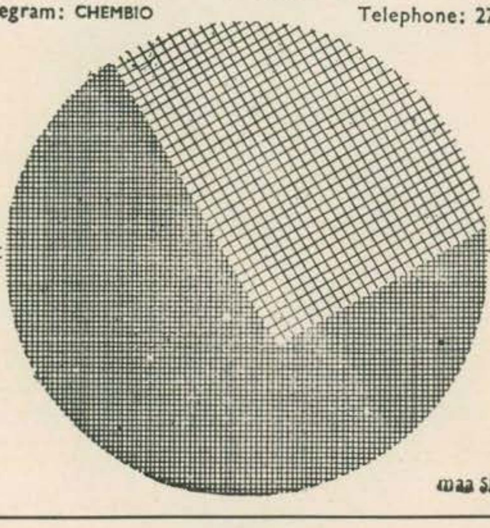

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ISI BULLETIN

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The President's Address*

THE Indian Standards Institution has made a place for itself in the industrial field as well as in the country. During the last few years it has made continuous progress although we may still feel that we have not made enough progress, because there is no end to ambition especially if it is in public good. I do, therefore, feel that the Institution has still to move forward and go ahead with a rapid pace.

Progress of ISI

I was looking into the agenda papers and I found that the membership of the Institution has grown from 1 932 in the last year to 2 062. It may be that you might consider it good but I would not feel satisfied till the membership has been raised to 10 000.

Besides, there has been an improvement in the sale of Indian Standards. It has gone up from Rs 2·90 lakhs to an estimated sum of Rs 4·00 lakhs. Similarly, overseas standards worth about Rs 2·00 lakhs are expected to be sold as compared to Rs 1·50 lakhs last year.

Then, ISI has also produced more standards; in fact, the target of 200 Indian Standards per annum was achieved one year ahead of schedule. They have reached the figure of 252 during this year, which exceeds the Plan figure by 52. So, it will be found that there has been consistent progress and we should feel satisfied over it.

I had observed last year that there should be an Implementation Division in the Institution. It should be the duty of ISI to see to it that the standards they produce are adopted both by the Government as well as by private industries. I am glad that such a Division has been set up in the Institution and discussions have been held with various State Governments. There are still some States left for being tackled, and I do hope that adequate progress will be made in that regard in the current year.

Two *Ad Hoc* Committees

I am glad that the country is gradually becoming quality-minded for better quality of goods and for standard quality. At least we have started talking about it seriously. I must admit that even in the Government — in State Governments and Central Government — we did not fully realize the importance of standards and other good work being done by ISI. However, things seem to be improving and recently two *Ad Hoc* Committees have been set up. One Committee has been set up at the initiative of the Development Councils of the Commerce & Industry Ministry under the chairmanship of Shri D. S. Joshi who is our Additional Secretary in charge of commerce. That Committee has to consider as to how best to adopt the standards fixed by ISI and to consider some other matters also. I also suggested to the Commerce & Industry Ministry to appoint another committee under the chairmanship of Dr. Lal C. Verman to consider the question of quality control as well as pre-shipment checking. We have been slow in this regard and in fact we have had no definite scheme. It was, therefore, decided that a committee should be set up which should consider the question as quickly as possible. As far as I remember, it has been suggested that this committee should submit its report by the end of this month. Dr. Verman is smiling; it seems that it would not be possible for the committee to submit its report within the prescribed time. However, they may take more time; I do not mind that but it should be submitted as early as possible. It may be that the Government of India may have to legislate in order to enforce the recommendations of the committee. So it would be desirable that we get their recommendations at the earliest so that there is enough time to think over the recommendations and, if necessary, initiate legislation sometime in August next when the Parliament meets.

IEC and ISO Meetings in India

I think you all are aware of the meetings of International Electrotechnical Commission and International Organization for Standardization. These meetings were held here in this country and ISI sponsored them. They were held in New Delhi and very satisfactory arrangements were made. I have received very complimentary letters from foreign delegates who attended these meetings. Besides, of course, the very good arrangements made for them, they also felt pleased with the useful discussions held in those meetings.

Missionary Zeal

I would not like to take more of your time. We have to carry on the work of the Institution with a missionary spirit. It is good that the Indian Standards Institution is not a Government organization or a Government body because Government is generally accused of not being very sensitive to the public opinion and it is said that it has its own ways of doing things. Well, as ISI does not happen to be directly a Government organization it should

*Address delivered at the sixteenth meeting of the General Council of ISI on 23 March 1961, at Manak Bhavan, New Delhi, by Shri Lal Bahadur Shastri, the then Union Minister for Commerce & Industry, and President, ISI.

set a better example, and I, therefore, suggest that the officers and workers of the Institution should work with a missionary zeal. They should see to it that they are able to create an atmosphere and a climate for the adoption of their standards.

Production of Quality Goods

It is in the interest of the country and the people as a whole that we produce quality goods — whether it is in the private sector or in the public sector. Needless to say, if we really wish to step up our exports it would not be possible to achieve a definite success in that unless we can send goods of high quality to foreign countries. There must be a set standard. And if our goods sent abroad are inferior in quality we will naturally lose markets to others. So, both for internal and external consumption, it is highly important to produce quality goods and this work can be successfully done by the Institution only if they will work hard and produce results.

I would also request the members of the General Council to take a special interest in this, especially in regard to private industries. As the Institution is discussing with the State Governments it would, perhaps, be worthwhile for the members of the Council to divide the work amongst themselves to take up a set of industries and discuss with their representatives. Of course, ISI will appear on the scene at a later stage but, as I said above, an atmosphere and a climate has to be created. I do wish that the private industries should take much greater interest in this field than they have done so far.

Shri K. C. Reddy, the New President of ISI, Who Took Over as the Union Minister for Commerce & Industry on 5 April 1961

Conclusion

I have every hope that the work of the Indian Standards Institution

(*Continued on p.* 110)

Shri Lal Bahadur Shastri, Union Minister for Commerce & Industry and President ISI (third from *r*), Addressing the Annual Meeting of the General Council. Seated from *r* to *l* are: Shri E. A. Nadirshah and Lala Shri Ram Who were Re-elected as Vice-Presidents of ISI; Dr. Lal C. Verman, Director ISI; and Dr. A. N. Ghosh, Joint Director

ISO Committees Meet in New Delhi

G. WESTON
TECHNICAL DIRECTOR, BSI

We publish here the radio talk which Mr. G. Weston, Technical Director of the British Standards Institution broadcast from AIR, New Delhi, on 27 February 1961 after two technical committees, two subcommittees and two working groups of the International Organization for Standardization (ISO) had met during the period 15 to 24 February 1961 at Manak Bhavan, New Delhi. The Secretariats of these ISO committees and working groups are held by India. Separate reports on these meetings appear on pp. 111 to 116—*Ed.*

THERE must be few countries, if any, that are not having to face to-day the urgent necessity of expanding their export markets. And yet, the difficulties, misunderstandings and frustrations that are ever present in world trading because of the differences in national practices and procedures, when expressed in terms of finance, would represent a staggering total, imposing a heavy burden on all. That urgent action should be taken to remove such differences — and to smooth the flow of international commerce — is such plain commonsense that it seems superfluous to state it, nevertheless I wonder how many people know what is in fact being done to grapple with this world problem and to provide, if not a full solution, at least a partial one.

It is just this task which is being undertaken by the ISO — the International Organization for Standardization. The aim of that organization is to draft internationally agreed industrial standard specifications which will provide a generally accepted basis for world commerce. The ISO is in effect a federation of the national standards bodies of no less than 44 countries. India is one of the members and is represented by the Indian Standards Institution — a body which is doing such valuable standards work in the industrial development of India.

The work of ISO is constantly expanding and, at the present time, there are over 100 technical committees actively at work drafting international standards which fall within virtually every sector of industry.

The varied character and the value of the work is strikingly illustrated by the subjects considered at the meetings of four of the committees which were held in New Delhi during the period February 15 to 24. They are some of the committees for which the Indian Standards Institution is responsible for providing the Secretariat.

Over a hundred delegates from eight countries — including India — were present at the meetings and I would like to say something about what the committees accomplished as I think it will clearly emphasize how useful the work of ISO is to India.

One committee, which was holding its first meeting — and it proved to be a very successful one — considered the subject of Pictorial Markings for Goods, that is, the symbols to be put on packages to indicate the way in which they should be handled during storage and transport. As transport has to be considered in relation to the world as a whole — it will be clear that the use of words in any one language would be quite inadequate. Some simple form of marking, which can be readily understood in all countries is, therefore, required. The need for such symbols is particularly important when the goods being handled are of a dangerous character, for example explosives, inflammable materials, or poisonous gases. If because of carelessness in handling an accident were to occur, the consequences could be very disastrous not only to other goods that may be nearby but, what is more serious, to the people who are engaged in handling the goods.

The fact that at the Delhi meeting of the ISO committee agreement was reached on a standard code of 14 symbols, which will convey the same message to anybody in any part of the world, is an achievement of prime importance. Of the fourteen symbols agreed — seven are for use with goods generally, and seven for goods with which a hazard exists.

Another of the committees was concerned with Lac and Shellac.

Mr. G. Weston at the Studio of All India Radio Just Before His Talk was Recorded

Dr. J. Grindley of UK Being Assisted at the Registration Counter

Dr. J. Grindley with M. G. Remenieras (France) and Dr. E. A. Spencer (UK) Oblige the Photographer After Registration

This subject is, of course, of great interest to India — the world's largest exporter of this material.

As a result of several years' earlier work by the Committee, international specifications including methods of test were prepared for SEEDLAC, SHELLAC and BLEACHED LAC and were issued about three years ago as ISO recommendations. The recent meeting in New Delhi was for the purpose of reviewing the progress that has been made in the implementation of these specifications, by their adoption in national standards, and of considering any problems that may have arisen in the use of the test methods.

The occasion provided a valuable opportunity for the chemical experts in this field to interchange information about their experiences. It was found that the ISO recommendations were proving very satisfactory and in general no major alterations to any of the specifications or methods of test were required, though the desirability of adding one or two new tests is to be looked into. It was also agreed that the possibility of amending the designations of the grades so that they can proximate more closely to the generally used trade descriptions should be examined.

The third committee was concerned with the problem of measuring the flow of water in rivers. At first sight, this might seem to be rather a strange matter to be the subject of international consideration. When it is realized, however, that with industrialization, the demands for water, whether for the generation of power, for irrigation, for industrial processes or for rapidly increasing consumer requirements as towns and cities grow, it will be appreciated that it is essential that there should be some means of assessing the amount of water available so that demand does not exceed 'resources'. The international significance of this subject will be readily understood when it is remembered that rivers sometimes flow through a number of countries and if one country were to draw off a disproportionate share of the water, it might seriously affect the industrial development of countries lower down. Efforts are sometimes made to reach agreement on the maximum amount of water to be made available to each country, but such agreements are of little value unless there are internationally agreed methods of measurement which can be used to check that the agreements are being honoured.

The New Delhi meeting was successful in completing the initial drafting of some of the methods which can be used for such purposes.

The fourth committee which was also holding its first meeting discussed another subject of special significance to India, namely spices and condiments. With the increasing competition in world markets, it is essential, if markets are to be maintained, that the produce exported must be of good quality; for example, it must not contain extraneous matter, and the presence of possible injurious substances, such as lead and arsenic must be restricted.

The object of the Committee, therefore, was to establish an agreed procedure by which consignments of produce should be sampled and then to draft the methods of test by which its quality can be assessed. The Committee first drew up a list of something like 45 different natural products used as spices and condiments. They then proceeded to prepare a first draft of the sampling procedure and of the relevant test methods and they also gave a first reading to a draft specification for pepper.

The Committee intend at subsequent meetings to draft specifications for other spices and condiments.

I hope this review has served to indicate in some degree the importance of the work of ISO to India — as also the value of the contribution, the Indian Standards Institution is making to the work of ISO.

THE PRESIDENT'S ADDRESS — *Continued from p. 108*

will not suffer for dearth of funds. I had last time said that the Institution should go ahead and prepare its programme of work for the third Five-Year Plan. It has done that. It was felt sometime back that it may not be possible for the Planning Commission to give to the Institution all the funds they had asked for. But now it seems that it will not be difficult and I do hope that the Planning Commission will be able to find the funds for the Plan that the Indian Standards Institution has drawn up.

First Meeting of ISO/TC 88— Pictorial Markings for Handling of Goods

THE ISO Technical Committee 88 — Pictorial Markings for Handling of Goods held its first meeting in New Delhi, at the invitation of ISI, from 15 to 18 February 1961 under the chairmanship of Shri N. S. Mankiker, Chief Adviser Factories, Government of India.

The Committee, of which ISI holds the Secretariat, was set up in 1957 by the ISO Council to prepare international recommendations on marking of packages containing dangerous substances and symbols for handling of goods in general.

Mr. N. S. Mankiker, Chairman, Inaugurating the First Meeting of ISO/TC 88. Seated (from *l* to *r*) are: Mr. J. R. Townsend (USA), Mr. G. Weston, Mr. A. W. Clarke (UK), M. J. Duval (France), Dr. Lal C. Verman and Dr. A. N. Ghosh

Thirty representatives from France, India, New Zealand, Turkey, UK and USA participated in the deliberations. France, New Zealand, Turkey and USA were represented respectively by M. J. Duval, Mr. I. K. McGregor, Capt. Huseyin Dereli, and Mr. J. R. Townsend. The delegations of the United Kingdom and India were led by Mr. G. Weston and Shri B. L. Hakim respectively. In addition, the following five International Organizations, who were extended special invitation in view of their interest in this subject, were also represented:

International Chambers of Commerce (ICC),
International Cargo Handling Co-ordination Association (ICHCA),
International Labour Office (ILO),
International Road Transport Union (IRU), and
Universal Postal Union (UPU).

Dr. A. N. Ghosh, Joint Director ISI, acted as the Secretary.

The Committee reviewed the scope and decided on its immediate programme of work. As a first step, it agreed on the basic principles to be followed in evolving the symbols, and the Committee decided the following in this regard:

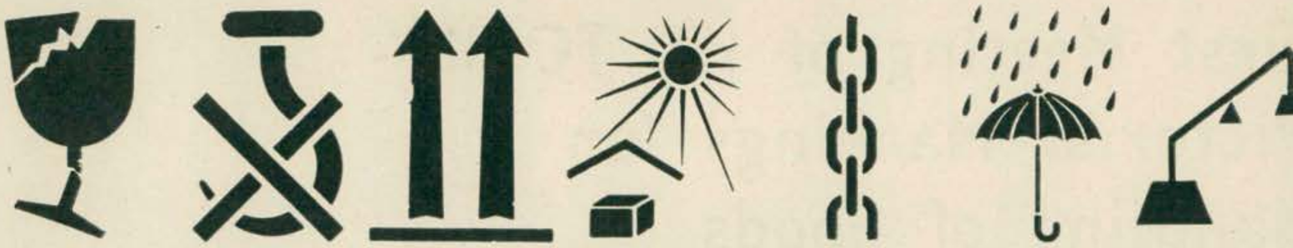
a) The message contained in the symbol should be capable of being understood by workers at all levels and in different countries. As a corollary it follows that the symbols should not contain letters of any alphabet.
b) The symbols should show, as far as possible, the nature of the message or messages involved.
c) As far as possible, the symbols should be chosen from the symbols already in existence.
d) The symbol should be easy to apply by means of a stencil.

The Committee accepted the symbols for the following dangers (*see* Fig. 1) for indicating the risks in handling dangerous goods:

a) Danger of Explosion,
b) Danger of Compressed Gas,
c) Danger of Ignition,
d) Danger of Oxidizing Substance,
e) Danger of Poisoning,
f) Danger of Corrosion, and
g) Danger of Ionizing Radiation.

Fig. 1 Symbols Proposed for Indicating Risks in Handling Dangerous Goods

The Committee was greatly helped by the work which had been done by other International Organizations, such as the International Labour Organization, the United Nations



Fragile Handle with Care | Use no Hooks Do not Puncture | This Side Up | Keep Cool Stow Away from Boilers | Sling Here | Keep Dry | Heavy Weight this End

Fig. 2 Symbols Proposed for Conveying Messages Calling for Special Handling

Committee of Experts and the International Air Transport Association.

The Committee also agreed on seven symbols (*see* Fig. 2) for use on packages containing general goods to indicate the following messages calling for special handling:

a) Fragile
   Handle with Care

b) Use no Hooks
   Do not Puncture

c) This Side Up

d) Keep Cool
   Stow Away from Boilers

e) Sling Here

f) Keep Dry

g) Heavy Weight
   This End

Two draft proposals approved in this meeting will now be submitted to member bodies of ISO/TC 88 as second draft proposals for their acceptance as draft ISO Recommendations.

First Meeting of ISO/TC 34/SC 7— Spices and Condiments

TERMINOLOGY, methods of sampling and test, and specification for black pepper were some of the important items discussed at the **first meeting** of the Spices and Condiments Subcommittee (SC 7) of ISO/TC 34 — Agricultural Food Products. The meeting was held from 20 to 23 Feb 1961 in ISI and was presided over by Dr. Y. K. Subrahmanyam of the Ministry of Health, Government of India and a member of the Spices and Condiments Sectional Committee (AFDC 21) of ISI. About 20 delegates representing France, Hungary, India, Netherlands and UK were present. France, Hungary and Netherlands were represented respectively by M. J. Duval, Mr. A. Miklovicz and Miss J. C. Ferringa. British and Indian delegations were led respectively by Mr. G. Weston and Shri N. P. Chatterji. Mr. A. Miklovicz also represented the Secretariat of ISO/TC 34. Dr. D. V. Karmarkar acted as the Secretary.

Since this was the first meeting of the Subcommittee, which was set up in April 1958, the title and scope of ISO/TC 34/SC 7 were considered first. The Subcommittee decided to retain its present title in English; while it will be only ' Spices ' in the French version, since in France condiments meant prepared spices using vinegar and other similar materials. The scope was defined as follows: ' The Subcommittee shall be responsible for drafting recommendations for spices and condiments. The recommendations shall cover terminology, methods of sampling and test, quality specifications, packing; and, if necessary, storage, handling and transport '. The term ' spices and condiments ' shall be applied to such natural vegetable products, either in the whole form or in ground form, as are used for imparting flavour, aroma, piquancy to and seasoning of food.

With regard to terminology, the Subcommittee formulated principles on the basis of which a second draft proposal will be prepared. The botanical names will be given first in the alphabetical order, giving wherever necessary the botanical synonyms, followed by the common names in the three ISO languages — English, French and Russian. The information regarding the part of the plant used will also be included.

A draft proposal relating to the methods of sampling and test for spices and condiments was discussed at length. As regards the method of sampling, it was agreed that it would be sufficient if a composite sample is made from individual samples taken from each selected container, thoroughly mixed and a representative portion thereof tested for the necessary requirements. Among the methods of test, which came up for discussion, were: determination of weight per litre, extraneous matter (refraction), moisture, ash, calcium, arsenic, lead, crude fibre, non-volatile ether extract, volatile oil, starch and salt; and additional methods. The revised document will now be circulated among Member Bodies of SC 7 for comments with a view to fresh discussion at the next meeting.

The draft proposal relating to specification for black pepper evinced keen interest and clauses dealing with packing; storage and transport; taste and flavour; freedom from moulds, insects, etc; presence of light berries; and fineness of pepper ground were thoroughly discussed. This document modified in the light of the decisions taken by the Subcommittee will now be circulated to the member bodies for their comments.

Draft proposals in respect of specifications for ginger, cardamom and curry powder along with comments received on them from the member bodies had also been included in the agenda for the meeting. Since the time available was short, it was decided that these documents be redrafted in the light of the comments received and recirculated.

Delegates to the First Meeting of ISO/TC 34/SC 7 — Spices and Condiments. Fourth from r in the Front Row is Dr. Y. K. Subrahmanyam, Who Presided Over the Meeting

Regarding the future programme of ISO/TC 34/SC 7, it was decided to add cinnamon, nutmeg, pimento, saffron, jamaica pimento, and paprika to the list already prepared by the Secretariat.

The delegations present accepted the invitation of the Association Francaise de Normalization to hold its next session in Paris in 1962.

PREFERENCE FOR GOODS BEARING ISI MARK IN PURCHASING FOR GOVERNMENT PURPOSES

The Government of **Maharashtra** has issued directions that preference should be given to goods bearing the ISI Certification Mark over those which do not carry the mark in making purchase of or inviting tenders for official use. The circular, issued in this connection by Maharashtra Government to all heads of departments, all departments of the Secretariat, and its Director of Industries and Central Purchasing Officer, says : " It is the State policy to encourage manufacture according to specifications issued by ISI and there is, therefore, good reason for Government departments and officers to show preference to goods bearing the ISI Certification Mark when making purchases of articles of stores for official purposes. Not only can more reliance as to quality be placed on goods so certified, but also the need for inspection or test-checking does not arise ".

Preference for ISI certified goods as encouraged by the State Governments of **U.P., Madras, Orissa, Himachal Pradesh,** and **Andaman and Nicobar** was reported in an earlier issue of this Bulletin*. Since then, besides Maharashtra, State Governments of West Bengal and Punjab have also issued the following directions :

West Bengal — The presence of ISI mark on an article will ensure that it has been produced/manufactured under controlled conditions and in accordance with the Indian Standard Specifications. All departments of the Government are accordingly requested to consider this aspect while making out their purchase programmes, wherever possible and subject to observance of normal financial rules and procedure.

Punjab — While making purchases or inviting tenders for supply of goods, the goods bearing ISI Certification Mark should be given preference, as far as possible, over those goods which do not carry this mark. Thus, by purchasing certified goods there will be an economy both in material and in the use of technical personnel.

Thus, so far 8 States have issued directives to all their departments. Of these, the declaration by Maharashtra Government that it is the State policy to encourage manufacture according to standards issued by ISI is specially welcome.

It is hoped that other State Governments will follow suit in the interest of quality production and direct the individuals and departments concerned in their respective states to give similar preference to goods carrying ISI mark.

*See Vol 12, No. 3, p. 165 (1960).

INDIAN STANDARD WITHDRAWN

With the publication of IS:1651-1960 Specification for Stationary Cells and Batteries, Lead-Acid Type (with Tubular Positive Plates) and IS:1652-1960 Specification for Stationary Cells and Batteries, Lead-Acid Type (with Planté Positive Plates), IS:541-1954 Specification for Stationary Accumulators, Lead-Acid Type (*Tentative*) has been withdrawn as it has been superseded by the two new Indian Standards.

Fourth Meeting of ISO/TC 50—Lac

THE ISO Technical Committee 50—Lac held its fourth meeting in New Delhi from 15 to 18 February 1961 under the chairmanship of Dr. K. L. Moudgill. Fifteen members from France, India, UK and USA, with an observer from the International Electrotechnical Commission participated in the deliberations. France and USA were represented respectively by M. J. Duval and Mr. W. R. Kuebler, whereas UK and Indian delegations were led respectively by Mr. R. A. Jones and Dr. P. K. Bose. The Secretary of the Committee was Shri T. Purnanandam.

Dr. K. L. Moudgill, Chairman, Addressing the Fourth Meeting of ISO/TC 50. Seated from *l* to *r* are: Mr. W. R. Kuebler (USA), Mr. K. Hillman (UK), Mr. R. A. Jones (UK), Mr. G. Weston, M. J. Duval and Dr. Lal C. Verman

Consequent upon the three meetings of ISO/TC 50 held in 1950, 1952 and 1954, three ISO Recommendations, covering Seedlac (ISO/R 55), Shellac (ISO/R 56) and Bleached Lac (ISO/R 57), had been duly adopted by the ISO Council in December 1957, and published* in July 1960. Consequently, one of the important items for consideration by the Committee was to review the extent to which these ISO Recommendations were being implemented in different countries. The information given by various delegates indicated that the methods of test for lac products included in ISO/R 55 to ISO/R 57 had been generally incorporated in the national standards of UK, USA and India. The Committee, therefore, recommended that all the member countries of ISO should use their best endeavours to obtain early adoption of these methods in their national standards.

With regard to the ISO grade designations, it was found that the international lac trade was continuing the use of traditional trade names, though an attempt had been made in UK and USA to equate the traditional grade designations to approximate equivalents of ISO grades. It was suggested that the current trade names may be recognized in place of the grade names accepted in the present ISO Recommendations. The Committee decided that if member countries sent specific proposals, a review of the grade designations might be undertaken.

The Committee also discussed the following methods of test and the conclusions arrived at are indicated against each:

a) *Non-volatile matter soluble in cold alcohol* — The Committee discussed the Indian method and the UK method in the light of data obtained from the round robin tests and the statistical analysis carried out on the data together with the remarks of the various laboratories of India, UK and USA which had conducted these tests. The Committee decided that the results so far obtained were not sufficiently satisfactory for either of the test methods to be adopted at this stage as a draft ISO proposal and requested India, UK and USA along with other member countries to examine the two test methods further.

b) *Bleach index and bleachability* — Two methods — Indian and USA — were considered and modified at the meeting. The Committee directed that the modified test methods be subjected to round robin tests in France, India, UK and USA.

c) *Estimation of rosin and shellac* — The Committee felt that there was no further need for estimation of rosin in shellac as practice of this type of adulteration was not current in the existing trade.

d) *Colour index* — Since no improved method was available, it was decided that no change be made in the existing methods included in ISO/R 55 and ISO/R 56.

e) *Acid value of shellac and bleached lac* — The Committee decided to delete this method of test from further consideration.

f) *Alternative methods of test for flow* — These were decided to be dropped from further consideration. The British delegate pointed the necessity of an additional test method for determination of grit.

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*See ISI Bull. Vol 13, No. 1, p. 22 (1961).

Pore Structure and Performance of Battery Separators

G. D. JOGLEKAR & V. K. BATRA

NATIONAL PHYSICAL LABORATORY

Separators influence the performance and life of storage batteries. Some idea of the behaviour of separators in a battery can be formed by a study of their physical characteristics, such as, porosity, predominant maximum pore size, permeability and capillary rise. Investigations on these lines with three separators, with reported different performances, have revealed that such studies would help the manufacturers of separators in determining their quality. These studies could also, in due course, be utilized when the existing Indian Standard Specification for Wooden Separators for Lead-Acid Batteries comes up for a second revision — *Ed.*

0. INTRODUCTION

0.1 The Indian Standard Specification for Wooden Separators for Lead-Acid Batteries (IS: 652-1960) (*Revised*) deals with the dimensions and chemical tests for impurities, and a test for the measurement of the electrical resistance offered by the separator under particular conditions of testing. There are no specifications for other types of separators but similar tests could be carried out on them. These tests, though useful, have to be further supplemented in order to give a complete picture of the working of a separator in a battery and also to specify a particular separator for a particular service, as the performance of a battery under various conditions of testing, such as, capacity at low and high rates of discharge, loss on retention, overcharge capacity and life, cannot be explained fully on the basis of the characteristics of separators mentioned above. It is possible that batteries fitted with certain types of separators may give initially high capacity at ordinary or at heavy rates of discharge, but might fail on retention or on life test. Other types of separators giving a little lower or the normal capacity at ordinary or at high rates of discharge initially may give satisfactory performance on retention or on life test. There is some variation in the capacity due to separators when the battery is new, but it cannot be considered a major factor. If large variations are noticed they may be due to other factors affecting the capacity.

0.2 The difference in performance on life of more or less similar A.H. capacity batteries can be due to the different types of separators used in them. The performance of separators can be judged by actual use in battery, but such a study is time consuming. It would be better if some idea of the behaviour of separators can be based on their physical characteristics. The subject is of importance as the improper selection of separators may restrict the full utilization of the costly materials that go into the battery.

1. FAILURE OF BATTERY

1.1 The failure of a battery during use, may be due to various causes, but for a properly maintained battery the failure may be chiefly due to the negative plates.

1.2 One of the important factors for the failure of the negative plates is the antimony contamination of negative active material[1]. Antimony from the positive grids after passing through separators deposits on the negative active material and causes local action. The structure of the separator should be such as to reduce this antimony contamination of the negative plates.

1.3 According to Rose[2], the function of a separator is apparently a filtering or sequestering action, protecting the negative from antimony dissolved from the positive. Pauland and Angstadt[3] attribute much importance to the influence of the separators in the self-discharge of negative plates. Dubinski[1], in his study on glass diatomaceous earth-rubber latex separators, has stated as follows:

'Diatomaceous earth is one of the best filter media known. It is anionic or negative in charge and attracts cations such as antimony. Being negative in particle charge it attracts and holds the positive antimony ion. Possibly it is the separating action that blocks the antimony; perhaps it is by ionic attraction . . .'

1.4 In view of this position it was decided to study other characteristics of separators a little more in detail. Battery separators both of wooden and of other synthetic types are now being manufactured in the country and it is felt that such study would be of interest both to the manufacturers and users of these separators. Such study would also be helpful in specifying the requirements of a separator and in controlling the conditions of manufacture which can be satisfied in the normal course of manufacture, without adding appreciably to the cost of manufacture of the separator.

2. FUNCTION OF SEPARATOR

2.1 The function of a separator in a battery is three-fold, namely: (a) to prevent physical contact between plates of opposite polarity; (b) to transfer the electrolyte from one side of the separator to the other side, through the capillaries of the separator; (c) to maintain a conducting electrical path of low resistance between the plates of opposite polarity. The second and third functions of the separator are governed by the structure of the separator and the nature of flow of electrolyte through it. The flow depends on: (a) the total porosity, (b) the pore diameter, and (c) the permeability of the separator.

2.2 It is easier to study these characteristics in unconsolidated media, but difficult to study in a consolidated one, and with the structure as that of the separators. In addition, the fibrous materials of the separator may swell when tested with a fluid flowing through it.

3. STRUCTURE OF SEPARATOR

3.1 The structure of a separator is complex and is difficult to visualize. The capillaries present a complex net work — larger capillaries breaking into smaller ones, and smaller capillaries uniting to form a larger one. There is a variation in the shape of the cross section of the capillaries, and the surface of the walls of the capillaries may not be smooth. Flow of gases or fluids through such capillaries may not be uniform. There may be sudden changes in the flow caused by enlargements and contractions of the pore cross section and bends, in the paths. The resistance to the flow may be mostly due to the inertia effects rather than tangential shearing effects.

3.2 Some indication of the structure is given by the capillary rise of liquid in the separator. Three types of separators designated here as I, II and III were, therefore, obtained. These were respectively made of paper impregnated with resins, foamed plastic material, and latex and glass wool. These were studied by microscope under suitable magnification to bring out clearly the surface structure. These photomicrographs are shown in Fig. 1 to 4.

3.3 Fibres of separator I (*see* Fig. 1) are seen to align themselves parallel to the main plane of the web, but are more or less randomly distributed. Separator II (*see* Fig. 2) shows only a few large pores; otherwise the surface appears to be more or less uniform. No fibres are seen in this separator. Separator III has different surface structure. On one side it is smooth and more or less uniform (*see* Fig. 3) and on the other it is comparatively coarse (*see* Fig. 4).

Fig. 1 Separator I Under Microscope X 100

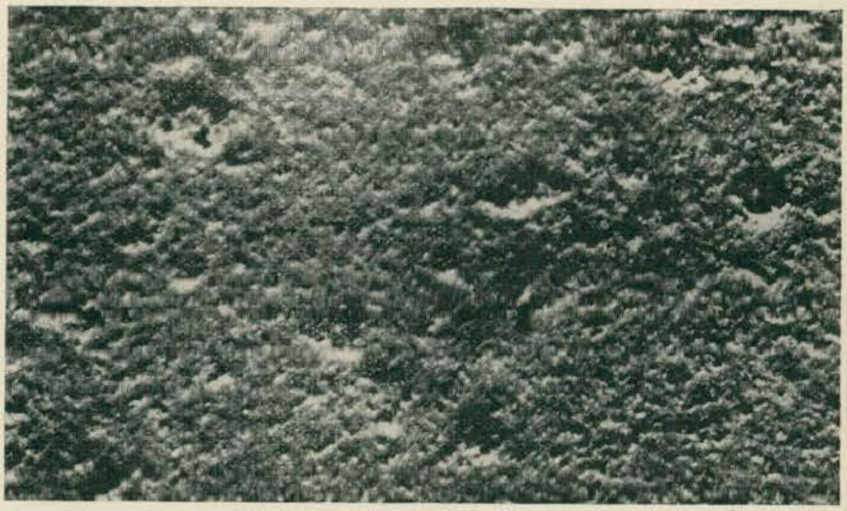

Fig. 2 Separator II Under Microscope X 40

4. CHARACTERISTICS

4.0 Four characteristics of separators, namely, porosity, predominant

Fig. 3 & 4 Two Faces of Separator III Under Microscope X 25 pore size, permeability and capillary rise have been studied in this paper.

4.1 Porosity

4.1.1 Information regarding porosity of the separators is important and this characteristic is often quoted by the manufacturer. Also it is helpful in understanding the fluid flow as well as in determining the effective pore size. It is possible to have a highly porous separator containing many closed pores and blind pores connected with one surface only with low permeability as contrasted to another separator of porosity which contains continuous pores connecting both surfaces allowing an easy passage for the fluid.

4.1.2 It can be determined by measuring the apparent density of the separator and the real density of the separator material. The porosity of the separator is then calculated by the following formula:

Porosity, percent

$$= \left(1 - \frac{\text{Apparent Density}}{\text{Real Density}}\right) \times 100$$

The values obtained for the porosity of the three types of separators are given in Table I (*see* p. 121).

4.2 Predominant Maximum Pore Size

4.2.1 The maximum pore size is determined by measuring the air pressure necessary to force the first bubble of air through a separator wetted by distilled water. Figure 5 shows the apparatus built for studying the predominant maximum pore size and the air flow through the separators. The method used for determining the pore size is similar to that described in B.S. 1752: 1952 Sintered Disc Filters for Laboratory Use. The separator is fixed in the holder as shown in Fig. 6 and water is allowed to stand on the separator to a depth of a few millimetres. Air pressure is applied from underneath the surface. It is gradually increased till air bubble appears on the surface of the separator. Sometimes an individual pore may be quite large to develop an air bubble at quite a low pressure. This pressure is neglected and the pressure at which the bubbles appear over the whole surface in sufficiently large number is noted. This is taken as an indication of the predominant maximum pore size that is more or less uniform.

4.2.2 The pore size is calculated from the following formula:

$$D = \frac{30\,\gamma}{P}$$

where

D = diameter of pore in microns,

γ = surface tension of liquid in dynes per centimetre (72 for water at 25°), and

P = observed pressure in mm of mercury.

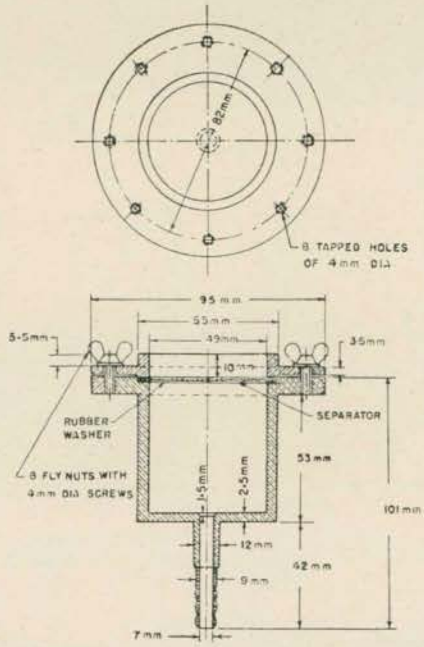

Fig. 6 Permeability Cell

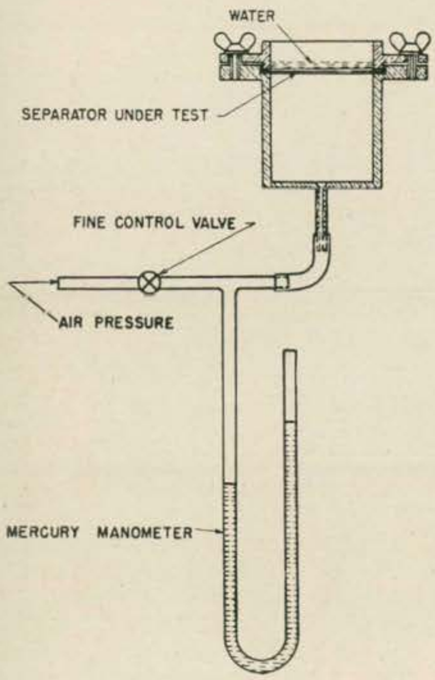

Fig. 5 Apparatus for Determination of Maximum Pore Size

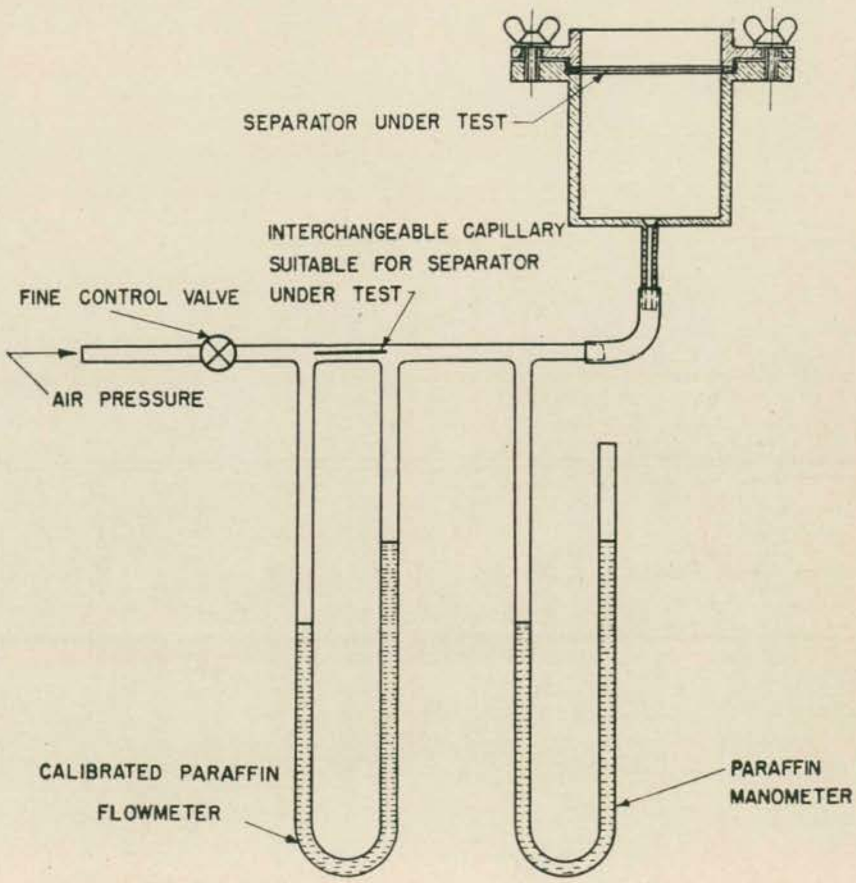

Fig. 7 Apparatus for Determination of Air Permeability

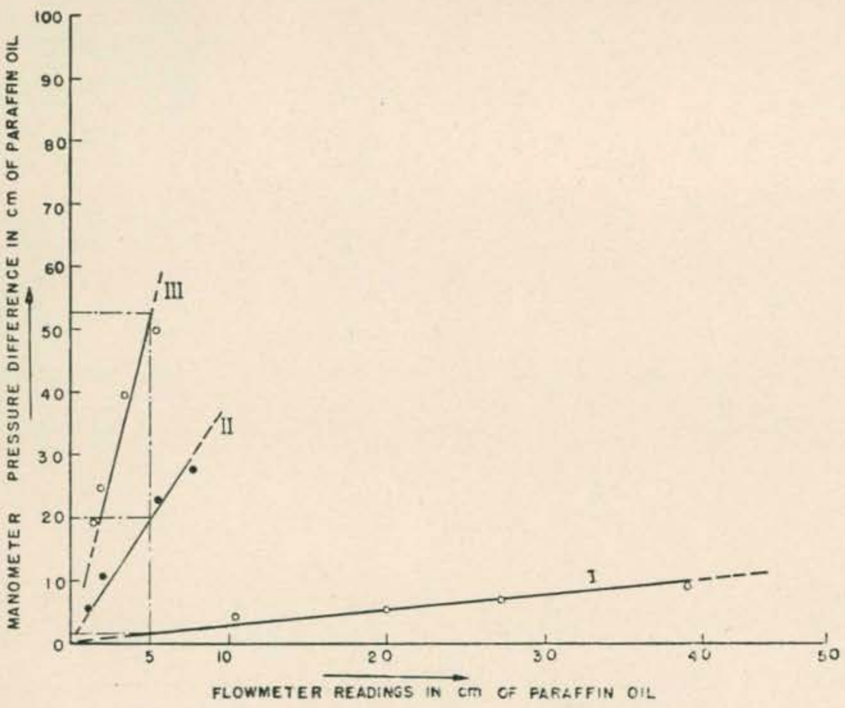

Fig. 8 Air Permeability Through Separators I, II and III

4.2.3 The results obtained with the three types of separators are given in Table I. With different samples of the same type, the results were found to be closely agreeing.

4.3 Permeability

4.3.1 The permeability of separators is shown in terms of air flow. Results obtained with air permeability were found to be reproducible. Flow rate with water was also tried, but reproducible results were not obtained.

4.3.2 The air permeability of the separator was determined by measuring the rate of passage of air through the given area of the separator, a known pressure difference being maintained between the two faces of the separator. A schematic diagram of the apparatus is given in Fig. 7.

4.3.3 A suitable pressure difference across the separator is maintained by means of a control valve. This pressure is measured by a manometer. The rate of air flow was observed on a calibrated flowmeter. The rates of flow were determined for different pressures across each type of separator and the results were plotted on a graph; a straight line showing viscous flow and absence of turbulence was obtained. For getting reproducible results, viscous flow should always be maintained. With different samples of the same type of separator, the results were found to be closely agreeing. Results obtained are shown in Fig. 8. For a given flow rate the pressure across the different separators is widely different, indicating a large difference in the permeability of the separators.

4.4 Capillary Rise

4.4.1 The experimental procedure requires merely the measurement of the rate of rise of the liquid in a strip of the material; the strip and the liquid in which it dips being held in a closed tube with a small vent hole to prevent evaporation. The samples under test were cut into pieces of $1{\cdot}3 \times 15$ cm (or $0{\cdot}5 \times 6$ in.) size, and were fixed as shown in Fig. 9. The rise of water 'h' was noted against time 't' and the plots of 'h' vs 't' in case of Separators I, II and III are shown in Fig. 10, 11 and 12.

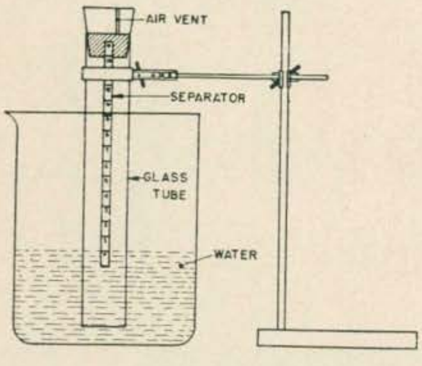

Fig. 9 Apparatus for Measurement of Capillary Rise

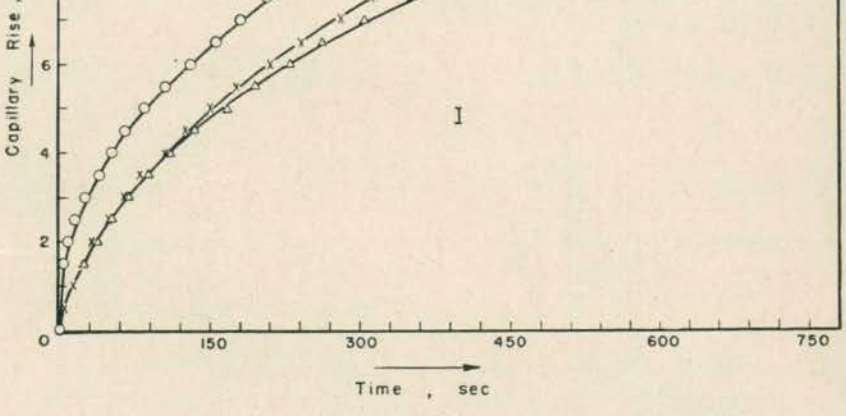

Fig. 10 Capillary Rise Against Time in Three Samples of Separator I

TABLE I CHARACTERISTICS OF SEPARATORS

SEPARATOR	THICKNESS (mm)	DENSITY (g/cm^3)		POROSITY, PERCENT	PREDOMINANT MAX PORE SIZE (microns)	PRESSURE DROP (cm)		TIME FOR 5·0 cm CAPILLARY RISE OF WATER ABOVE THE WATER SURFACE
		Apparent	Real			Separator	Flowmeter	
I	0·74	0·46	1·40	67	32	2·0	5	1 min 40 sec
II	0·71	0·19	1·43	86	14	21·0	5	84 min 0 sec
III	0·81	0·47	1·21	61	4	51·0	5	13 min 50 sec

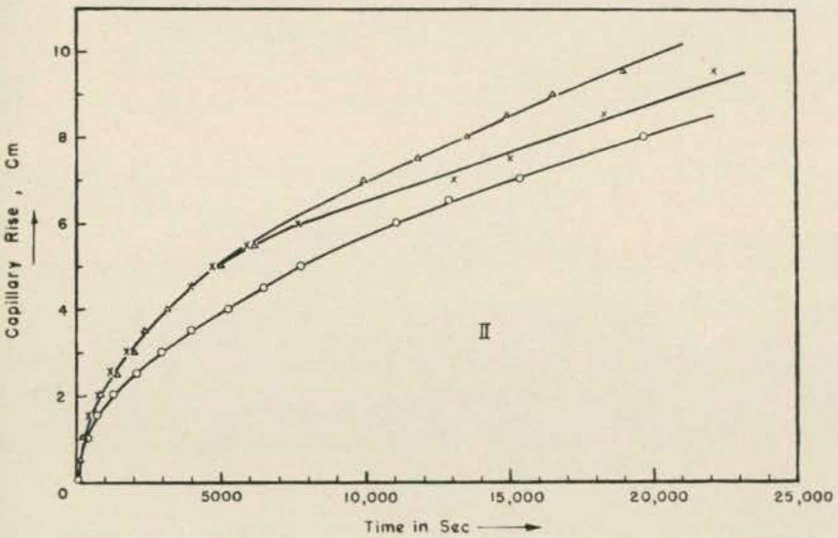

Fig. 11 Capillary Rise Against Time in Three Samples of Separator II

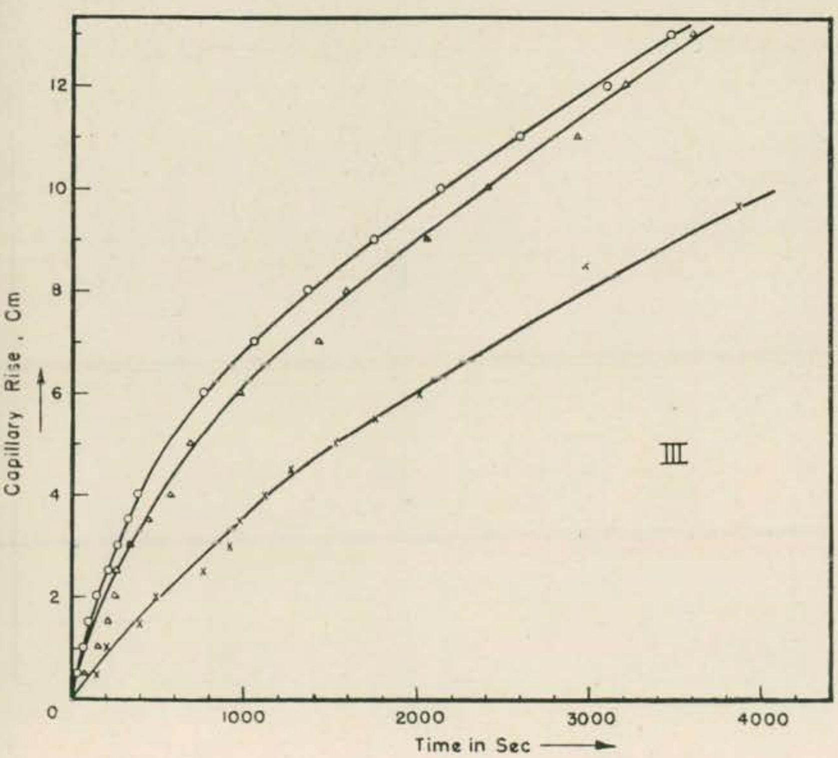

Fig. 12 Capillary Rise Against Time in Three Samples of Separator III

4.4.2 The penetration of the liquid is due to the capillary force against the resistance due to viscosity and due to hydrostatic pressure. The velocity at which the sample is wetted by capillary flow is dependent on varying pore dimensions. In the beginning, this rate is high but becomes steady afterwards. The interconnected pore openings may vary greatly in size, and the velocity at which water first reaches any individual point depends greatly on the pore area at that point. The degree of saturation caused by capillary rise gets reduced with increasing height above the water surface. Finally, there is a limiting height above which no water can be drawn by capillary force.

4.4.3 The rate of rise of liquid in papers have been studied by different workers[4,5,6]. Attempts have been made to correlate 'h' and 't' in various ways. In the present investigation, the authors find that dh/dt vs 1/h gives a straight line. According to Peek[4], the slope of this straight line is a function of the distribution of pore sizes in the medium.

5. CONCLUSIONS

5.1 It would be seen from the table and the various figures that the separators tested differ in their pore structure considerably, and, therefore, affect the performance of batteries in actual life service. It has been reported[7] by battery manufacturers that separator I gives the poorest performance on life, separator II gives the best performance while the performance of separator III approaches that of separator No. II. It would be seen from these results that perhaps there is an optimum range of pore size distribution and permeability of separators which give a better life performance by keeping down the local action in the battery. It is hoped that this work has sufficiently brought out the importance of such

(*Continued on p.* 125)

The Second Middle East Standardization Conference

A. N. GHOSH
JOINT DIRECTOR, ISI

THE second Middle East Standardization Conference (MESC) was held at Cairo from 30 January to 5 February 1961; the first Conference* was held three years ago in Beirut.

The Conference was attended by some 500 delegates, a majority of whom was drawn from the Arab countries, specially the United Arab Republic.

The twelve member-countries of the International Organization for Standardization (ISO) represented at the Conference were Czechoslovakia, Egypt, France, Germany, Hungary, India (represented by the author), Indonesia, Roumania, Turkey, UK, USA and USSR. The five organizations, two international and three national, namely the International Organization for Standardization, the International Organization for Legal Metrology; and the National Bureau of Standards, USA, the National Institute for Testing Materials and the National Physical Institute, had also sent delegates.

INAUGURATION

The Conference was inaugurated, on behalf of the President of the United Arab Republic, by Dr. Aziz Sidky, Central Minister for Industry and President of the Egyptian Organization for Standardization (EOS). In his inaugural address, Dr. Sidky laid stress on the need for industrialization in UAR and indicated the importance of standardization in their efforts to raise the standard of living in Arab countries. He further said that Arab countries had to move in a co-operative venture to solve the problems which faced them and much would be gained in co-ordinating their efforts towards standardization.

Dr. M. Attia from Lebanon also addressed the inaugural meeting on behalf of the organizers of the first meeting in Lebanon. He laid stress on the need for common approach to the problems of metrology in the Middle East Countries.

Mr. Henry St. Leger, General Secretary of ISO, addressed the delegates on behalf of ISO and the countries that were unable to attend the Conference. He presented an ISO Flag to the President of EOS.

SYMPOSIUM

Twenty-three papers were presented at the four symposia on the following subjects:

a) Standardization systems in various countries with discussion of problems pertaining to regional and international co-operation;
b) The role played by standardization and technical inspection in quality control;
c) Metric system of measurements; and
d) Training of technical personnel at different levels for standardization institutions and laboratories.

Many of the papers submitted by delegates from Arab countries were in Arabic, and discussion was also in Arabic. But arrangements had been made for simultaneous translation by the technical staff of EOS.

There was quite a lively discussion on the papers of the foreign delegates. Papers presented by the author received quite a lot of attention and the work done by ISI was highly commended upon. At the end of the fourth Symposium, a special vote of thanks was passed for the wealth of practical information brought by the Indian delegate to the Conference.

RESOLUTIONS

Since standard specifications and measurements are among the most important means for realizing that aim, as well as safeguarding consumers and preventing adulteration, besides being essential factors in international commercial interchange, the Conference agreed upon the following recommendations and resolutions:

a) The establishment of national standardization organizations be expedited in those countries which have not yet formed such organizations. These national organizations should immediately join the ISO and other international organizations concerned with specifications and measurements, particularly the International Organization for Legal Metrology, and should also positively participate in the activities of the technical committees of these international organizations to gain experience and to sustain international industrial co-operation in the fields of specifications and measurements.
b) National and international organizations be requested to

Dr. A. N. Ghosh, the Indian Delegate, Photographed While Presenting His Paper

*See ISI Bull. Vol 11, No. 2, p. 65 (1959).

Dr. Ghosh with Dr. Aziz Sidky (Second from l), Minister for Industry and President EOS. In the Foreground are Dr. and Mrs. Amin EL Sharif

submit financial and technical assistance to these countries which have not yet established technical bodies for specifications and measurements to enable these countries to form such bodies.

c) Co-ordination and unification of standardization systems in member countries may be achieved in co-operation with the international organizations to develop their industries and to raise the standard of quality of their production.

d) The metric system of measurements be adopted in those countries which have not yet adopted it since this system is characterized by its simplicity and ease of application beside being suitable for developing countries; the system also helps sustaining industries and the inter-change of products.

e) Symposia and training courses be organized in all member countries in which interested workers in the fields of specifications, measurements, technical inspection and quality control will participate; their aim will be the co-ordination between the different applied systems according to international agreements in such fields.

f) Immediate action be taken towards the training of personnel, at all levels, for specifications and measurements work and laying down a special system for the inter-change of specialists. This will be carried out by co-operation with national and international organizations.

g) To make it possible for the Arab States to benefit from international efforts in the fields of specifications and measurements, it is necessary to establish a technical committee working in co-operation with other organizations concerned with the unification of scientific and technical Arabic terms. The task of the committee will be the establishment of the definitions, specifications and unification of scientific and technical Arabic terms used in specifications and measurements. The committee will also work towards the unification of Arabic writing used in engineering drawings and of figures and tolerance nomenclature together with the unification of rules for transliteration to Latin.

h) Opposing the monopoly in science and invention which hinders economic progress in recently developed countries and striving for international co-operation to prevail the fields of technical and scientific inter-change.

j) Asking the concerned international organizations and ISO/TC 85 Nuclear Energy to take positive steps to ensure that water, air, agricultural and other industrial products will not be contaminated with atomic radiations and will comply with standard specifications and requesting different

(*Continued on p.* 153)

A Section of the Distinguished Assembly at the Inaugural Session

Conference on Implementation of Indian Standards in Bihar

BIHAR is the fifth state in the country to have organized a State Conference on Implementation of Indian Standards which was held at Patna on 16 January 1961. The other states which have already convened similar conferences are: Orissa, Kerala, West Bengal and Punjab*. The Union territory of Himachal Pradesh† has also held a similar conference.

The object of these conferences is to have discussion with Government departments and others at the state level to resolve doubts and to establish utility of Indian Standards in indigenous production and purchase operations.

The Bihar State Conference was inaugurated by Shri Bhola Paswan Shastri, Minister for Excise, Forest & Welfare, Government of Bihar. It was presided over by Shri R. S. Pande, Agent, Tata Iron & Steel Co. Ltd., Jamshedpur, and attended by delegates representing the Legislative Assembly, various Government departments, municipalities, district boards, industries, etc, in the State of Bihar.

The Conference was followed by a meeting of the heads of departments of the Government of Bihar at Patna Secretariat under the chairmanship of Shri B. N. Sinha, Secretary, Industries Department. The meeting decided upon the various *modus operandi* for follow up action and also agreed to set up a cell in the Industries Department to serve as a clearing house of information on standardization activity and for unifying and directing it with the State. This is the first State in which this welcome step has been taken and, it is hoped, that it would help in propagating the message of standardization in Bihar.

INAUGURAL AND PRESIDENTIAL ADDRESSES

Delivering the inaugural address, Shri Paswan said that lack of adequate appreciation of the value of standards both by producers and consumers in the country was coming in the way of development of trade and industry. He mentioned the grievances of foreign customers about the quality of Indian goods exported and emphasized that unless the country's industry strictly adhered to standards of quality for export, it would not be possible to compete successfully with the industrially advanced countries of the world.

For popularizing manufacture of standard goods, he urged that consumers in the country should be 'standards conscious' and called upon the Union and State Governments, which are organized consumers, to give a lead to others by adopting Indian Standards to form the basis of their purchase requirements. The municipalities, district boards and other local bodies should also popularize Indian Standards by adopting them to form the basis of their purchases.

Shri R. S. Pande in his presidential address stressed that it was absolutely essential for export promotion that Government should take adequate measures to ensure that goods exported conformed to the standards of quality.

RESOLUTIONS

The Conference adopted unanimously three resolutions relating to the implementation of Indian Standards, ISI Certification Marks Scheme and extension of standardization activities in the State of Bihar. These resolutions dealt with, among other things, the following:

a) "All Indian Standards including specifications, codes of design and practice, model byelaws, etc, should be formally adopted, as soon as they are published by the Indian Standards Institution, by all departments of the Government of Bihar and municipal committees and other local self government bodies, for the purpose of stores purchases and for guiding design and construction work in the public sector. Such official adoption by the State may be indicated by publication of notification in the official gazette from time to time and by giving direct reference to Indian Standards in legislation and any statutory orders wherever it may be necessary to prescribe requirements according to standards."

"It is also important that industrial undertakings both in the public and private sectors adopt Indian Standards to guide their production programmes as well as procurement and sales operations."

b) "The Bihar State Government may give a lead by according due recognition to the ISI Standard Mark by preferring to purchase only such goods as carry this mark and wherever such goods are not available by demanding goods that could be similarly certified. The Conference recognizes that certified goods, which are produced under an organized inspection system, do not require the same degree of inspection and testing prior to purchase as other goods do. It is, therefore, possible to effect substantial economies by relaxing repeat inspection prior to purchase. Furthermore, the State may direct industrial undertakings under its control and request those in the private sector to cover their products under the ISI Mark."

c) "The Indian Standards Institution, therefore, should be supported by every municipal committee and local self-government body in the same manner as it is being supported by the States and the private industry, by becoming sustaining members of ISI and by active participation in its deliberations for the establishment of standards."

DISCUSSIONS

During the discussion of the resolutions quoted above some interesting points were raised by delegates. Some of these together with the replies given by Dr. Lal C. Verman, Director ISI, are given below:

ISI Certification Marks Fees

Shri K. R. P. Sinha, Textile Expert, Industries Department,

*See ISI Bull. Vol 12, No. 4, p. 167 (1960).
†See ISI Bull. Vol 13, No. 1, p. 21 (1961).

Government of Bihar, said that according to his information the present rates of charges of ISI for the use of certification mark were some 2 percent of the total cost of production; hence, ISI should lower down the rates.

On behalf of ISI, it was clarified that the Institution had issued about 258 licences under its Certification Marks Scheme and ordinarily the licence fees ranged from 0·1 to 0·2 percent of the total cost of production. The marking fees were charged by ISI, it was stated, to meet expenditure in running the scheme, travelling by inspectors, collecting of samples from the factory, sending them to independent laboratories, getting them tested and keeping a watch on the quality of the product in the market. The Institution did not make any profit through its Certification Marks Scheme and would be willing to reduce the marking fees even further when more manufacturers join the scheme to make it possible for ISI to run it more economically.

Standards for Drugs and Pharmaceuticals

Dr. B. S. Lal, Dy. Director, Health Services, Bihar, wanted to know to what extent ISI undertook the task of formulation of Indian Standards for drugs and pharmaceuticals, sale and distribution of which were controlled by the Drugs Control Act of the Government of India.

It was explained that as a rule ISI did not enter the drug and pharmaceutical fields for which standards were prepared by the Ministry of Health, Government of India under the provision of the Drugs Control Act. Indian Standards were formulated for chemicals and where these fields overlapped, extra care was taken to see that provisions of Indian Standards were not contradictory to the requirements of the Indian Pharmacopoeia. Further, close liaison existed between ISI and the Ministry of Health in these cases and all care was taken to avoid duplication and contradiction.

Surgical Instruments

Answering another query from Dr. Lal about ISI work on surgical instruments, Dr. Verman said that ISI had not yet touched upon this field very seriously. One of the reasons which was responsible for this lack of activity was that information available with ISI indicated that in the field of surgical instruments there existed disagreement between professionals themselves, the different schools of surgeons in the country propagating different types of instruments. The variety of surgical instruments at present in use is very large. In taking up these items for standardization one of the objects would be to reduce the variety of instruments now in use for a given purpose to the barest minimum and that would only be possible if surgeons representing various schools of thought could first decide about it amongst themselves.

Spare Parts for Automobiles

Shri A. F. Couto, General Manager, Bihar State Road Transport Corporation, referred to the difficulties being faced by them in obtaining spare parts for automobiles due to lack of standards and suggested that ISI should pay more attention to this field.

It was pointed out on behalf of ISI that the Institution had been very conscious of this need but it had not been able to make much progress as standards for spare parts in India raised a very complex problem. The total demand of automobiles in the country was relatively small, and yet there were many varieties of vehicles available. Some five or six automobile manufacturers in the country were bringing out their models and those required different kinds of spare parts. The manufacturers of automobiles in India had licences from their principals abroad and it was not possible for manufacturers to deviate from their specifications without consulting their principals who for obvious reasons were not much interested in the subject. Nevertheless every thing possible was being done and Indian Standards on sparking plugs, lead-acid storage batteries, hydraulic fluid brakes, automobile springs, etc, had been published and were available.

PORE STRUCTURE AND PERFORMANCE OF BATTERY SEPARATORS—*Continued from p. 121*

studies in the selection of battery separators. Such studies would also help to have control during the manufacture of separators.

6. ACKNOWLEDGEMENT

6.1 Our thanks are due to Shri Narendra Kumar for his help in experimental work, and Shri R. S. Dhawan for taking the photomicrographs for the separators.

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REVIEWS

ASTM Standards on Electrical Insulating Liquids and Gases. American Society for Testing Materials, Philadelphia. 1959. Pp. viii + 328. Price $ 4·25.

For the first time ASTM has published its 48 standards for liquid electrical insulating materials in a single volume containing only standards in this field. Typical of the standards are: test for cloud and pour points; tests for interfacial tension of oil against water; tests for corrosive sulphur in electrical insulating oils; test for scavenger content in Askarels, and recommended practice for safe use of oxygen combustion bombs.

Rapid developments in liquid insulation make this book a welcome addition for those concerned with problems associated with high voltage transmission.

Bituminous Paving Materials. American Society for Testing Materials, Philadelphia. 1959. Pp. v + 232. Price $ 5·50.

As a result of expanded highway programmes to accommodate the growing traffic load and increased airport runway construction to meet the needs of increasing air traffic, there has been greater emphasis on better pavement construction. Highway engineers want to know more about factors entering into the design of more durable pavements. They also want to know more about the application of existing methods of test to design as well as the development of new tests for use in this field.

To assist in meeting these needs, ASTM Committee D-4 on Road and Paving Materials arranged during June 1959 two symposia on: (a) Methods of Test for Design of Bituminous Paving Mixtures, and (b) Practical and Statistical Significance of Tests and Properties of Bituminous Binders; a session on Road and Paving Materials was also held. Fourteen papers presented at the two symposia and the technical session have been combined into this publication. Discussions are also included at the end of each paper.

Papers on Soils — 1959 Meetings. American Society for Testing Materials, Philadelphia. 1960. Pp. vi + 376. Price $ 9·00.

Engineers have long since found that while the soil may in some instances be inexpensive, its movement from place to place and its use for construction may not. Hence, a clear understanding of the properties of soils is necessary if it is to be economically employed.

This publication contains 32 papers presented at three symposia on: (a) Time Rates of Loading in Soil Testing, (b) Atterberg Limits, and (c) Soils for Engineering Purposes; it also includes papers on soils presented at the ASTM 62nd Annual Meeting.

Papers presented at the symposium on Time Rates of Loading deal with consolidation of clays and soils, evaluation of soils strain-rate effects, and contain an extensive literature survey on dynamic and static resistance of cohesive soils for the period 1846 to 1958. Various aspects of the well-known Atterberg Limits Tests are treated in one portion of the book. The additional papers cover various aspects of soils, such as, testing, soil stabilization, moisture-density tests, and triaxial compression tests.

1959 References on Fatigue. American Society for Testing Materials, Philadelphia. 1960. Pp. 88. Price $ 18·00.

This list of references consisting of about 460 entries provides an extensive source of information on articles published in 1959 dealing with fatigue of structures and materials. An abstract of each reference is included in all those cases where these were readily available. The material is so arranged that individual references can be cut apart for filing according to any desired plan. This publication is sponsored by ASTM Committee E-9 on Fatigue. Similar lists of references were published covering the years 1950 to 1958.

Report on Marine Atmosphere Exposure of Galvanic Couples Involving Magnesium. By A. Gallaccio and I. Cornet. American Society for Testing Materials, Philadelphia. 1960. Pp. ii + 26. Price $ 2·25.

The need for information for the selection of metals, dissimilar metal couples, and protective systems in military communication and associated equipment is recognized because of the high incidences of corrosion failure of such equipment. This is particularly true of conditions encountered in coastal and beachhead areas. Marine environments apparently are among the most severe conditions encountered. Experience has shown that certain coastal areas of California represent an ideal testing area for signal equipment protection because of frequent heavy fog conditions coming in from the sea. It has been suggested that galvanic couples which can withstand the corrosive environment of this area would provide satisfactory service under most natural environments elsewhere.

This publication reports the results obtained by authors from exposure tests of protective systems for magnesium including chromate conversion, anodic coatings, as well as paint systems of chromate primer and alkyd, phenolic and epoxy enamels. Suitable controls were included in the experiment and inorganic and organic protection for the cathode metals also were studied. The data presented permit the selection, for each couple, of protective systems serviceable under severe marine atmospheric conditions.

Supplement to 1958 Edition of ASTM Standards in Building Codes. American Society for Testing Materials, Philadelphia. 1960. Pp. xii + 258. Price $ 3·25.

This Supplement calls attention to the revised standards and the new and revised tentatives, in the construction field, that have been accepted by ASTM since the appearance of the 1958 edition.

For the 73 standards and tentatives where the revisions were not extensive, complete descriptions of the revisions are given on pages 1 to 47. The revisions are so listed that the changes in individual standards can be cut from the Supplement and pasted on the standard which appears in the original book. In the case of 27 standards and tentatives in which the revisions were rather extensive, the completely revised methods and specifications have been included in this supplement. Also included are 13 new specifications for materials used in building constructions.

Among the topics covered are admixtures; mineral aggregates;

asbestos cement products; bituminous roofing and waterproofing; brick; cement; structural clay tile; concrete; concrete pipe; concrete masonry units; and copper pipe, tube and sheets. In addition, gypsum, iron, lime masonry mortar, building stone, drain tile, plastics, refractories, wood and steel products are covered besides fire tests, flash point test and general testing methods.

Gas-Chromatographie 1958. (In German. Edited by Hans-Peter Angele. Published by the Akademie-Verlag, Leipziger Strasse 3-4, Berlin W1. 1959. Pp. 338. Price 25 DM).

The 'Arbeitsgemeinschaft Gas-Chromatographie' of the German Democratic Republic deserves to be congratulated for the successful effort in bringing out this publication which contains 18 papers from well-known research workers in this field. These papers were presented at the symposium on Gas Chromatography held in Leipzig from 9 to 11 October 1958.

Gas Chromatography is the simplest of the many chromatographic systems, and its rapid and striking development during the last decade has made it one of the most versatile and widely used methods of analysis and separation. An idea of the progress made in this front can be gained from the fact that up to date more than two thousand papers have been produced and at least five international symposia exclusively devoted to the subject have been held. It is hoped that before long rapid methods of analysis applying the principles of Gas Chromatography will be standardized, and they shall find their due place in the field of standards.

This collection of original contributions on the various applications of Gas Chromatography by some of the leading workers in the field will be found interesting and useful. The book is well got up on good paper and contains numerous chromatograms.

Symposium on Air Pollution Control. American Society for Testing Materials, Philadelphia. 1960. Pp. iv + 44. Price $ 1·50.

The influence of wind and weather on air pollution potential of industrial areas is an important consideration in plant location and in measures needed to reduce air pollution. Consequently, the ASTM Committee on Methods of Atmospheric Sampling and Analysis conducted a Symposium on Air Pollution Control in October 1959. Five papers presented at the symposium: (a) Air Pollution Potential of California Coastal Climate, (b) Wind and Weather Summaries for Chemical Plant Design and Air Pollution Control, (c) Fluorescent Dyes as Airborne Tracer Materials, (d) The Colorimetric Determination of Formaldehyde and Methanol from Combustion Sources, and (e) Determination of Gaseous and Particulate Inorganic Fluorides in the Atmosphere, are included in this publication.

PUBLICATION RECEIVED

Central Building Research Institute. Annual Report, 1959-60. CBRI, Roorkee. Pp. iv + 45.

SIR ROGER DUNCALFE

We announce with deep regret the death on 15 April 1961 of Sir Roger Duncalfe, an acclaimed leader of chemical industry in UK, who was President of ISO from 1956 to 1958.

Born in 1885, Sir Roger was intimately connected with standardization work in his country during the last three decades. On account of his deep interest in standardization, he became in 1934, Chairman of the Technical Committee of BSI dealing with glues, and in 1941 was elected as the Chairman of its Chemical Division Council. Subsequently, he held the offices of Chairman, Finance Committee; Chairman, General Council; Vice-President and President of BSI. For his outstanding services to standardization, Sir Roger Duncalfe was knighted in 1951.

His natural gifts for organization and his willingness to serve industry, Government and the public to the best of his ability were recognized by numerous trade associations and committees in whose work and development he played a leading role. But it was in the field of international standardization that his talents shone at their brightest. Future generations will always remember him as a charming champion of international goodwill and a vital contributor towards what he himself termed as 'breaking down the barriers in the way of world trade'. Also, he will always be recalled for the scrupulous objectivity with which he approached all difficult problems of international standardization, and the penetrating mind which he brought to bear on their solution with always a smile and usually a glint of friendliness in his eyes. We in ISI who had the privilege of knowing him personally and to work with him in international forums feel a personal loss of a friend and a counsellor of mature experience.

IEC TO MEET AT INTERLAKEN

The 26th Annual General Meeting of the International Electrotechnical Commission will be held at Interlaken in Switzerland from 18 to 30 June 1961. Besides the Committee of Action of IEC, 44 technical committees, subcommittees and working groups will hold their meetings. It may be recalled that the 25th Annual General Meeting of IEC was held at New Delhi last November.

The Seventh Charles le Maistre Memorial Lecture will be delivered at the inaugural session on 18 June by Shri M. Hayath, Chairman of the Indian National Committee for IEC and Chairman, Central Water & Power Commission, Government of India. This invitation by IEC to Shri Hayath is regarded as an appropriate appreciation of the contribution which India is making to the work of IEC as also a fitting tribute to the personal eminence of Shri Hayath.

STANDARDS NEWS

Metricization of Indian Standards

Metricization of Indian Standards is proceeding according to a planned programme. By 31 March 1961, some two-thirds of Indian Standards in force had been metricized, and work on the remaining is scheduled to be completed before the end of 1965. In new standards, all values are being specified only in metric units.

Metricization is being carried out on the basis of a Guide for Specifying Metric Values in Standards now under print. In this Guide, an attempt has been made to lay down principles for deciding as to where a converted metric value should be made.

It is difficult to define the concept of rationality. Nevertheless, the following three criteria have been laid down to ascertain if a value is rational or not:

a) Whether the value is one of the Preferred Numbers,
b) Whether it conforms to the international usage in the matter,
c) Whether it is dimensionally correlated with its components, raw materials, other sizes of the series to which it may belong and items with which it should fit or be interchangeably used.

Having thus delimited the rationality of a value, it has been recommended in the Guide that the rational metric values should be adopted in all cases except where some positive reasons exist against their adoption. Such reasons may arise from one or more of the following situations:

a) The question of interchangeability with existing products, and of fit in case of assembly components;
b) Possible effects on production if re-designing, re-tooling, etc, should be called for;
c) The need of correlation between interdependent and interrelated industries.

Since such situations cannot altogether be avoided, the following preferences have been indicated for specifying values in metric systems:

a) 1st preference — rationalized metric value,
b) 2nd preference — rounded converted value in metric system, and
c) 3rd preference — values converted according to IS: 787-1956 and IS: 1105-1957.

Cottonseed Oil

The Ministry of Food & Agriculture has sanctioned a sum of Rs 23 383 to be spent by the Indian Central Oilseeds Committee on schemes of investigations on raw, washed and refined cottonseed oil. These researches will be conducted by the Regional Research Laboratory, Hyderabad, and the Oil Technological Institute, Anantpur.

The object of the schemes is to carry out analytical work with a view to collecting data on raw, washed and refined cottonseed oil in order to enable ISI to prescribe specifications and methods of test for bleachability and refining loss.

Sago Standard in Tamil

The Tamil translation of Indian Standard Specification for Sago (*Saboodana*) (IS:899-1956) has been recently published by ISI to meet the demand of producers of the District of Salem (Madras State) where the sago industry of the country is concentrated.

While extending the period of protection to sago industry by another two years up to the end of 1959, the Tariff Commission, in its 1957 Report, had recommended that the Indian Standard Specification for Sago, which had then just been issued by ISI, should be translated in the regional language (Tamil) and made available to sago producers. The Tamil translation of this standard was prepared in collaboration with the Salem Sago Manufacturers' Association, the Director of Industries & Commerce, Madras, and the Central Food Technological Research Institute, Mysore. Printed copies of the translation can be had from the Madras Branch Office of ISI.

Kannada Version of IS : 1020-1957

Recently, the Institution has brought out a Kannada translation of the Indian Standard Conversion Factors for Ordinary Use (IS: 1020-1957), and also reprints (loose sheets) of different tables from the Kannada version.

The translation was taken up when a request for the supply of 10 000 copies of the complete translation was received from the Chief Marketing Officer (Weights & Measures), Bangalore, for use in different departments of Mysore State. Reprints (loose sheets) of different tables were also supplied against request for making them available to the public and the educational institutions in Mysore.

As the international Hindu-Arabic numerals have been accepted for official use in all the States in India, these have been used in the tables in the Kannada version also. Although abbreviations in Kannada have been used for fps units, universally accepted abbreviations in the regional language were not available for the metric units. Abbreviations in English have, therefore, been used for metric units, but suitable explanations of these abbreviations have been given as footnotes to the tables.

The standard was translated from English to Kannada by Dr. L. Sibaiya, D.Sc., Principal and Professor of Physics, Yuvaraja's College, Mysore, and a suitable acknowledgement to this effect has been made in the translation.

A few copies of the complete translation are available for sale at 75 nP per copy at the ISI Branch Office at Madras.

Popularizing Abroad the Indian Standards and ISI Certification Mark

The Ministry of Commerce & Industry, Government of India, has requested all Indian Diplomatic and Trade Missions abroad to convey to trade bodies, particularly importing organizations, in their respective countries about the existence of the ISI Certification Marks Scheme on which they could rely for quality conformance of goods to Indian Standards. Indian Missions in Burma, East Pakistan, Hong Kong, Iran, Iraq, Japan, New Zealand, Phillipines, West Germany, Switzerland, and Viet Nam have brought this to the notice of trade organizations, chambers of commerce and others concerned with import of goods in those countries. This has led to some interest being shown by importers abroad about the ISI Certification Marks Scheme.

(*Continued on p.* 134)

Implementation of Indian Standards

During the period 16 November 1960 to 15 January 1961, the following Government purchasing and consuming departments communicated to ISI that they had added to the list of Indian Standards, on the basis of which their purchases are made and other recurring problems solved, the standards listed below under each. On 15 January 1961, 1 557 Indian Standards were in force, of which 1 346 had thus been adopted by various Government departments.

Directorate General of Supplies & Disposals

- IS: 784-1959 Prestressed Concrete Pipes
- IS: 935-1959 Portable Chemical Fire Extinguishers, Carbon Tetrachloride Type
- IS: 1148-1957 Rivet Bars for Structural Purposes
- IS: 1185-1957 Method for Determining the Relative Wetting Power of Wetting Agents
- IS: 1194-1959 Forms for Recording Measurement
- IS: 1323-1959 Code of Practice for Oxy-Acetylene Welding for Structural Work in Mild Steel
- IS: 1345-1959 Methods of Chemical Analysis of Printing Metals
- IS: 1346-1959 Code of Practice for Waterproofing of Roofs with Bitumen Felts
- IS: 1350-1959 Methods of Test for Coal and Coke — Proximate Analysis, Total Sulphur and Calorific Value
- IS: 1351-1959 Methods of Test for Coal and Coke — Ultimate Analysis
- IS: 1352-1959 Methods of Test for Coal and Coke — Special Impurities
- IS: 1353-1959 Methods of Test for Coal Carbonization — Caking Index, Swelling Properties and Gray-King Assay (L.T.) Coke Types
- IS: 1354-1959 Methods of Test for Coke — Special Tests
- IS: 1356-1959 General Requirements for Electrical Equipment of Machine Tools
- IS: 1362-1959 Dimensions for Screw Threads for General Purposes
- IS: 1375-1959 Black Lead Pencils
- IS: 1392-1959 Glass Milk Bottles
- IS: 1395-1959 ½-Percent Molybdenum Steel Covered Electrodes for Metal Arc Welding
- IS: 1399-1959 Glossary of Terms Used in Optical Technology
- IS: 1401-1959 Accessibility Test Probes
- IS: 1415-1959 Electric Hand-Pumps
- IS: 1416-1959 Extra Low Voltage Transformers
- IS: 1420-1959 Light Magnesium Carbonate for Rubber Industry
- IS: 1432-1959 General Requirements for Weighing Instruments
- IS: 1434-1959 Counter Machines
- IS: 1440-1959 Ink, Metal Stamp, Black
- IS: 1441-1960 Insulator Stalks for Telegraph and Telephone Lines
- IS: 1444-1959 Engineers' Pattern Drawing Boards
- IS: 1445-1959 Porcelain Insulators for Overhead Lines with a Nominal Voltage Below 1 000 Volts
- IS: 1458-1959 Railway Bronze Ingots and Castings
- IS: 1460-1959 Diesel Fuels
- IS: 1464-1959 Ridge and Ceiling Tiles
- IS: 1466-1960 Ferro Vanadium
- IS: 1467-1960 Ferro Tungsten
- IS: 1468-1960 Ferro Titanium
- IS: 1469-1960 Ferro Molybdenum
- IS: 1470-1960 Silico Manganese
- IS: 1474-1959 Commercial Refrigerators
- IS: 1475-1959 Self-Contained Water Coolers
- IS: 1476-1959 Domestic Refrigerators (Mechanically Operated)
- IS: 1477(Part 1)-1959 Code of Practice for Finishing of Iron and Steel in Buildings: Painting and Allied Finishes
- IS: 1486-1959 Copper Oxychloride, Technical
- IS: 1488-1959 2, 4-D-Sodium
- IS: 1492-1959 Metric Surveying Chains
- IS: 1495-1959 Mild Steel Dust-Bins
- IS: 1496-1959 Transformers Used in Vibrator Power Supplies
- IS: 1498-1959 Classification and Identification of Soils for General Engineering Purposes
- IS: 1499-1959 Method for Charpy Impact Test (U-Notch) for Steel
- IS: 1501-1959 Method for Vickers Hardness Test for Steel
- IS: 1503-1960 Rectangular Solid Wood Packing Cases
- IS: 1506-1959 Copper Oxychloride Dusting Powders
- IS: 1507-1959 Copper Oxychloride Water Dispersible Powder Concentrates
- IS: 1508-1960 Extenders for Use in Synthetic Resin Adhesives (Urea-Formaldehyde) for Plywood
- IS: 1512-1959 Tests and General Requirements for I.F. Transformers and R.F. Coils Used in Amplitude Modulation Broadcast Receivers
- IS: 1513-1959 Wooden Pattern Equipment for Foundries
- IS: 1514-1959 Methods of Sampling and Test for Quick Lime and Hydrated Lime
- IS: 1520-1960 Horizontal Centrifugal Pumps for Clear, Cold, Fresh Water
- IS: 1522-1960 Fireclay Refractories for Glass Melting Tank Furnaces
- IS: 1523-1960 Bottom Pouring Refractories for Steel Plants
- IS: 1524-1960 Refractory Sleeves for Steel Plants
- IS: 1525-1960 Ladle Refractories for Steel Plants
- IS: 1526-1960 Sizes and Shapes for Firebricks
- IS: 1530-1960 Cloth, Baize
- IS: 1532-1960 Serge, Blue Worsted
- IS: 1539-1960 Cotton Yarn, Grey, for Handlooms
- IS: 1541-1960 Glass Filter Funnels
- IS: 1543-1960 Single Cylinder Fuel Injection Pumps
- IS: 1544-1960 Cotton Calico, Bleached or Dyed
- IS: 1545-1960 Solid Drawn Copper Alloy Tubes

- IS: 1550-1960 Copper Sheet and Strip for the Manufacture of Utensils and for the General Purposes
- IS: 1552-1960 Wire Reeds for Use in Jute Looms
- IS: 1555-1960 Pitch-Bound Wire Reeds for Use in Cotton Looms
- IS: 1556-1960 Handloom Cotton Poplin, Bleached or Dyed
- IS: 1557-1960 Handloom Cotton Bed Durries
- IS: 1565-1960 Electrical Apparatus Comprising Resistors
- IS: 1567-1960 Metal Clad Switches
- IS: 1580-1960 Bitumen (Plastic) for Waterproofing Purposes
- IS: 1583-1960 Handloom Silk Dhoties, Loomstate
- IS: 1584-1960 Handloom Silk Shirting, Loomstate
- IS: 1585-1960 Motor Gasoline, 79 Octane
- IS: 1592-1960 Asbestos Cement Pressure Pipes

Research, Designs and Standards Organization, Ministry af Railways

- IS: 1491-1959 Metric Scales for Architectural Purposes

Controller General of Defence Production, Ministry of Defence

- IS: 1399-1959 Glossary of Terms Used in Optical Technology
- IS: 1408-1959 Recommended Procedure for Inspection of Copper-Base Alloy Sand Castings
- IS: 1422-1959 Cotton Duck, Scoured, Dyed or Waterproofed
- IS: 1424-1959 Cotton Canvas, Scoured, Dyed, Waterproofed
- IS: 1446-1959 Classification of Dangerous Goods
- IS: 1458-1959 Railway Bronze Ingots and Castings
- IS: 1472-1959 Methods of Sampling Ferro Alloys
- IS: 1501-1959 Method for Vickers Hardness Test for Steel
- IS: 1505-1959 BHC Smoke Generators
- IS: 1514-1959 Methods of Sampling and Test for Quick Lime and Hydrated Lime
- IS: 1530-1960 Cloth, Baize
- IS: 1531-1960 Cloth, Blanket
- IS: 1532-1960 Serge, Blue Worsted
- IS: 1533-1960 Serge, Drab Mixture, Water Resistant
- IS: 1535-1960 Cotton Lining Cloth, Dyed
- IS: 1540-1960 Quick Lime and Hydrated Lime for Chemical Industries

RECOMMENDATIONS FOR IMPLEMENTATION

Indian Standards relating to the following items have been recommended for implementation, and also adopted in certain cases as detailed below.

Fire Fighting Equipment

The Indian Standards Institution has issued a series of 31 Indian Standards relating to fire fighting equipment, and standards on certain other items in this series are at various stages of formulation. The Ministry of Home Affairs, Government of India, has recommended to all the State Governments to adopt these Indian Standards as basis for their purchases. The Governments of Andaman and Nicobar, Bihar, Delhi, Himachal Pradesh, Madras, Maharashtra, Manipur, Mysore, Orissa, Tripura and Uttar Pradesh have responded and issued directives to all concerned departments within their states to purchase fire fighting equipment in accordance with the relevant Indian Standards. Other State Governments are also considering the question of implementation of these standards, and it is expected that similar action will be taken by them in the near future.

Electrical Equipment

The Central Water & Power Commission, Government of India, has recommended to all State Electricity Boards and other electrical undertakings in the country to base their purchase of electrical equipment on the specifications drawn up by ISI, wherever available, in the interest of economy of manufacture as well as reducing the delivery time of equipment manufactured indigenously.

Electrical Wiring and Fittings in Buildings (IS:732-1958)

Rule 29 of the 1956 Indian Electricity Rules refers to construction, installation and maintenance of electric supply systems in accordance with IS: 732-1958 in the interest of safety. The electrical inspectors to Governments of Kerala, Mysore, Uttar Pradesh and West Bengal have directed all the licenced electrical contractors and electric supply undertakings in their respective provinces to ensure that IS: 732-1958 is followed for compliance with the Rule mentioned above.

Outdoor Type Three-Phase Distribution Transformers Up to and Including 100 kVA 11kV (IS : 1180-1958)

Tariff Commission's enquiry for continuance of protection to power and distribution transformers industry held on 12 May 1960 at Bombay referred to adoption of IS : 1180-1958 by the State Governments and electrical undertakings to cover their requirements of transformers. The State Electricity Boards/Undertakings of Andhra Pradesh, Delhi, Himachal Pradesh, Madras and Rajasthan have assured ISI that all their purchases of transformers up to 100 kVA will be covered by IS : 1180-1958. This standard has also been adopted by DGS&D to form the basis of their purchases.

Code of Building Byelaws (IS : 1256-1958)

The Central Council of Local Self-Government at its meeting held at Hyderabad during 1959 had recommended that State Governments should adopt IS : 1256-1958 with necessary modifications to suit local requirements. The Governments of Andaman and Nicobar, Bihar, Himachal Pradesh, Mysore, Orissa, Rajasthan, Uttar Pradesh and West Bengal have brought this to the notice of their respective municipal committees, municipal boards and other local bodies.

ISI Certification Marks

New and Renewed Licences, and Marking Fees

During the two months ending 15 January 1961, minimum charges for production during a calendar year were fixed, the marking fees remaining the same, in respect of: (a) BHC dusting powders; (b) BHC water dispersible powder concentrates; and (c) BHC emulsifiable concentrates. The marking fees for these three items are Re 1·00 per ton, Rs 2·00 per ton, and Re 0·30 per gallon respectively. These rates remain the same, but minimum amount of fees payable for production during a calendar year have been fixed. For BHC dusting powders and BHC water dispersible powder concentrates, the minimum shall be Rs 1 000·00 for production during a calendar year; whereas for BHC emulsifiable concentrates, it shall be Rs 2 000·00 for production during a calendar year.

Keeping in view the metric change-over of the industries, marking fees have been prescribed in metric units for rubber insulated cables and flexible cords, and paper-insulated lead-sheathed cables. For rubber insulated cables and flexible cords, the marking fee is 12·5 nP per 1 000 yards; now it will also be 13·5 nP per 1 000 metres. Similarly, the marking fee for paper insulated lead-sheathed cables is 25 nP per 100 yards; now it will also be 27·5 nP per 100 metres. For hydroquinone, the marking fee has been revised from Rs 4·90 per one cwt to 16 nP per kilogram.

During the same period, ISI specified standard marks for 10 products, granted 18 new licences and renewed 25 for the use of standard marks; particulars of all of these are given below:

STANDARD MARKS AND MARKING FEES

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard	Unit	Marking Fee per Unit
PVC Cables and Cords	IS:694	IS: 694-1960 Specification for PVC Cables and Cords for Electric Power and Lighting for Working Voltages Up to and Including 650 Volts to Earth (*Tentative, Amended*)	1 000 metres	25 nP per unit with a minimum of Rs 1 500·00 for production during a calendar year
Corn Flakes	IS:1158	IS: 1158-1957 Specification for Corn Flakes	One kilogram	1 nP per unit with a minimum of Rs 500·00 for production during a calendar year
Phenol-Formaldehyde Moulding Powder	IS:1300	IS: 1300-1959 Specification for Phenol-Formaldehyde Moulding Powder (For General Purpose Mouldings)	One ton	Rs 5·00 per unit for the first 300 units with a minimum of Rs 1 500·00 for production during a calendar year
Transverse Strength Testing Machine	IS:1375 APP B	IS: 1375-1959 Specification for Black Lead Pencils	One machine	Rs 11·00
Apparatus for Determination of Wear of Slip	IS:1375 APP C	do	One apparatus	Rs 32·00

(*Continued on next page*)

STANDARD MARKS AND MARKING FEES — *Contd*

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard	Unit	Marking Fee per Unit
Apparatus for Determination of Friction of Slip	IS:1375 ISI APP D	IS: 1375-1959 Specification for Black Lead Pencils	One Apparatus	Rs 45·00
Blackness Indicator	IS:1375 ISI APP E	do	One Indicator	Rs 54·00
Copper Oxychloride Dusting Powders	IS:1506 ISI	IS: 1506-1959 Specification for Copper Oxychloride Dusting Powders	One Tonne	Re 1·00 per unit with a minimum of Rs 1 000·00 for production during a calendar year
Copper Oxychloride Water Dispersible Powder Concentrates	IS:1507 ISI	IS: 1507-1959 Specification for Copper Oxychloride Water Dispersible Powder Concentrates	One Tonne	Rs 5·00
Infant Milk Foods	IS:1547 ISI	IS: 1547-1960 Specification for Infant Milk Foods	One Ton	Rs 5·00 per unit with a minimum of Rs 3 000·00 for production during a calendar year

NEW LICENCES GRANTED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-241 21-11-1960	1-12-1960	30-11-1961	M/s Bharat Pulverising Mills Pvt. Ltd., Bombay	BHC Water Dispersible Powder Concentrates (IS: 562-1958)
CM/L-242 21-11-1960	1-12-1960	30-11-1961	do	DDT Dusting Powders (IS: 564-1955)
CM/L-243 23-11-1960	1-12-1960	30-11-1961	M/s Hindustan Tin Works (P) Ltd., Ghaziabad	18-Litre Square Tins (IS: 916-1958)
CM/L-244 28-11-1960	15-12-1960	14-12-1961	M/s Indian Plastics Ltd., Bombay	Phenol-Formaldehyde Powder (For General Purpose Mouldings) (IS: 1300-1959)
CM/L-245 28-11-1960	15-12-1960	14-12-1961	M/s Tipco, The Industrial Plastics Corporation Ltd., Bombay	do
CM/L-246 28-11-1960	15-12-1960	14-12-1961	M/s Research Chemical Laboratories, Madras	Ferro-Gallo Tannate Fountain Pen Ink (0·1 Percent Iron Content) (IS: 220-1959)
CM/L-247 28-11-1960	15-12-1960	14-12-1961	M/s Associated Instrument Manufacturers (I), New Delhi	Instruments for Testing Pencil Lead (IS: 1375-1959): a) Transverse Strength Testing Machine b) Apparatus for Determination of Wear of Slip c) Apparatus for Determination of Friction of Slip d) Blackness Indicator

(*Continued on next page*)

NEW LICENCES GRANTED — *Contd*

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-248 19-12-1960	20-12-1960	19-12-1961	M/s Kaira District Co-operative Milk Producers' Union Ltd., Kaira District, Gujerat State	Infant Milk Foods (IS: 1547-1960)
CM/L-249 19-12-1960	1-1-1961	31-12-1961	M/s Delton Cable Company, Delhi	PVC Cables and Cords (250 and 660 Volts Grade) (IS: 694-1960)
CM/L-250 26-12-1960	1-1-1961	31-12-1961	M/s Krishnaveni Ink Factory, Madras	Ferro-Gallo Tannate Fountain Pen Ink (0·1 Percent Iron Content) (IS: 220-1959)
CM/L-251 26-12-1960	1-1-1961	31-12-1961	M/s Krishnaveni Ink Factory, Madras	Dye Based Fountain Pen Inks, Blue, Green, Violet and Red (IS: 1221-1957)
CM/L-252 26-12-1960	1-1-1961	31-12-1961	M/s Tata-Fison Private Ltd., Bombay	Copper Oxychloride Water Dispersible Powder Concentrates (IS: 1507-1959)
CM/L-253 26-12-1960	1-1-1961	31-12-1961	M/s Travancore Chemical & Manufacturing Co. Ltd., Manjummel, Alwaye	do
CM/L-254 26-12-1960	1-1-1961	31-12-1961	M/s Swastik Rubber Products Ltd., Kirkee, Poona	Rubber-Insulated Cables, VIR (Vulcanized Rubber-Insulated) 250 Volt Grade (IS: 434-1953)
CM/L-255 29-12-1960	1-1-1961	31-12-1961	M/s Shree Ram Oil & General Mills, Gurgaon (Punjab)	Corn Flakes (IS: 1158-1957)
CM/L-256 29-12-1960	15-1-1961	14-1-1962	M/s Tata-Fison Private Ltd., Cochin	Copper Oxychloride Dusting Powders (IS: 1506-1959)
CM/L-257 29-12-1960	15-1-1961	14-1-1962	do	Copper Oxychloride Water Dispersible Powder Concentrates (IS: 1507-1959)
CM/L-258 28-12-1960	1-2-1961	31-1-1962	M/s Boots Pure Drug Co. (India) Private Ltd., Bombay	do

LICENCES RENEWED

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-21 3-12-1956	10-12-1960	9-12-1963	M/s Devidayal Metal Industries (Pvt.) Ltd., Bombay	Wrought Aluminium and Aluminium Alloy Sheets, Strips and Circles (IS: 21-1959)
CM/L-23 19-12-1956	1-1-1961	31-12-1961	M/s Deccan Aluminium Stores, Bombay	Wrought Aluminium and Aluminium Alloy Utensils (IS: 21-1959)
CM/L-24 19-12-1956	1-1-1961	31-12-1961	M/s Light Metal Works, Bombay	do
CM/L-34 4 11 1957	16-11-1960	15-11-1961	The National Insulated Cable Co. of India Ltd., Calcutta	Hard-Drawn Copper Solid and Stranded Conductors (IS: 282-1951)
CM/L-35 4-11-1957	16-11-1960	15-11-1961	do	Bare Annealed Copper Wire (IS: 396-1953)
CM/L-36 4-11-1957	16-11-1960	15-11-1961	do	Hard-Drawn Stranded and Steel-Cored Aluminium Conductors (IS: 398-1953)
CM/L-37 4-11-1957	16-11-1960	15-11-1961	do	Rubber-Insulated Cables and Flexible Cords (IS: 434-1953)
CM/L-38 4-11-1957	16-11-1960	15-11-1961	do	Cotton-Covered High-Conductivity Annealed Round Copper Wire (IS: 450-1953)
CM/L-39 4-11-1957	16-11-1960	15-11-1961	M/s Rashtriya Metal Industries Ltd., Bombay	Wrought Aluminium and Aluminium Alloy Utensils (IS: 21-1959)
CM/L-40 4-11-1957	16-11-1960	15-11-1961	do	Wrought Aluminium and Aluminium Alloy Sheets, Strips and Circles (IS: 21-1959)
CM/L-100 18-9-1958	1-10-1960	30-9-1961	The Central Trading Co. Pvt. Ltd., Calcutta	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-101 18-9-1958	1-10-1960	30-9-1961	Travancore Timber & Products, Kottayam (Kerala State)	do
CM/L-105 31-10-1960	17-11-1960	16-11-1961	M/s Sylvan Plywood Mills, Kottayam (Kerala State)	do
CM/L-107 4-11-1958	17-11-1960	16-11-1961	The Assam Veneer & Saw Mills Ltd., Calcutta	do
CM/L-108 4-11-1958	17-11-1960	16-11-1961	The Asiatic Plywood Industries, Calcutta	do
CM/L-109 4-11-1958	17-11-1960	16-11-1961	M/s Savlar Paint & Varnish Works, Bombay	i) Oil Paste for Paints, Zinc Oxide (IS: 98-1950) ii) Oil Paste for Paints, Zinc Oxide, Reduced (IS: 99-1950)

(*Continued on next page*)

LICENCES RENEWED — *Contd*

No. of Licence and Date of Issue	Period of Validity from	to	Name and Address of the Licensee	Article Covered by the Licence and Number of Relevant Indian Standard
CM/L-110 23-12-1958	1-1-1961	31-12-1961	M/s Jaipur Metals & Electricals Ltd., Jaipur	Hard-Drawn Copper Solid Conductors for Overhead Power Transmission Purposes (IS: 282-1951)
CM/L-111 16-12-1958	1-1-1961	31-12-1961	M/s Beliaghata Timber Works Pvt. Ltd., Calcutta	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-112 26-12-1958	1-1-1961	31-12-1961	The Kesar Sugar Works Ltd., Bombay	Hydroquinone, Photographic Grade (IS: 388-1952)
CM/L-143 24-9-1959	1-10-1960	30-9-1961	The Travancore Plywood Industries, Punalur (Kerala State)	Tea-Chest Plywood Panels (IS: 10-1953)
CM/L-149 25-9-1959	1-10-1960	30-9-1961	M/s Enco Plywood & Saw Mills Industries, P.O. Siliguri, Distt. Darjeeling	do
CM/L-154 15-10-1959	1-11-1960	31-10-1961	M/s Mysore Commercial Union Ltd., Bangalore	do
CM/L-155 16-11-1959	1-1-1961	31-12-1961	M/s Bombay Chemical Pvt. Ltd., Bombay	Pyrethrum Extracts (IS: 1051-1957)
CM/L-156 20-11-1959	1-12-1960	30-11-1961	M/s Sulekha Works Ltd., Calcutta	Ferro-Gallo Tannate Fountain Pen Ink (0·1 Percent Iron Content) (IS: 220-1959)
CM/L-157 23-12-1959	1-1-1961	31-12-1961	M/s Shashi Brothers Pvt. Ltd., Bombay	Rubber-Insulated Cables, TRS (Tough Rubber Sheathed) Type 250-Volt Grade and Vulcanized Rubber Insulated Cables, Taped, Braided and Compounded Type 250 Volts and 660 Volts (Weather Proof) (IS: 434-1953)

STANDARDS NEWS — *Continued from p. 128*

Furthermore, the Directorate of Export Promotion, Ministry of Commerce & Industry, has requested the various Export Promotion Councils to examine the recommendations of ISI with regard to implementation of Indian Standards and ISI Certification Marks Scheme. In addition, the Directorate has sought information on the following lines:

a) Items/goods with which the Council is concerned;
b) Items out of (a) above for which Indian Standards exist;
c) Measures, if any, that are being taken by the Council for getting Indian Standards prescribed for other items;
d) Measures that are being taken or proposed to be taken by the Council for promotion of only those goods which bear ISI Certification Marks; and
e) Measures that are being taken by the Council to indicate in their advertisement programmes the facilities that are available under the ISI Certification Marks Scheme.

At present, this is being examined by the Export Promotion Councils.

Liaison of ISO with United Nations

There is a great deal going on in the United Nations, especially in the Economic Social Council and its subordinate organizations on which standardization has a definite though generally unrecognized bearing. This has been brought out in a Report drawn up by the United Nations Liaison Officer of ISO who has made an appraisal of the 1959 to 1964 programmes of each of the specialized agencies of the UN. Among these, the following have a notable bearing on the ISO Technical Committees indicated against each:

a) Food and Agriculture Organization (FAO) — ISO/TC 34 — Agricultural Food Products;
b) International Atomic Energy Agency (IAEA) — ISO/TC 85 — Nuclear Energy;
c) International Labour Organization (ILO) — ISO/TC 80 — Safety Colours, ISO/TC 85 — Nuclear Energy, ISO/TC 88 — Pictorial Marking for Handling of Goods, ISO/TC 92 — Fire Tests on Building Materials and Structures and ISO/TC 94 — Protective Helmets; and
d) World Health Organization (WHO) — ISO/TC 12 — Quantities, Units, Symbols, Conversion Factors and Conversion Tables.

The Report points out that the Regional Economic Commissions under the Economic and Social Council, being faced generally with problems of immediacy, have been more apt to resort to standardization. The Liaison Officer has, therefore, recommended that a continuing relationship between each Member Body of ISO and its own country's Delegation is necessary to make clear to the UNO and its subordinate organizations the part which ISO can and should play in problems of UNO susceptible to standardization.

from the view-point of nutritional requirements of animals. They emphasized that under the conditions prevailing in the country where balanced feeding was not being followed in the case of about 80 percent of the cattle population, it would not be advisable at this stage to recommend the removal of most of the oil by solvent extraction. Other countries could afford to do it as they had other cheap sources of fat to make up the energy loss. It was also pointed out that fat played quite an important part in the nutrition of the animal and this fact should not be totally ignored. Further, oilcakes would be used in compounding balanced feed mixture with a guarantee for a minimum fat content and if most of the oil was removed from the oilcake, it would not be economic to make up the loss by the addition of other oil-rich feedstuffs like rice bran, maize, etc, which are in short supply.

Winding up the discussion, the Chairman stressed the following points:

a) The possibility of toxic residues in the solvent extracted oilcake,
b) The removal of oil which has a higher energy value, and
c) The prevailing malnutrition in Indian cattle and the absence of the practice of feeding balanced rations.

The Chairman pointed out that the stage had not come in our country when we could do away with most of the oil in the oilcakes meant for feeding animals and that a similar view had been taken by the Animal Nutrition Committee of the Indian Council for Agricultural Research at its recent meeting.

The Committee, therefore, deferred the inclusion of the solvent extracted oilcakes in the draft Indian Standards for the present. But it was of the opinion that doors should be kept open for the formulation of a separate specification to cover this material at the proper time in future.

The Committee decided to take up the formulation of Indian Standards for Gram *Chuni* and Gram Husk as these were being consumed in large quantities for feeding the livestock.

Meat and Meat Products

At the third meeting of the Meat and Meat Products Sectional Committee, AFDC 18, held on 3 December 1960 in Manak Bhavan under the chairmanship of Shri V. A. Mehta, draft Indian Standard Specifications for the following two items were finalized:

a) Pork, and
b) Meat of Sheep and Goats Canned in Brine.

At the instance of the Development Council for Food Processing Industries of the Ministry of Commerce & Industry, the Committee decided to formulate Indian Standards for Canned Fish and Fish Products. For this purpose, the Fish and Fish Products Subcommittee, AFDC 18:4, was set up with Dr. N. L. Lahiry as convener.

The Committee decided that priority be given to the following subjects for formulation of Indian Standards:

a) Dried Salted Mackerel,
b) Canned, Dried and Frozen Prawns,
c) Canned Mackerel in Oil,
d) Canned Pomfret in Oil, and
e) Canned Sardnines in Oil.

Spices and Condiments

The third meeting of the Spices and Condiments Sectional Committee, AFDC 21, was held in Manak Bhavan on 3 January 1961 under the chairmanship of Dr. J. S. Patel, Agricultural Commissioner with the Government of India. The Committee discussed several matters relating to the first meeting of ISO/TC 34/SC 7 — Spices and Condiments, a note on which appears elsewhere in this issue (*see* p. 112).

BUILDING DIVISION

Building Stones

The Building Stones and Bricks Sectional Committee, BDC 6, held its eighth meeting on 12 December 1960 in New Delhi under the chairmanship of Shri K. B. Khushalani.

The Committee finalized for printing the Indian Standard Glossary of Terms Relating to Occurrence, Quarrying and Dressing of Building Stones.

The Committee also decided to take up the preparation of Indian Standard Specification for Sandstone Slabs for Flooring and Lining.

The Committee examined the draft Indian Standard Method of Test for Surface Softening Tendency of Natural Building Stone by Exposure to Acidic Atmospheres and called for further research data before finalization.

Builder's Hardware

The eleventh meeting of the Builder's Hardware Sectional Committee, BDC 15, was held on 29 and 30 December 1960 in Calcutta under the chairmanship of Shri Yousuf Mowjee. The Committee reviewed the printed standards on builder's hardware and decided that these standards should be revised with a view to incorporating metric dimensions and bringing them up-to-date so that the concerned industries may smoothly changeover to the metric system in time.

The following are some of the other important decisions taken at the meeting:

a) The draft Specifications for Fanlight Pivot, Door Stoppers, and draft revision of IS: 204-1950 were finalized in the light of the comments received during their wide circulation.
b) The draft revisions for the following standards were considered clause by clause and some provisions contained therein were modified:

IS : 205-1950 Butt Hinges,
IS : 206-1956 Tee and Strap Hinges,
IS : 208-1950 Door Handles, and
IS : 362-1951 Parliament Hinges.

The modified draft revisions were approved for wide circulation.

Measurement of Fluid Flow

The Fluid Flow Measurement Sectional Committee, BDC 17, held its tenth and eleventh meetings on 13 January 1961 and 25 January 1961 respectively under the chairmanship of Shri Kanwar Sain. The Sectional Committee nominated the Indian delegation to the meetings of ISO/TC 30/SC 1 — Liquid Flow Measurement in Open Channels and its Working Groups 1 and 4 dealing with Velocity Area Methods and Dilution Methods of Measurement of flow. The Committee considered in detail and finalized India's views on the documents discussed by the Working Groups and the Subcommittee at its New Delhi meeting (*see* p. 115).

Construction Plant and Machinery

The second meeting of the Construction Plant and Machinery Sectional Committee, BDC 28, was held on 12 December 1960 in New Delhi under the chairmanship of Shri R. S. Bhalla. The comments received during wide circulation of the draft specification for Batch Type Concrete Mixers were considered and the draft was finalized for adoption and publication.

The Committee agreed to take up preparation of specifications for the following items:

a) Asphalt Mixers, Portable Type;
b) Asphalt Pavers and Spreaders;
c) Concrete Placers;
d) Roller Pan Mixers;
e) Rollers;
f) Stone Crushers;
g) Weighbatchers.

CHEMICAL DIVISION

Paper

The tenth meeting of the Paper Sectional Committee, CDC 15, was held at Manak Bhavan on 12 January 1961 under the chairmanship of Shri C. A. Subrahmanyam, Chief Controller of Printing & Stationery, Government of India. The Committee recommended that drafts for Writing and Printing Papers; Paper for Permanent Records; Base Paper for Sensitized Papers; and Folding Box Board, Uncoated, as finalized at the meeting, be further processed for adoption as Indian Standards. It was decided that IS : 1064-1957 Paper Sizes should be revised to include untrimmed (raw stock) sizes as well; the draft Revision of this standard is under wide circulation.

The Committee decided to take up formulation of standards for ticket board, mill board, straw board and grey board. It decided to defer work on paper for electrical purposes and corrugated fibre boards for containers as it was felt that the manufacture of these items was not yet fully established in the country. The proposal for the formulation of a standard for multi-walled paper bags was also not taken up by the Committee as it was felt that it should be handled by a Committee dealing with paper products.

Acids and Fertilizers

The Acids and Fertilizers Sectional Committee, CDC 24, at its second meeting held at Manak Bhavan on 30 November 1960 under the chairmanship of Shri C. R. Ranganathan finalized for publication draft Revision of IS : 266-1950 Sulphuric Acid and a Specification for Urea, Technical and Pure.

The Committee considered the recommendations of the Development Council for Heavy Chemicals (Acids and Fertilizers) for specifying another grade in IS : 294-1954 Specification for Superphosphate (*Tentative*) and agreed to introduce a grade containing 18·0 percent minimum of water soluble phosphates (as P_2O_5). The Committee also decided to raise the maximum limit for free phosphoric acid to 4·0 percent in the specification, and to revise the standard while making these modifications.

The Committee also decided to revise IS: 263-1950 Specification for Boric Acid and IS: 265-1950 Specification for Hydrochloric Acid, after making the necessary amendments.

The Committee approved for wide circulation draft specifications for ammonium sulphate nitrate and calcium ammonium nitrate.

Water

Dr. T. R. Bhaskaran conducted the fourth meeting of the Water Sectional Committee, CDC 26, held on 21 December 1960 at Madras in the absence of the Chairman, Dr. S. M. Kaji. Dr. Bhaskaran Stressed that in view of the rapid industrialization of the country, it was very necessary to lay down standards to control the pollution of rivers by trade effluents. He pointed out that the draft standard prescribing requirements for river water for various uses would serve as a guide in determining the extent of permissible pollution. He said that the Committee should also pay immediate attention to evolve standards for trade effluents and industrial water for various industries.

The Committee finalized for printing draft Indian Standard Code of Practice for Water for Marine Boilers and approved for wide circulation the following draft standards:

a) Methods of Sampling and Industrial Water for Physical and Chemical Tests, and
b) Requirements for River Water.

The Committee decided to formulate a draft Standard Code of Practice for Treatment of Water for Locomotive Boilers.

Brushware

The Brushware Sectional Committee, CDC 31, at its second meeting held in Bombay on 14 December 1960 under the presidentship of Shri R. R. Vaidya, finalized for publication the draft revision of IS : 384-1954 Specification for Brushes, Paints and Varnishes, Flat. This finalized revision, which takes care of all improvements suggested and found acceptable sets the basic pattern for revision of the other printed brushware standards and those under formulation.

A highlight of the work of the Committee was the approval for wide circulation of the draft Indian Standard Specification for Bristles. While all the essential requirements for bristles, as stipulated under the Bristle Grading and Marking Rules 1950, Government of India, have been incorporated in this draft, an attempt has also been made by the Committee to make the determination of some of the characteristics such as stiffness, colour, distinguishing bristles from vegetable fibre or hair, etc, more objective.

The Committee also noted that proposed draft specification for important consumers' items like the tooth brush and shaving brush had been processed by its Toilet Brushes Subcommittee, CDC 31: 2. Besides, it had taken into account the processing of the proposed draft specification for Nylon Monofilaments (Synthetic Bristles) which is the basic raw material used for the manufacture of most toilet and other types of brushes.

In addition, the following subjects related to the Brushware Industry were found acceptable for preparing Indian Standards:

a) Brushes, Carriage Washing;
b) Code of Practice for Maintenance of Brushes;
c) Cements used for Setting of Bristles in Brushes; and
d) Glossary of Terms Relating to the Brushware Industry.

For item (d) a new Glossary of Terms Subcommittee, CDC 31: 5 was constituted.

ELECTROTECHNICAL DIVISION

Electrical Conductors and Accessories

The fifth meeting of the Electrical Conductors and Accessories Sectional Committee, ETDC 2, held on 14 January 1961 at Bombay under the chairmanship of Shri V. Venugopalan was preceded by the meetings of the Bare Conductors Subcommittee, ETDC 2: 1, Machine Winding Wires Subcommittee, ETDC 2: 2, and the Insulated Cables Subcommittee, ETDC 2 : 3. Draft specifications for the following subjects, which had completed wide circulation, were finalized for publication as Indian Standards.

a) Hard-Drawn Stranded Aluminium Conductors for Overhead Power Transmission Purposes (Revision of IS: 398-1953),
b) Reels and Drums for Bare Wire,

c) Paper-Covered Rectangular Copper Conductors for Transformer Windings, and
d) Aluminium Conductors in Insulated Cables.

In all the above documents, dimensions have been given in rationalized metric units.

In addition, the draft specification for Aluminium Conductor Fittings for Overhead Power Lines was approved for wide circulation.

Accepting a suggestion from the South African Bureau of Standards, the Committee decided to provide information, in an addendum, on making cable terminal joints for paper insulated cables in IS: 1255-1958.

Another important aspect examined was the question of conducting investigations regarding the behaviour of rubber insulated cables with reduced insulation thickness as agreed to at the 1957 Commonwealth Standards Conference. The Committee decided on the procedure to carry out the test and noted that a number of manufacturers and the Post & Telegraph Department have agreed to proceed with investigations so that data becomes available in time for the next Commonwealth Standards Conference.

The Committee also decided to take up work on Cadmium Copper Conductors required for electric traction purposes.

Electroplating

The eighth meeting of the Electroplating Sectional Committee, ETDC 12, was held in New Delhi on 30 December 1960. In the absence of the Chairman, Dr. T. Banerjee, the meeting was presided over by Shri A. S. Santiago of Hindustan Aircraft Limited, Bangalore. The Committee meeting was preceded by meetings held from 27 to 29 December 1960 of Subcommittees for Silver Plated Finishes (ETDC 12:2) Code of Practice for Electroplating (ETDC 12:4) and Anodes for Electroplating (ETDC 12:5); and the Panel for Brass Plating (ETDC 12/P-1).

The Committee finalized for printing draft specifications for the following items which had completed wide circulation:

a) Copper Plating,
b) Industrial Silver Plating, and
c) Brass Plating.

The finalization of specification (c) was subject to confirmation by investigation of a few points.

The following draft standards were approved for wide circulation:

a) Code of Practice for Pre-treatment of Steel, Copper and Copper Base Alloys, Zinc and Zinc Base Alloys for Electroplating;
b) Code of Practice for Hard-Chromium Plating;
c) Specification for Silver Anodes for Electroplating; and
d) Specification for Nickel Anodes.

While discussing the specification (d), the Committee recognized the important part played by the physical structure of crystal grains of anodes in producing the right quality of deposit. The Committee recommended that investigations in this regard be conducted at the Central Electrochemical Research Institute, Karaikudi, to try and establish correlation between grain structure and performance characteristics of nickel anodes.

The Committee appointed Dr. S. K. Panikkar of Hind Cycles Limited as the new Convener of the Subcommittee for Code of Practice for Electroplating and Shri Kantilal T. Dalal as Convener of the Panel for Gold Plating.

The meeting of the Sectional Committee was attended by Mr. Sven Nilsson, UNTAA Expert of Sweden, by special invitation. Mr. Nilsson told the Committee about the progress of electroplating and metal-finishing standards in Sweden and how the industry in that country had taken advantage of developments in this field.

Rotating Machinery

At its third meeting held on 10 January 1961 in Bombay under the chairmanship of Mr. F. Wade-Cooper the Rotating Machinery Sectional Committee, ETDC 15, reviewed the work done by IEC/SC 2B, 2F and 2G at their New Delhi meetings during 31 October to 12 November 1960 and examined in what manner the decisions taken there affected its own work. This meeting was preceded by a meeting of the Industrial Motors Subcommittee, ETDC 15:1, and Panel for Textile Motors, ETDC 15:1:1.

The important aspects discussed at these meetings were modifications to IS:325 1959 Specification for Three-Phase Induction Motors for Industrial Use with a view to introducing Class 'E' insulation, and extending the scope of IS:1231-1958 Dimensions of Motors to cover Class 'E' Insulated Motors.

The Committee also examined and got ready a preliminary draft Specification for AC Three-Phase Induction Loom Motors. This draft specification, in addition to giving essential performance requirements, specifies dimensions of motors required for driving looms for light fabrics.

The Committee took up the work on dimensions of Flange Motors and Hollow Shaft Motors. India has been requested to provide the first draft on the latter subject for consideration by the IEC Subcommittee 2B.

The Committee also noted with satisfaction that a large number of manufacturers was able to adopt IS: 1231-1958 not only for open type motors but also for the totally enclosed motors.

ENGINEERING DIVISION

Cargo Marking

Shri B. L. Hakim, the Chairman of the Cargo Marking Sectional Committee, EDC 37, presided over the third meeting of the Committee held in New Delhi on 12 January 1961. The meeting was mainly devoted to consider various issues relating to the first meeting of ISO/TC 88—Pictorial Markings for Handling of Goods (*see* p. 111).

Small Tools

The third meeting of the Small Tools Sectional Committee, EDC 45, took place in Bombay on 25 and 26 November 1960 under the chairmanship of Mr. O. D. Friedman. The following three draft Indian Standards which had completed their wide circulation were finalized for adoption and publication:

a) Dimensions for Milling Cutters,
b) General Requirements for Milling Cutters, and
c) Specifications for Reamers.

The Committee also approved the following draft Indian Standards for wide circulation:

a) Dimensions of Driving Squares,
b) Specification for Thread Cutting Dies, and
c) Specification for Hacksaw Blades.

STRUCTURAL AND METALS DIVISION

Metal Standards

The fourth meeting of the Metal Standards Sectional Committee, SMDC 1, was held at Bombay on 26 and 27 December 1960. Shri R. G. Bhatawadekar, Metallurgical Adviser, Tata Locomotive & Engineering Co. Ltd., was in the chair.

The Committee finalized for publication the draft Indian Standard Code for Designation of Steel.

The following two proposed draft Indian Standards were approved for wide circulation for eliciting comments:

a) Coding and Classification for Non-Ferrous Scrap Metals and Residues, and
b) Code for Designation of Pig Iron and Ferro-Alloys.

Code (a) has been prepared with a view to facilitating trade by establishing a generally recognized usage and to eliminate ambiguity and confusion arising from individual interpretation of terms commonly used in the trade in the field of non-ferrous scrap metals and residues.

The Committee appointed drafting panels to undertake work on the following:

a) Colour Code for the Identification of Metallic Materials,
b) Glossary of Terms Relating to Foundry Technology, and
c) Code for Designation of Non-Ferrous Metals and Alloys.

The Committee decided to consider the Colour Code for Identification of Metallic Material as applicable to Steel and Steel Products, Copper and Copper Alloys, and Aluminium and Aluminium Alloys. It authorized the Panel to co-opt representatives from the respective fields.

Mr. P. J. O'Leary was nominated as the Convener to the Panel SMDC 1/P-6 to prepare the preliminary drafts for:

a) Round Bars for the Production of Metric Threaded Components, and
b) Hexagonal Bars for the Production of Metric Threaded Components.

Cast Iron and Malleable Cast Iron

The Cast Iron and Malleable Cast Iron Sectional Committee, SMDC 9, held its third meeting on 23 and 24 September 1960 at Bombay. The Chairman of the Committee, Shri Pranlal Patel presided. The Committee decided to co-opt the Institute of Indian Foundrymen as one of its members.

The draft Indian Standard Specification for Iron Castings with Spheroidal or Nodular Graphite was finalized for publication.

The Committee also considered the preliminary draft Specification for Cast Iron Spigot and Socket Soil, Waste and Ventilating Pipes, Fittings and Accessories and approved it for wide circulation. In connection with the revision of IS: 210-1950 Specification for Grey Iron Castings, and IS: 227-1954 Specification for Malleable Iron Castings, the replies received on the questionnaire sent out were considered in detail. The Committee decided to take up their revision.

The two new subjects accepted for examination in connection with the preparation of standards are the following:

a) Specification for Cast Iron Traps, and
b) Code of Practice for Laying of Cast Iron Pipes.

The Committee also considered the report from Shri Pranlal Patel who had attended the first meeting of the Working Group ISO/TC 25/WG 1 — Malleable Cast Iron held on 27 and 28 June 1960 at Dusseldorf. Shri Patel in his report has suggested that the National Metallurgical Laboratory, Jamshedpur, should be requested to take up research work on malleable iron in view of the high phosphorus contents in our normal grades of pig iron which in turn influence the properties of malleable iron particularly the temper brittleness.

Light Metals and Their Alloys

The fifth meeting of the Light Metals and Their Alloys Sectional Committee, SMDC 10, was held at Bombay on 21 and 22 November 1960 under the chairmanship of Shri K. K. Bhasin. The Committee finalized three draft Indian Standard Specifications for the following:

a) Anodized Aluminium,
b) Rolled Aluminium Rods (Electrical Conductor Grade) for Electrical Purposes, and
c) 99·7 Percent Primary Aluminium Notched Bars and Ingots for Remelting for Aircraft Purposes.

The Committee also approved for wide circulation the following three draft specifications:

a) Inspection and Testing Procedure for Aluminium Ingots, Aluminium Alloy Ingots and Castings, Magnesium Ingots, Magnesium Alloy Ingots and Castings for Aircraft;
b) Aluminium Alloy Hardeners (Master Alloys) for Remelting; and
c) Wrought Aluminium for Electrical Purposes — Wire (Other Than That Used for Overhead Conductors).

It was noted by the Committee that the draft Indian Standard Specification for Inspection and Testing Procedure for Aluminium and Aluminium Alloys for Aircraft was under preparation.

The Committee also decided that the ISI Directorate with the assistance of certain organizations should formulate preliminary proposals with regard to metricization of Indian Standards on Aluminium.

Copper and Copper Alloys

The sixth meeting of the Copper and Copper Alloys Sectional Committee, SMDC 11, was held at Bombay on 29 to 31 December 1960. Shri K. C. Choudhuri, of Research, Designs & Standards Organization, Chittaranjan, was in the chair.

The Committee finalized for publication the following three draft specifications:

a) Naval Brass Rods and Sections (Suitable for Machining and Forging) (Revision of IS: 291-1951);
b) Brass Tubes for General Purposes (Revision of IS: 407-1953); and
c) Copper Plate, Sheet and Strip for Industrial Purposes.

The Committee also finalized for publication the following amendments:

a) Draft Amendments No. 1 and 2 to IS: 191-1958 Copper (*Revised*);
b) Draft Amendment No. 1 to IS: 410-1959 Rolled Brass Plate, Sheet, Strip and Foil (*Revised*); and
c) Draft Amendment No. 1 to IS: 422-1959 Brass Sheet and Strip for the Manufacture of Utensils.

The following five draft specifications were approved for wide circulation for eliciting comments:

a) Nickel Silver Sheet and Strip for General Purposes;
b) Phosphor Copper Ingot;
c) Brass Strip for the Manufacture of Pen Nibs;
d) Free Cutting Brass Rods and Bars (For Use in Screw Machines) (Revision of IS: 319-1951); and
e) High Strength Brass Rods, Bars and Sections (Revision of IS: 320-1951).

The Committee also decided to take up preparation of specifications for the following new subjects:

a) Aluminium Bronze Ingots and Castings for Overhead Fittings in Electrical Traction,
b) Brass Wire for Cold Heading and Free Cutting Purposes,
c) Cast Copper and Copper Alloy Pipe Fittings,
d) Cast Nickel Silver Alloys, and

e) Rationalization of Copper and Copper Base Alloys.

The Committee set up a subcommittee to undertake work on cast copper and copper alloy pipe fittings. One drafting panel was also set up to prepare a draft standard on brass wire for cold heading and free-cutting.

It was decided that IS:24-1956 Brazing Solder and IS:613-1954 Copper Bars and Rods for Electrical Purposes (*Revised*) may be taken up for second revision.

Welding General

The fourth meeting of the Welding General Sectional Committee, SMDC 14, was held at Madras on 30 November 1960. Shri K. K. Rao, Director, Research Designs & Standards Organization, Ministry of Railways, was in the chair. Shri Rao, in his opening remarks, stated that welding would be adopted on a large scale on the Indian Railways and especially in the construction of railway bridges as this would lead to considerable economy. He also expressed the hope that Indian Standards so far formulated would greatly assist the Railways in this task.

In this meeting, the Committee finalized for publication two Codes of Practice, one relating to Training and Testing of Oxy-Acetylene Welders, and the other to Metal Arc Welding of Mild Steel. The first code would be of great assistance in training welders who could undertake gas welding and the second would help designers in specifying suitable procedure for welding of mild steel constructions.

The Committee also finalized for publication draft Amendments relating to IS:813-1956 Scheme of Symbols for Welding and IS:814-1957 Specification for Covered Electrodes for Metal Arc Welding of Mild Steel.

The following two proposed draft Indian Standard Specifications were approved for wide circulation for eliciting comments:

a) Hose Fittings for Welding and Cutting Appliances, and
b) Filler Rods and Wires for Inert-Gas Arc Welding.

Drafting panels were appointed to undertake work on preparing: (a) Code of Practice for Argon Arc Welding of Aluminium and Stainless Steels, and (b) Handbook for Welding Supervisors.

The Committee also decided to take up preparation of Codes of Practice for Training and Testing Metal Arc and Gas Welders for Specialized Jobs.

It was felt that time is not yet opportune for the formulation of Indian Standards relating to (a) Codes of Practice for Sub-merged Arc Welding and (b) Specification for Filler Wires and Flux Powders for Sub-merged Arc Welding. The Committee, however decided that as much data as possible should be collected on these subjects for consideration at the next meeting.

Structural Welding

The third meeting of the Structural Welding Sectional Committee, SMDC 15, was held at Madras on 28 November 1960. Shri D. S. Desai, Director, M. N. Dastur & Co. (Private) Ltd., Calcutta, was in the chair. In his opening remarks, the chairman stressed the need for expediting the work relating to the Handbook for Welding Engineers, which, he added, was required urgently for popularizing welding in India. The Chairman also urged that the Indian Standards so far formulated should be widely accepted and used in the country in order to derive full benefit of the work already done by ISI. He especially urged the Government departments and the Railways to follow Indian Standards.

In this meeting, the Committee finalized for publication the draft ISI Handbook for Manual Metal Arc Welding for Welders. The Committee also stressed the need for translating this handbook in Hindi and other regional languages in due course. It was decided that while translating this handbook in Hindi many of the technical terms in English should be maintained, as English terms were being used and understood by welders from all parts of India.

The proposed draft Indian Standard Code of Practice for Use of Welding in Structures Subject to Dynamic Loading was approved for wide circulation. In this connection, the Committee decided to refer to the Central Mechanical Engineering Research Institute, Durgapur, the work on investigation into the behaviour of welds subjected to fatigue.

The Committee decided to take up work on the revision of IS:816-1956 Code of Practice for Use of Metal Arc Welding for General Construction in Mild Steel in order to bring this standard in line with the draft revision of IS: 800-1956 Code of Practice for Use of Structural Steel in General Building Construction.

Drafting panels were appointed to undertake detailed work on Code of Practice for Use of Welding in Pipelines and on Handbook for Gas Welders. It was also decided to prepare a Code of Practice for Use of Welding in Tubular Construction.

The Committee agreed on the need to take up work on welding of mild steel bars used in reinforced concrete work.

TEXTILE DIVISION

Cotton Mill Shuttles

The Cotton Mill Shuttles Sectional Committee, TDC 20, in its third meeting held on 4 January 1961 in Bombay under the chairmanship of Shri M. Rangachari finalized for adoption and publication the draft Indian Standard Specification for Shuttles for Plain Calico Looms: Kissing Type. The Committee also approved for wide circulation the draft Indian Standard Specification for Shuttles for Pirn Changing Automatic Looms (Cotton). Besides, the Committee suggested to take up the formulation of Indian Standard Specifications for the following items:

a) Shuttles for Plain Calico Looms: Self-Threading Type;
b) Weft Pirn for Shuttles for Plain Calico Looms;
c) Weft Pirn for Shuttles for Pirn Changing Automatic Looms; and
d) Fittings of Shuttles for Pirn Changing Automatic Looms, such as:
   i) Shuttle Jaw,
   ii) Sliding Cover,
   iii) Spring Washer,
   iv) Shuttle bolts and nuts, and
   v) Shuttle tips.

Tapes for Electrical

The Tapes for Electrical Purposes Sectional Committee, TDC 35, in its second meeting held on 21 November 1960 in Calcutta under the chairmanship of Shri A. K. Choudhuri, approved for wide circulation the draft Indian Standard Specification for Cotton Tape for Electrical Purposes.

NEW INDIAN STANDARDS

Indian Standards recently published are briefly described here

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Commercial Food Grain Storage Structures for the *Northern* Region

The requirements and the method for construction of storage structures for the storage of food grains in bags as well as in bulk suitable for areas having such geographical conditions as in the *Northern* Region and chiefly intended for trade and government purposes are covered in IS: 604-1959 Code of Practice for Construction of Food Grain Storage Structures Suitable for Trade and Government Purposes for the *Northern* Region.

The *Northern* Region comprises the areas having geographical and soil conditions as are met with in the cold and hilly tracts of Himachal Pradesh and the States of Jammu & Kashmir, Punjab and Uttar Pradesh. The annual average rainfall in most of the areas falling in this region is about 125 cm (or 50 in.). The region, as a whole, has long severe cold winters and short cool summers. During the winter season, some areas of the region have frequent snowfalls, and the snow accumulates on the top of the structures and around them. This snow does not clear off for a number of days and, unless adequate provision is made, snow water may trickle inside the structure through the roof and may seep through the walls and the floor. The foundation soil in the region is rocky, moorum or loamy. At places, it is also sandy. All such geographical conditions have, therefore, been taken into account while laying down this code of practice.

Besides, this code also meets the basic requirements for food grain storage structures which are essential to hold food grains without loss. With this end in view, this code is designed for the construction of structures which would be insect-proof and would permit effective control of insect pests of stored food grains, which would afford complete protection against rodents, such as rats, squirrels and bandicoots, birds and monkeys, and which would entirely exclude snow or rain water and ground moisture. Due weightage has also been given to the fact that the structures in the region have generally timber floor, timber walls and gabled type roofs made of timber planking because of the easy availability of timber in these areas.

Milk Bottle Crates

The Indian Standard Specification for Milk Bottle Crates (IS: 1613-1960) prescribes the dimensions and other requirements for three types of milk bottle crates, namely:

a) Type 1 — to hold 12 one-litre milk bottles,
b) Type 2 — to hold twelve 500-ml milk bottles, and
c) Type 3 — to hold thirty 250-ml milk bottles.

The main consideration in the preparation of this standard was the interstackability of the different crates used for the different types of milk bottles. For this purpose, it was decided that the length and breadth of the milk bottle crates for the different types of milk bottles should be the same. The dimensions of the crate have been adjusted to suit the glass milk bottles as specified in IS: 1392-1959 Specification for Glass Milk Bottles.

Cuprous Oxide Water Dispersible Powder Concentrates and Dusting Powders

Cuprous oxide water dispersible powder concentrates and cuprous oxide dusting powders containing varying percentages of technical cuprous oxide are largely used as fungicides for the control of plant diseases in agriculture and horticulture. Their requirements and the methods of test have been covered in the following two specifications:

IS: 1665-1960 Cuprous Oxide Water Dispersible Powder Concentrates, and
IS: 1669-1960 Cuprous Oxide Dusting Powders.

These specifications belong to a series of Indian Standard Specifications for pesticides and their formulations. Other standards in this series cover BHC, DDT, dieldrin, aldrin, endrin, copper oxychloride and their formulations; lime sulphur solutions; pyrethrum extracts; nicotine sulphate solution; zinc phosphide; 2,4-D sodium; BHC smoke generators; fumigants, like ethylene-dichloride carbon-tetrachloride mixture, ethylene dibromide, methyl bromide; and common names for pesticides.

BUILDING DIVISION

Air-Conditioners

The purpose of IS: 1391-1960 Specification for Room Air-Conditioners is to establish minimum standards of performance of room air-conditioners and to provide means for establishing reliable ratings. This standard prescribes constructional and performance requirements and methods for establishing ratings of room air-conditioners of all types, which operate non-frosting when cooling and dehumidifying at standard rating conditions.

The manufacture of room air-conditioners has advanced rapidly since 1953 and at present, almost all the components are indigenously manufactured, except the hermetically sealed and semi-sealed compressors and controls. It is necessary that the indigenously manufactured items should conform rigidly to the required standard specifications.

Fire Safety of Buildings

The latest addition to the series of fire safety codes being formulated by ISI is IS: 1645-1960 Code of Practice for Fire Safety of Buildings (General): Chimneys, Flues, Flue Pipes and Hearths. The purpose of issuing this series is to provide reliable and adequate guidance with regard to fire prevention, fire fighting and fire grading of buildings.

The requirements for chimneys, flues, flue pipes and hearths may be considered roughly under two main types based on the differences of application. Chimneys, flues, flue pipes and hearths for domestic fires, such as in dwelling houses, are considerably different from those of boiler plant equipment employed in large industries.

Dimensions and clearances given in the code are based on fire tests made in UK and the West and these dimensions will be confirmed or suitably altered, as the case may be, in the next revision of this code, when suitable data will be available for the conditions prevailing and the materials available in India.

Timber, Coniferous and Cut Sizes

The following two standards deal with coniferous sawn timber and rules for grading of cut sizes of timber:

IS: 190-1960 Specification for Coniferous Sawn Timber Intended for Further Conversion (*Second Revision*); and

IS: 1629-1960 Rules for Grading of Cut Sizes of Timber.

The specification for coniferous sawn timber was first published in 1950. The first revision was undertaken as a result of experience gained in the use of the standard to include three grades. This second revision, which also covers the requirements of three grades of coniferous sawn timber, namely, Special Grade, Grade 1 and Grade 2, was undertaken as a result of usage particularly with regard to the question of recovery. Since this is an important aspect from the point of view of users, opinions were solicited from various users and producers as to the need for a clause on recovery in addition to the quality requirements. It was found that the majority of opinion was unfavourable to the retention of the recovery clause in addition to quality requirements. It has, therefore, been laid down that the timber shall be accepted ordinarily on the basis of quality requirements. However, coniferous sawn timber, which does not conform to the quality requirements, may be accepted on the basis of the recovery, if required, by the purchasers.

The need for a standard defining rules for grading cut sizes of timber, based on defects for both structural and non-structural use has been felt for a long time in view of various methods current in grading of timber in general. The Indian Standard Rules for Grading of Cut Sizes of Timber (IS: 1629-1960) which is a necessary adjunct to IS: 1331-1958 Specification for Cut Sizes of Timber would facilitate stockists in suitably separating and grading the cut sizes already available and help the consumer in making his demand more specific according to the use to which the timber is to be put and also on the strength requirements.

Construction of Wood Stairs

The design of wood stairs is in no way complicated and most of the structural dimensions, such as thicknesses of planks, sizes of joists and railings, etc, as generally used are well above the strength requirements. But general dimensions, namely, the width of staircase, the rise and tread of steps, the pitch angle, the length of flight, etc, are related to several aspects of human comfort in the use of stairs, and they have been developed as a result of long experience. Several practices prevail in this respect, mainly in the form of thumb rules and these have been examined to arrive at the uniform practice laid down in the Indian Standard Code of Practice for Design and Construction of Wood Stairs (IS: 1634-1960).

Plywood for General Purposes

The Indian Standard Specification for Plywood for General Purposes (*Revised*) (IS: 303-1960) is a revision of the specification published in 1951 on this subject under the title 'Specification for Commercial (Common) and Moisture-Proof Plywood (*Tentative*) (IS: 303-1951)'. The earlier specification was based largely on the specification being followed at the time by the Directorate General of Supplies & Disposals and on the spot investigations conducted on the grading of plywood in different parts of the country. The experience gained in the use of the standard revealed that the standard did not cover all the grades of plywood which were marketed by the industry. Further, as the grading of plywood was based upon use rather than quality of the material, it had led towards an inadequate understanding of the uses of particular grades or the suitability of any grade for a particular job. While taking note of this experience, the present revision has also been prepared with a view to bringing under the specification all those grades that are being manufactured by the industry.

The grading in the present revision is based upon the quality of the face veneers and the type of adhesive used in the manufacture of plywood. The former is responsible for the appearance of the plywood, whereas the adhesive used indicates the use to which any particular grade of plywood may be put. Appropriate species of timber have also been specified for 18 grades specified at present.

Dry Sieving

Sieve analysis is one of the quality requirements specified for many raw materials and finished products and in order to be able to produce comparable and reproducible results, it is important that uniform procedure for sieving should be adopted.

The aim of IS: 1607-1960 Methods for Dry Sieving is to lay down definite instructions regarding the quantity to be used for sieving, time of sieving, and the method of sieving on test sieves conforming to IS: 460-1953. The procedure outlined in this standard is suitable for materials which are non-hygroscopic and non-corrosive. Modifications, however, may have to be made for materials which are hygroscopic or corrosive and fragile and have acicular or laminar shape as these properties cause difficulties in sieving.

Damp-Proof Coursing Using Bitumen Felts

The latest addition to the series of the Indian Standards for waterproofing and damp-proofing of buildings and structures is IS: 1609-1960 Code of Practice for Laying Damp-Proof Coursing Using Bitumen Felts.

The Indian Standard Code of Practice for Waterproofing of Roofs with Bitumen Felts (IS: 1346-1959) published earlier in this series deals with the methods of using both fibre based and hessian based bitumen felts for waterproofing treatment of roofs of buildings. The present code (IS: 1609-1960) deals with the methods of application of bitumen felts as damp-proof coursing in the basement, floors and walls of existing and new buildings and structures to prevent ingress of moisture. Thus, these two codes together provide a guide regarding methods of protecting a building, from parapets to basement, from sources of moisture penetration.

Field Testing and Field Slaking of Lime

The following two Indian Standards deal with field testing and field slaking of building lime:

a) *Code of Practice for Field Testing of Building Lime and Lime Mortar* (IS: 1624-1960) — This code lays down the purpose and procedure of simple field tests for building lime, namely, visual examination for physical characteristics, hydrochloric acid test, test for soundness, test for workability, and test for transverse strength.

b) *Code of Practice for Field Slaking of Lime and Preparation of*

Putty (IS: 1635-1960) — Slaking is an essential operation in the preparation of lime at site for use in building construction. Improper slaking is attended upon by serious defects in mortars and plasters and subsequent maintenance work will be difficult and elaborate. Therefore, in the interest of sound construction, wherever lime is used, its complete slaking should be ensured. This code is intended to give necessary guidance for field slaking of lime so as to achieve this objective.

Mason's Tools

The Indian Standard Specification for Mason's Tools for Plaster Work and Pointing Work (IS: 1630-1960) lays down the material, essential dimensions and performance requirements of such tools commonly used in building construction. A variety of tools, such as trowels, rules, floats, etc, has been developed and used in our country for plaster and pointing work. These tools differ from region to region and in order to promote their mass production and improve their quality, it is necessary to rationalize their dimensions and specify the materials that should go in their manufacture. This standard has been prepared with this object in view. In addition, the types of use for which the tools are best suited are indicated.

Prestressed Concrete and Concrete Poles

The following two Indian Standards deal with structural use of prestressed concrete and prestressed concrete poles:

a) *Code of Practice for Prestressed Concrete* (IS: 1343-1960) — This code deals with the structural use of prestressed concrete and covers both work carried out on site and the manufacture of precast prestressed concrete units. It is based on considerations applying mainly to statically determinate structures. In the case of statically indeterminate structures, the provisions of the code may be applied with such modifications as found necessary to suit the special conditions of each individual case. This code is primarily intended for engineers and other qualified persons who are required to prepare or check designs in prestressed concrete and carry out the construction of prestressed concrete structures.

b) *Specification for Prestressed Concrete Poles for Overhead Power Traction and Telecommunication Lines* (IS: 1678-1960) — The purpose of this specification is mainly to define design requirements and test procedure for different types of prestressed concrete poles used in overhead electric power transmission, traction, telephone and telegraph lines. The specification relates chiefly to prestressed concrete poles in which initial compression has been induced by one of the pre-tensioned or post-tensioned systems. A standard covering prestressed concrete street lighting columns is under preparation.

CHEMICAL DIVISION

Distilled Water and Tests for Industrial Water

Requirements for water, distilled quality and physical tests for industrial water have been covered in the two standards reported below:

The Indian Standard Specification for Water, Distilled Quality (*Revised*) (IS: 1070-1960) prescribes the requirements and the methods of test for water, distilled quality, intended for general laboratory use, photograph washings, etc. In the present revision, use of permanent glass colour discs has also been permitted for determining *p*H and testing for ammonia.

The object of IS: 1631-1960 Methods of Test (Physical) for Industrial Water is to guide testing in laboratories. The tests covered in this standard are regarding general appearance, colour, turbidity, odour, *p*H value, electrical conductance, total solids, ignited residue, and suspended matter and total dissolved solids. Some of the methods prescribed may be applicable to sea water, sewage and trade effluents also, but these have not been specifically covered.

Blotting Paper

The requirements and methods of test for three grades of blotting paper used as a stationery item for absorbing ink have been covered in IS: 1396-1960 Specification for Blotting Paper. The production of blotting paper in the country is increasing. It is expected that this standard will assist manufacturers to control the quality of their products and consumers to obtain material of proper quality.

Gasoline and Aviation Turbine Fuels

The following four specifications prescribe the requirements and methods of tests for some of the petroleum fuels used in aviation and automobiles:

IS: 1585-1960 Motor Gasoline, 79 Octane;
IS: 1587-1960 Aviation Turbine Fuels, High Flash Point;
IS: 1588-1960 Aviation Turbine Fuels, Wide Cut Gasoline Type; and
IS: 1604-1960 Aviation Gasoline.

With the setting up of refineries in the country, the production of petroleum products is increasing at a rapid rate. Consequently, the need for formulation of Indian Standards on various petroleum products is being increasingly felt. The Estimates Committee of the Lok Sabha also emphasized the necessity for formulating Indian Standards on petroleum products.

Essential Oils

The following five specifications are the latest additions to a series of Indian Standard Specifications for essential oils, which is being prepared in order to ensure a uniform quality of the supply of these essential oils and also to serve as a guide to prospective producers of these oils in the country in view of their economic importance:

a) *Oil of Vetiver Roots* (*Cultivated*) (IS: 1614-1960) — The oil of vetiver roots (cultivated) is obtained from cultivated *khus* roots and has been so named to avoid confusion with the oil, at present distilled in India from wild *khus* roots. This essential oil is used by the soap, perfumery and cosmetic industries. It is also used as a flavouring agent.

b) *Oil of Himalayan Cedarwood* (IS: 1615-1960) — This standard prescribes requirements and methods of test for the material commercially known as the oil of Himalayan cedarwood. It is used with other essential oils in soap perfumes as an excellent fixative and diluent, in sanitary supplies, polishes and for masking odours in many other industrial products. Special grades used for oil-immersion lenses and for clearing sections in microscopy are not covered by this specification.

c) *Oil of Spike Lavender* (IS: 1616-1960) — Oil of spike lavender is generally in demand as a low-priced substitute for oil of lavender. It is not produced in India and is consequently imported into the country. Realizing the economic importance of this essential oil, it was decided to lay down basic requirements of the material, in order to ensure minimum quality requirements of the imported material, particularly in view of the naturally occurring wide variations in the quality of the oil.

d) *Oil of Lavandin* (IS: 1617-1960) — This standard prescribes requirements and methods of test for the material commercially known as oil of lavandin. It does not apply to the oil of the Abrialis type. The material is used for cutting oil of lavender—French. It is preferred in perfumery largely for its high fixative properties.

e) *Oil of Lavender—French* (IS: 1618-1960) — True oil of lavender—French, one of the most popular essential oils largely used in modern perfumes, cosmetics and soaps is not produced in India on a commercial scale and is consequently imported into the country. Cultural experiments are in progress to introduce the plants in suitable areas. The basic requirements of the material have been laid down in this standard. The so-called ' Vesubie ' Lavender, having a low ester content and of insignificant production, is excluded from the purview of this specification.

Cellulose Nitrate for Use in Coated Fabrics

Cellulose nitrate required for the production of coated fabrics is usually a high or medium nitrated, relatively more soluble product, as distinct from the material used in the plastics, lacquers or film industries. The requirements for this material are covered in IS: 1627-1960 Specification for Cellulose Nitrate for Use in Coated Fabrics.

Although coated fabrics based on cellulose nitrate are being replaced by the vinyl coated type, there is still considerable demand for the former. This standard together with IS: 1421-1959 Specification for Cellulose Nitrate Coated Fabrics will be able to meet the requirements of that section of the coated fabrics industry which uses cellulose nitrate for preparation of the dope.

Oil, Lubricating, Axle, Regular and Premium

The desirability of an Indian Standard on axle oil was keenly felt as it is used in considerable quantity by Indian Railways and others. It is expected that IS: 1628-1960 Specification for Oil, Lubricating, Axle, Regular and Premium, which prescribes requirements and methods of test for axle oil, will assist the Railways and other purchasers in procuring suitable quality of the material.

Corrosion Preventive Fluid

The object of IS: 1674-1960 Specification for Temporary Corrosion Preventive, Fluid, Soft Film, Solvent Deposited is to facilitate the supply to large and small scale consumers of a material of quality most suited for use under Indian climatic conditions. The standard prescribes requirements and methods of test for temporary corrosion preventive, fluid, soft film, solvent deposited, suitable for protection of clean metal surfaces during transport and storage.

Sole Leather, Cycle Saddle Leather and East India Tanned Kips

The following three specifications are the latest additions to the series of Indian Standards concerning leather and leather goods:

a) *Chrome Waxed Sole Leather* (IS: 1636-1960) — This standard prescribes requirements and methods of test for chrome waxed sole leather used for soles of *chappals*, sports shoes, and for occupational and protective footwear.

b) *Cycle Saddle Leather* (IS: 1637-1960) — This standard prescribes requirements and methods of test for cycle saddle leather in natural and dyed condition for use not only for making cycle saddles but also for purposes where strong and pliable leather is required.

c) *East India Tanned Kips and Skins* (IS: 1639-1960) — This standard lays down the chemical requirements of East India tanned leathers for pure tannage and includes all leathers under the category of prime tannages, semi-prime tannages and single tannages.

Liquor Bottles

Glass liquor bottles of a wide number of sizes and shapes are used as containers for liquor of various types. The purpose of IS: 1662-1960 Specification for Glass Liquor Bottles is to rationalize the sizes and shapes of these types so as to affect greater economy in production.

With the introduction of the metric system in the alcohol industry in the country, the need for recommending a rationalized series of capacities in the metric system has been urgently felt and it is hoped that this specification would be of help to the industry in this direction. As packers of liquor prefer to retain the individuality of the shapes and dimensions of bottles they use, it has been decided not to specify them in this standard. The tests prescribed for the liquor bottles are based on the trade practice currently followed in the country.

Floating Dairy Thermometers

The dairy industry, trade and public analysts in India prefer to use floating type thermometers for their work. Material and dimensional requirements, and methods of test for such thermometers commonly used in dairy laboratories and farms are covered by IS: 1672-1960 Specification for Floating Dairy Thermometers. Although both Centigrade and Fahrenheit scales are at present in vogue in our country, in conformity with the Government of India's decision to introduce throughout the country metric system of weights and measures for all types of work, this standard covers thermometers in Centigrade scale only.

Stearic Acid and Oleic Acid

The following two specifications cover requirements and methods of test for stearic acid and oleic acid:

IS: 1675-1960 Stearic Acid, Technical

IS: 1676-1960 Oleic Acid, Technical.

In preparing these specifications, due consideration has been given to the different grades of the acids being used at present for various purposes.

Braided, High Pressure Spray Hose

The Indian Standard Specification for Braided Spray Hose, High

Pressure, for Agricultural Purposes (IS: 1677-1960) prescribes requirements and methods of test for high pressure spray hose with cotton or rayon braided reinforcement, for a recommended maximum working pressure of 40·0 kg·cm^2 (or 600 lb·in.^{2}), for use in orchards, parks, forestry, tea and coffee estates for spraying mild insecticides, not containing oils or tarry matter.

ELECTROTECHNICAL DIVISION

Containers for Motor Batteries

The Indian Standard Specification for Hard Rubber Containers for Motor Vehicle Batteries (IS: 1146-1960) lays down requirements and methods of test for monobloc hard rubber containers normally used in the assembly of lead-acid storage batteries for motor vehicles and similar other purposes. Physical, chemical and electrical tests with corresponding requirements have been included in this standard, in order to check the quality of the material of the container as also the reliability of the finished container for use in assembling.

Zinc Plating

Three grades of zinc coating depending on thickness of coating and three types, namely, without any further treatment and with either chromate or phosphate treatment, have been included in IS: 1573-1960 Specification for Zinc Plating which covers electroplated coating of zinc for protective purposes on fabricated articles of iron and steel. The specific grade and type required should, therefore, be specifically indicated in the enquiry or order by the intending purchaser of the zinc coated article.

Automobile Lamps

Before the advent of large scale assembly and manufacture of automobiles in this country, a variety of automobiles was being imported from several countries abroad, resulting in the use of a large number of sizes and types of automobile electric lamps. Now that manufacture of automobiles has been taken up in our country, it was felt that the time was opportune to take up the work of standardization of automobile lamps with a view to reducing the multiplicity of the requirements of such lamps and facilitating interchangeability.

The Indian Standard Schedule for Automobile Lamps (IS: 1606-1960) includes tables detailing the rated voltages, wattages, dimensions, caps, etc, of different types of automobile lamps used for various purposes in an automobile. This standard covers three groups of automobile lamps: Group I covering miniature lamps, such as side, tail and dash-board lamps; Group II covering interior lighting and stop-tail lighting lamps which are bigger in size but do not require focussing; and Group III covering head light lamps wherein the luminous intensity, focussing, etc, are important. It covers only those automobile lamps which operate on 6, 12 and 24 V.

ENGINEERING DIVISION

Rules for Rounding Off

Rules for rounding off numerical values for the purpose of reporting results of a test, an analysis, a measurement or a calculation, and thus assisting in drafting of specifications are prescribed in IS: 2-1960 Rules for Rounding Off Numerical Values (*Revised*). Recommendations as to the number of figures that should be retained in course of computation have also been laid down.

This standard was originally issued in 1949, with a view to promoting adoption of uniform procedure in rounding off numerical values. Rules given in the earlier standard referred only to unit fineness of rounding and in course of years the need was felt to prescribe rules for rounding off numerical values to fineness of rounding other than unity. Moreover, it was also felt that the discussion on the number of figures to be retained as given in the earlier version required further elucidation. The present revision is expected to fulfil these needs.

Weighing Instruments

The latest addition to the series of Indian Standards on commercial weighing instruments being prepared by ISI at the instance of the Standing Metric Committee, Government of India, are IS: 1435-1960 Specification for Platform Weighing Machines, and IS:1436-1960 Specification for Weigh-Bridges. Other standards published so far in the series cover general requirements for weighing instruments; and specifications for beam scales, counter machines, crane weighing machines and steelyards.

Type Testing of Internal Combustion Engines

When major modifications are made in the design or materials or both of an existing type of engine, or when an entirely new design is evolved and is to be introduced in the market, it is necessary to typetest the new or modified design under rigorous operating conditions in order to prove its reliability. The Indian Standard Code for Type Testing of Constant Speed Internal Combustion Engines for General Purposes (IS: 1600-1960) is intended to serve as a guide in carrying out such type tests. This code applies to type testing of constant speed reciprocating internal combustion engines of the following types used for general purposes:

a) Compression ignition engines,
b) Carburettor type engines, and
c) Gas engines.

The code is not applicable to pressure-charged engines for road or rail traction, engines for ships propulsion or for marine auxiliaries, and engines for aircraft propulsion or aircraft auxiliaries.

Wrought Aluminium Utensils

The useful life of a utensil and the satisfactoriness of cooking depend not only on the quality of the metal from which it is fabricated but also on the thickness of the finished utensil. A number of important organizations, such as (a) The Federation of Hotel and Restaurant Associations of India, (b) All India Women's Food Council, (c) Indian Navy, and (d) Indian Railways, had requested that robustness of utensils should be ensured by laying down the minimum thickness for various types and sizes of the most commonly used wrought aluminium utensils, in the first instance. It was further felt that such utensils would also be preferred by certain classes of users in the countries to which the Indian made utensils are normally exported.

The Indian Standard Specification for Wrought Aluminium Utensils (IS: 1660-1960) prescribes general requirements, quality of material and thicknesses for some of the more commonly used wrought aluminium utensils of two grades designated as ' Standard ' and ' Utility '.

STRUCTURAL AND METALS DIVISION

Tin Bronze Ingots and Castings

The Revised Indian Standard Specification for Tin Bronze Ingots and Castings (IS: 306-1960) covers the requirements for the following grades of tin bronze ingots and castings:

a) Gun Metal Grade 1 designated as IS: 306-G1; and
b) Gun Metal Grade 2 designated as IS : 306-G2.

The specification was first published in 1951. The main modification made in this revision relates to the omission of one of the grades, namely Grade III, specified earlier. The requirements of this Grade III tin bronze ingots and castings which is used in railways only, has been covered separately under IS: 1458-1959 Specification for Railway Bronze Ingots and Castings.

Physical Testing of Metals

The following three Indian Standards are the latest addition to the series of Indian Standards concerning the physical testing of metals:

IS: 1521-1960 Method for Tensile Testing of Steel Wire,
IS: 1598-1960 Method for Izod Impact Test for Steel, and
IS: 1663-1960 Method for Tensile Testing of Steel Sheet and Strip of Thickness 0·5 mm to 3 mm.

These standards are based on the following draft Recommendations of the International Organization for Standardization (ISO) which represent the consensus of international opinion on the subjects:

a) Draft ISO Recommendation No. 160 Tensile Testing of Steel Wire,
b) Draft ISO Recommendation No. 135 Izod Impact Test for Steel, and
c) Draft ISO Recommendation No. 151 Tensile Testing of Steel Sheet and Strip Less than 3 mm and Not Less than 0·5 mm Thick.

Mild Steel Wire for Machine Screws

The Indian Standard Specification for Mild Steel Wire for the Manufacture of Machine Screws (by Cold Heading Process) (IS: 1673-1960) has been prepared on the recommendation of the Tariff Commission, Government of India. This standard covers the requirements for two grades of cold drawn mild steel wire up to 20 mm diameter, suitable for the manufacture of machine screws by the cold heading process.

Iron Pressure Pipes for Water, Gas and Sewage

The following two specifications cover requirements for pressure pipes for water, gas, and sewage:

IS: 1536-1960 Centrifugally Cast (Spun) Iron Pressure Pipes

AMENDMENT SLIPS

Amendment slips have been issued during the period 16 November 1960 to 15 January 1961 to the following Indian Standards:

No. and Date of Amendment	No. and Title of Indian Standard
No. 5 November 1960	IS: 705-1955 Specification for Dry Battery-Operated Community Radio Receivers (*Tentative*)
No. 5 November 1960	IS: 706-1955 Specification for AC Mains-Operated Community Radio Receivers (*Tentative*)
No. 1 December 1960	IS: 877-1956 Method of Sampling and Test for Activated Carbon Used for Decolourizing Vegetable Oils and Sugar Solutions
No. 1 December 1960	IS: 1005-1957 Specification for Edible Maize Starch (Corn Flour)
No. 1 November 1960	IS: 1006-1957 Specification for Arrowroot Starch
No. 1 November 1960	IS: 1007-1957 Specification for Custard Powder
No. 3 November 1960	IS: 1036-1957 Specification for 6-Volt Accumulator-Operated Community Radio Receivers
No. 1 November 1960	IS: 1068-1958 Specification for Copper, Nickel and Chromium Electroplated Coatings
No. 1 January 1961	IS: 1093-1957 Specification for Handloom Cotton Madras Handkerchiefs
No. 1 November 1960	IS: 1095-1957 Specification for Handloom Cotton Dress Material, Bleached, Dyed, Printed, Striped or Checked
No. 1 November 1960	IS: 1096-1957 Specification for Handloom Cotton Holland Cloth, Unscoured
No. 1 November 1960	IS: 1097-1957 Specification for Handloom Cotton Mosquito Netting, Bleached or Dyed
No. 1 November 1960	IS: 1099-1957 Specification for Handloom Cotton Lining Cloth, Dyed
No. 1 November 1960	IS: 1100-1957 Specification for Handloom Cotton Crepe, Bleached or Dyed
No. 1 November 1960	IS: 1101-1957 Specification for Handloom Cotton Cellular Shirting, Bleached or Dyed
No. 2 December 1960	IS: 1109-1957 Specification for Borax, Technical
No. 1 December 1960	IS: 1147-1957 Glossary of Terms for Secondary Cells and Batteries
No. 1 January 1961	IS: 1162-1958 Specification for Cane Molasses
No. 1 November 1960	IS: 1169-1957 Specification for Pedestal Type Electric Fans
No. 1 December 1960	IS: 1234-1957 Specification for Ink, Stencil, Oil Base, for Marking Porous Surfaces, Colour as Required

(*Continued on next page*)

AMENDMENT SLIPS — *Contd*

No. and Date of Amendment	No. and Title of Indian Standard
No. 1 November 1960	IS: 1242-1958 Specification for Handloom Cotton Shirting, Bleached, Dyed, Striped, Checked or Printed
No. 1 November 1960	IS: 1243-1958 Specification for Handloom Cotton Coating, Bleached, Dyed, Striped or Checked
No. 1 November 1960	IS: 1245-1958 Specification for Handloom Cotton Pyjama Cloth, Grey, with Stripes
No. 1 November 1960	IS: 1265-1958 Specification for Handloom Woollen Tweed
No. 1 November 1960	IS: 1267-1958 Specification for Handloom Worsted Raffal Shawls
No. 1 November 1960	IS: 1268-1958 Specification for Handloom Worsted Lohis
No. 1 December 1960	IS: 1433-1960 Specification for Beam Scales

for Water Gas and Sewage; and

IS: 1537-1960 Vertically Cast Iron Pressure Pipes for Water Gas and Sewage.

These standards are applicable to pipes with sockets (for lead joints) and flanges. They may also be made applicable to other types of joints, specially rubber joints, where overall measurements are adhered to for ensuring interchangeability.

Antimonial Lead for Storage Batteries

The Indian Standard Specification for Antimonial Lead for Storage Batteries (IS: 1654-1960) specifies the requirements for antimonial lead for use in storage batteries. Whilst the battery plates are frequently made from this material, it is not intended that the use of special alloys for this application should be excluded.

TEXTILE DIVISION

Tapioca Starch for Textiles

Tapioca starch for cotton textiles is manufactured both on the cottage industry basis and on the factory scale. It is used as a sizing and finishing material in the cotton textile industry. The Indian Standard Specification for Tapioca Starch for Use in the Cotton Textile Industry (IS: 1605-1960), it is expected, would be of use to the producers in preparing starch of acceptable quality and to purchasers in acquiring dependable supplies.

Resistance of Jute to Attack by Micro-Organisms

The following two standards which prescribe methods for evaluating the resistance of materials to attack by micro-organisms are based on extensive research carried out at the Indian Jute Mills Association Research Institute (IJMARI), Calcutta:

IS: 1623-1960 Method for Testing Jute Fabrics for Resistance to Attack by Micro-Organisms, and

IS: 1633-1960 Methods for Testing Jute Cordages for Resistance to Attack by Micro-Organisms.

The methods prescribed in these standards can also be used for evaluating preservatives or treatments designed to protect the materials from damage by micro-organisms.

The mixed culture inoculation method prescribed in these standards serves to assess the behaviour of jute fabrics and cordages under exposure to humid warm atmosphere whereas the soil incubation method serves to assess their behaviour under conditions of contact or contamination with soil. Since, often a combination of the above two conditions exists in practice in relation to the use of the materials, both the methods are to be used.

Breaking Load of Cotton Yarn

The following two standards prescribe methods for determining the breaking load of cotton yarn in metric units:

a) *Method for Determination of Breaking Load (Strength), Elongation at Break and Tenacity of Single Strand of Cotton Yarn (by Constant-Rate-of-Traverse Machine)* (IS: 1670-1960) — The purpose of this standard is to eliminate unnecessary and undesirable variations in testing procedure for the determination of breaking load (strength), tenacity and elongation at break of single strand of cotton yarn, whether single, plied or cabled yarn, or cord.

b) *Method for Determination of Skein Breaking Load (Strength), Tenacity and Yarn Strength Index of Cotton Yarn (by Constant-Rate-of-Traverse Machine) (Metric System)* (IS: 1671-1960) — This standard is intended to supersede IS: 239-1951 Method for Determination of Lea Breaking Load (Strength) of Cotton Yarn and Its Count-Lea-Strength Product which laid down a method for determination of lea breaking load of cotton yarn and its count-strength product in the foot-pound system. Since this would become obsolete on account of the adoption of the metric system of weights and measures by India, IS: 1671-1960 has been issued.

Dyed Woollen Blanket

The purpose of IS: 1681-1960 Specification for Blanket, Woollen, Dyed, is to help producers in manufacturing goods of a quality in conformity with good market practice. This standard is also expected to be helpful in enabling consumers to purchase dyed woollen blanket of a defined quality.

The standard prescribes constructional details and other particulars of three varieties of woollen blankets. It, however, does not specify the general appearance, lustre, feel and shade of the cloth.

DRAFT INDIAN STANDARDS

Brief reviews are given here of draft Indian Standards issued recently for wide circulation to elicit comments from interested parties in India and abroad. Comments are considered by the Sectional Committee concerned at the stage of finalization of the drafts.

Titles of draft Indian Standards which are due to be issued in wide circulation in the near future are also given at the end; some of these might have been circulated while this issue was under print.

AGRICULTURAL AND FOOD PRODUCTS DIVISION

Method of Test for Dairy Industry

The draft Indian Standard Specification For Dairy Industry, Part III: Bacteriological Analysis of Milk, covers methods commonly used for detailed bacteriological examination of milk. It also includes the methods of bacteriological examination for special purposes. The specific methods to be employed would depend upon the object of analysis.

The adoption of this standard will help achieve uniformity in the methods of analysis of milk, thereby facilitating the interpretation and comparison of results. The physical, chemical and bacteriological methods of analysis which are used for assessing rapidly the quality of raw milk for processing and manufacture have already been published [IS: 1479 (Part I)-1960].

Malted Milk Powder

Malted milk powders used in this country have so far been imported. Efforts are now being made to manufacture them in India and some manufacturing units are being put up. It was felt that an Indian Standard Specification for Malted Milk Powders should be formulated so that the new units, which have yet to start their production, could do it in conformity with the Indian Standard.

The draft prescribes minimum requirements and methods of test for malted milk powders intended as food for children, invalids and convalescents. This is the fourth Indian Standard in the series; the Indian Standard Specifications for: (a) Infant Milk Foods (IS: 1547-1960), (b) Processed Cereal Infant Foods (IS: 1656-1960), and (c) Special Infant Foods (IS: 1657-1960) have already been published.

BUILDING DIVISION

Steel Pipes Lined and Outcoated with Cement Concrete or Mortar

Steel pipes lined and outcoated with cement concrete are widely used in water mains and to a limited extent in the pressure sewer lines and irrigation works in preference to cast iron pipes and steel pipes because of their better carrying capacity and longer life. When used for carrying highly acidic sewage or industrial waste, the lining should be inspected at frequent intervals and necessary precautions taken to prevent exposure of steel pipe to the action of the sewage or industrial waste.

The draft specification for Steel Pipes Lined and Outcoated with Cement and Concrete or Mortar covers requirements and tests of electrically welded mild steel pipes having nominal internal diameter of 150 mm to 1 800 mm with spigot and socket ends, plain ends, slip-in-type ends suitable for field welding, or flanged ends, cement concrete lined and externally coated with cement concrete or mortar for water mains, sewers, irrigation pipes, etc.

Preservation of Bamboo and Cane for Non-Structural Purposes

Bamboos compare favourably with such reputed timbers as sal and teak in strength properties. But bamboos have a low natural durability against attacks by fungi and insects. Hence preservative treatment is required to lengthen their life. They are very difficult to treat by normal preservation methods in dry condition since their outer and, to some extent, inner membranes are impermeable to liquids. The treatment of bamboo is, therefore, best carried out in green condition.

The draft Indian Standard Code of Practice for Preservation of Bamboo and Cane for Non Structural Purposes covers the preservative treatment of bamboos and canes used both indoors and outdoors for non-structural purposes, like chicks, jafri, ladders, mats, furniture, basketware, etc. It includes recommendations for the choice of the preservative and the method of treatment depending on the various uses to which the bamboo and cane are put.

Timber for Portable Ladders

The use of timber for portable ladders, besides meeting structural considerations, combines the aspect of lightness with strength. This is particularly so in fire fighting where lightness is a very important consideration. Keeping this in view the draft specification for Timber for Ladders (Portable) which covers the species of timber suitable for portable ladders used for fire fighting and other purposes and specifies the requirements of such timbers in converted form has been prepared. The choice of a particular species of timber either for rung or stile has been based on the weight, shock resisting ability, strength and stiffness as a beam, hardness, and the strength to weight ratio.

The need for a standard on requirements of portable timber ladders, particularly in the appropriate selection of timber species was felt both by the Defence Department and the Fire Fighting Services. This draft standard is based largely on the information supplied by the Defence Stores Department.

Unreinforced Corrugated Asbestos Cement Sheets

The draft specification for Unreinforced Corrugated Asbestos Cement Sheets covers only unreinforced laminated asbestos cement corrugated sheets designed to provide structural weather exposed surfaces of roofs and building walls of industrial, residential, agricultural, commercial and institutional types of buildings, and for decorative and other purposes.

The draft standard is a revision of the standard published earlier on the subject (IS: 459-1955). The draft revision incorporates certain important changes. Tolerances on the pitch and depth of corrugations have been introduced to facilitate interchangeability between sheets of different manufacturers. The special semi-corrugated sheets which were included in the original standard have been omitted as these sheets are no longer being manufactured on a commercial scale.

CHEMICAL DIVISION

Coal Tar Black Paint

Coal tar black paint, when applied as a film over iron and steel surfaces, provides some protection against corrosion. In the case of timber also its application gives a good protection mainly by virtue of its creosote content. It was, therefore, considered necessary to formulate a standard for coal tar black paint to be used in the painting of iron, steel and timber.

The present draft Specification for Coal Tar Black Paint is a revision of IS: 290-1953. The original specification was based largely on the British Standard Specification for Black Paint (Tar Base) for use on Iron and Steel (B.S. 1070-1942). Lately, in view of the extensive revision of the British Standard as B.S. 1070-1956, and the likely increase, due to the setting up of various steel factories in the public sector, in the indigenous production of solvent naphtha required for the quick drying type of coal tar black paint, a revision of IS: 290-1953 was felt necessary to take care of all these developments.

Paste Filler for Colour Coats

The draft Specification for Paste Filler for Colour Coats is a revision of IS: 426-1953. This draft revision prescribes requirements and methods of test for the material. The material is used as an ingredient for preparing Ready Mixed Paint, Brushing, Grey Filler, for Enamels, for Use over Primers (*see* IS: 110-1950). It is not intended for use as a knifing putty or as a trowelling compound.

In view of the wrong use of this material as a knifing putty and as a trowelling compound, the scope of the draft revision has been amplified to clarify this aspect. Besides, all other changes found necessary after detailed study have been incorporated in this revision.

Ready Mixed Paints : Primers Series

The six draft Indian Standard Specifications concerning the ready mixed paints, primers series are the draft Revisions of eight Indian Standard Specifications given below:

IS: 102-1950 Ready Mixed Paint, Brushing, Red Lead, Nonsetting, Priming;

IS: 104-1950 Ready Mixed Paint, Brushing, Zinc Chrome, Priming for Use on Aluminium and Light Alloys;

IS: 105-1950 Ready Mixed Paint, Brushing, Priming, for Enamels, for Use on Metals (*Tentative*);

IS: 106-1950 Ready Mixed Paint, Brushing, Priming, for Enamels, for Use on Wood;

IS: 107-1952 Ready Mixed Paint, Brushing, Red Oxide-Zinc Chrome, Priming;

IS: 108-1952 Ready Mixed Paint, Spraying, Red Oxide-Zinc Chrome, Priming;

IS: 135-1952 Ready Mixed Paint, Spraying, Stoving, Red Oxide-Zinc Chrome, Priming; and

IS: 136-1952 Ready Mixed Paint, Brushing, Stoving, Red Oxide-Zinc Chrome, Priming.

Only two drafts have been prepared for the last four standards; IS: 107-1952 and IS: 108-1952 have been amalgamated into one, and the other two into another. This has been done to specify the brushing and spraying types of the same material in a single standard. The present revisions incorporate all changes found necessary after a careful study, as well as the results of experience gained in the use of these specifications during the past decade.

Tarpaulins and Tracing Cloth

Requirements and methods of test for tarpaulins and tracing cloth have been covered in two separate draft specifications. The specifications also lay down procedures for drawing representative samples for adjudging conformity of the material to the prescribed requirements. The drafts are based on the trade practices followed in the country in this field.

ENGINEERING DIVISION

Bicycle Rims and Spokes and Nipples

In the series of Indian Standards on bicycle components and accessories, draft revisions of the following specifications, first published in 1955, have been prepared:

a) IS: 624-1955 Bicycle Rims (*Tentative*), and
b) IS: 630-1955 Bicycle Spokes (Plain) and Nipples for Spokes (*Tentative*).

Advantage has been taken of this revision to introduce metric values in these standards for various quantities as all future standards would be formulated in the metric system. The draft Revision for Bicycle Rims recognizes two grades of rims depending on plating thickness. It covers requirements for four sizes of rims suitable for tyres of sizes $26 \times 1\frac{1}{2}$, $28 \times 1\frac{1}{2}$, $26 \times 1\frac{3}{8}$, and $28 \times 1\frac{3}{8}$ that fit into bicycles of two standard sizes, namely, 22 and 24. The draft Revision for Bicycle Spokes (Plain) and Nipples for Spokes gives only the functional requirements and the dimensions for interchangeability leaving scope for improvement in design. It covers requirements for: (a) two sizes of bicycle spokes (plain), and (b) nipples and washers intended for use with (a).

Dimensions given in these draft Revisions will ensure interchangeability; design details are left to the discretion of the manufacturer. Material requirements specified are only the minimum and the use of other materials having characteristics equivalent to or higher than those specified in this standard is not precluded.

Precision Grade Studs and Clearance Holes for Bolts (Metric)

Two draft specifications — one for Precision Grade Studs and the other for Clearance Holes for Bolts (Metric) — belong to the series of Indian Standards on threaded fasteners.

The former draft covers the requirements of the studs intended for general purposes having threads with coarse or fine pitches. The latter draft gives the dimensions of clearance holes for metric bolts of sizes 1·6 to 39 mm diameter.

Thread Cutting Dies and Driving Squares

The following two drafts would be of interest to the small tools industry:

a) Specification for Thread Cutting Dies, and
b) Dimensions for Driving Squares.

The types of dies covered in the first draft are suitable for cutting external metric threads on bolts, screws, etc, with ISO Profile conforming to IS: 1362-1959 Dimensions for Screw Threads for General Purposes and pipe threads with Whitworth Profile conforming to those specified in IS: 554-1955 Pipe Threads for Gas List Tubes and Screwed Fittings (*Tentative*).

The second draft deals with driving squares, which are used in driving small tools, such as drills, reamers, taps, etc. It comprises two Tables of principal and secondary series giving the dimensions of driving squares in millimetres. The complete range of diameters is divided into a number of diameter groups for which the corresponding standard square is given. The principal series is recommended for use unless a finer subdivision is absolutely necessary in the small diameter range for which secondary series may be used.

STRUCTURAL AND METALS DIVISION

Steel

The following six draft specifications cover requirements for various types of steel plates, sheets, castings, forgings, etc:

a) *Blackplate for Tinning and Hot Pack Rolled Tinplate* — This draft specification covers hot rolled blackplate for tinning and tinplate, and is a revision of the standard published in 1955 (IS: 597-1955). The important modifications made in the draft Revision pertain to the inclusion of an additional grade of tinplate suitable for ordinary purposes and the inclusion of metric values in the standard.

b) *Cold Reduced Tinplate and Cold Reduced Blackplate* — This draft specification covers requirements for hot rolled strip suitable for cold reduction in strip form to tinplate gauges, hot rolled sheet suitable for cold reduction in sheet form to tinplate gauges, cold reduced blackplate, and cold reduced hot dipped tinplate and electrolytic tinplate.

c) *Steel Castings for General Engineering Purposes* — This draft Revision of IS: 1030-1956 covers requirements for plain carbon steel castings for general engineering purposes. The main modifications made in the revised draft relate to the inclusion of optional tests, such as ringing test, drop and destruction test, falling weight test, proof load and destruction test, and impact test.

d) *Electrical Steel Sheets* — This draft Revision of IS: 648-1955 covers the requirements for non-oriented magnetic steel sheet and strip primarily intended for machines and transformers operating at power frequencies. Electrical steel sheets or silicon steel sheets are used as core material in the manufacture of electromagnetic machines, such as motors generators, transformers, etc.

e) *Expanded Metal Steel Sheets for General Purposes* — This draft covers expanded metal steel sheets used for general purposes and includes process of manufacture, sizes of mesh, properties, dimensions and physical tests, such as cold bend test. This standard is a revision of the specification first issued in 1954. One of the new provisions included in the draft revision relates to the requirements with regard to supply of blank steel sheets and plates. Also, in view of the changeover to the metric system of weights and measures, all values have now been given in metric units.

f) *Carbon Steel Forgings for General Purposes* — This draft covers requirements for four grades of carbon steel forgings along with the purposes for which these grades of steel may be used. The standard also includes clauses on process of manufacture, chemical composition, heat treatment, physical tests and optional tests, such as microscopic test, macroscopic test and magnetic particle test. Carbon steel forgings are used for a variety of special and general engineering purposes.

Aluminium Alloy

The following two draft specifications are of interest to the light metals industry:

a) Inspection and Testing Procedure for Aluminium Ingot, Aluminium Alloy Ingots and Castings, Magnesium Ingots, Magnesium Alloy Ingots and Castings for Aircraft; and

b) Aluminium Alloy Hardeners (Master Alloys) for Remelting.

The first covers general inspection and testing requirements for light metal ingots, their alloy ingots and castings for aircraft.

The second covers the requirements for aluminium alloy hardeners for remelting purpose, such as making up alloy melts for permanent mould or direct chill casting of extrusion ingot, sheet ingot, wire bar, etc, used in the production of semi-fabricated products in aluminium base alloys or for general engineering castings in the foundry covered by sand permanent mould and pressure die castings.

Sillimanite Refractories and Natural Sillimanite Blocks

The term 'sillimanite refractories' is applied to refractories made of calcined cyanite, sillimanite or andalusite. Sillimanite refractories have high refractoriness, law coefficient of expansion, high resistance to shock by impact, and high mechanical strength. Their high resistance to furnace gases and to the materials like soda, borax, lime and frits used in glass-making, has proved their usefulness in glass melting tank furnaces.

The two draft specifications for Sillimanite Refractories and Natural Sillimanite Blocks for Use in Glass Melting Tank Furnaces have been prepared to cover the requirements of glass industry in the country.

The draft specification for Sillimanite Refractories covers the requirements for formed sillimanite refractories with regard to alumina and iron oxide content, refractoriness, apparent porosity and permanent linear change after reheating.

The draft Specification for Natural Sillimanite Blocks for Use in Glass Melting Tank Furnaces lays down the requirements with regard to alumina, iron oxide and titania content, refractoriness (PCE value) and specific gravity of the blocks.

Lead Pipe, Rolled Zinc Plate, Sheet and Strip, and Rosin Cored Solder Wire

Requirements for lead pipe, rolled zinc plate, sheet and strip, and rosin cored solder wire have been covered in the following three draft specifications:

a) *Lead Pipe* — This draft Revision of IS: 404-1952 Specification for Lead Pipes Other Than Chemical Purposes, first issued in 1952, covers metric sizes of lead pipes. It also includes requirements for lead pipes for use in chemical industry.

b) *Rolled Zinc Plate, Sheet and Strip* — The draft specification covers the requirements of zinc base alloys in wrought form used for eyelets and gromets, address plates, extruded and soldered battery cans, photo-engraver's plate, weather strips, boiler and ship plates, etc.

c) *Rosin Cored Solder Wire* — The draft covers five grades of rosin cored solder wire of circular cross-section having one or more continuous cores of fluxes, either 'activated' or 'non-activated'. The solder wires covered in this draft are non-antimonial and suitable for use with zinc or galvanized materials.

Methods of Test

The following seven draft Indian Standard Methods of Test are intended to achieve uniformity in testing at various laboratories and research units:

a) *Flattening Test on Steel Tubes* — This draft specifies flattening test on steel tubes having an external diameter greater than 400 mm and a thickness not greater than 15 percent of the external diameter. However, individual specifications for material may specify the maximum diameter and thickness of tube to which this test is to be applied in particular circumstances.

b) *Bend Test on Steel Tubes* — This draft prescribes the method of conducting bend test on steel tubes in full section, having an external diameter not greater than 60 mm.

c) *Flanging Test on Steel Tubes* — This draft applies to the flanging test on steel tubes having an external diameter not greater than 150 mm and a thickness not greater than 9 mm.

d) *Drift Expanding Test on Steel Tubes* — This draft prescribes the drift expanding test on steel tubes of circular cross-section, having an external diameter not greater than 150 mm and a thickness not greater than 9 mm.

e) *Calibration of Brinell Hardness Testing Machines* — This draft applies to the calibration of testing machines for determining Brinell hardness.

f) *Test for Expansion of Copper and Copper Alloy Tubes* — The method of test specified in this draft is applicable to copper and copper alloy tubes having an external diameter not greater than 100 mm for the discovery of defects and verification of ductility.

g) *Mercurous Nitrate Test for Copper and Copper Alloys* — This draft prescribes the method for conducting the mercurous nitrate test of wrought copper and copper base alloy products. It is an accelerated test for the purpose of detecting the presence of residual (internal) stresses that might bring about failure of the material in service or storage through stress corrosion cracking.

Rolled Steel Bulb Plates

The draft Specification for Rolled Steel Bulb Plates belongs to a series of Indian Standards being published under the Steel Economy Programme of ISI. The object of this programme is to achieve economy in the use of steel by establishing rational, efficient and optimum standards for structural sections; formulation of standard codes of practice for the design and fabrication of steel structures; popularization of welding in steel construction and co-ordination and sponsoring of experimental research relating to the production and use of structural steel which would enable the formulation and revision of specifications and codes of practice.

Bulb plates are generally used in ship building industry and the requirements of this industry have been kept in view while preparing this draft specification. The size and other properties of bulb plates included in this draft are in metric units.

Hose Fittings and Filler Rods and Wires for Welding

The two draft Indian Standard Specifications for (a) Hose Fittings for Welding and Cutting Appliances and (b) Filler Rods and Wires for Inert Gas Arc Welding, are expected to provide useful guidance to the persons engaged in the welding industry.

The draft specification for hose fittings covers the requirements for five sizes of fittings for hoses with a nominal bore of 20 mm for use with welding and cutting equipment. These sizes which will ensure interchangeability of fittings made by the various manufacturers cover the dimensions for (a) size, type and kind of thread; (b) angle and outside diameter of the internal seat; (c) diameter of hole in nut; (d) radius and distance of radius centre of external seat from shank shoulder; (e) diameter of shank shoulder; and (f) large diameter of hose shank.

The second draft standard covers the requirements of a series of ferrous and non-ferrous filler rods and wires for gas-shielded, tungsten-arc welding supplied either in cut lengths or in coils, more commonly used in India.

Use of Steel in General Building Construction

The Indian Standard Code of Practice for Use of Structural Steel in General Building Construction (IS: 800-1956) was first published in March 1956. Since then, a number of points have come up, based on which some of the important provisions of the code needed changing. Accordingly, a draft revision of the code has been prepared.

One of the important changes in the draft revision is with respect to the provision of permissible stress in bending; it now provides more accurate basis for arriving at the permissible stress by making use of the theoretical expressions instead of approximate formulæ adopted earlier. Unavoidable imperfections inherent in the fabrication of beams, which were not taken into consideration formerly, are also now provided in arriving at the permissible stress.

TEXTILE DIVISION

Method for Estimation of Carboxylic Acid Groups

In the cotton textile industry, cotton in the form of fibres, yarn and fabric comes in contact with different oxidizing agents during the various chemical processing treatments. The action of these oxidizing agents on cellulose may result in the formation of oxycelluloses of an acidic character attributable to the introduction of carboxyl groups into the cellulose chain molecule. Purified cotton cellulose, not subjected to any treatment with oxidizing agents, also behaves as though it possesses a very small carboxylic acid group. The absorption of metallic ions from aqueous solutions of their salts is an outstanding property of oxycelluloses. This property in celluloses and oxycelluloses is due to the presence of carboxylic acid groups in them. The estimation of carboxylic acid groups present in cotton textile materials is a method of determining the extent of this type of oxidation of cellulose.

The draft Indian Standard Method for Estimation of Carboxylic Acid Groups in Cotton Textile Materials consists in suspending the cation-free cellulosic material in a solution of KI-KIO_3-$NaCl$ mixture, to which sodium thiosulphate is added to prevent the loss of iodine due to side reactions and vaporization, as also to facilitate the completion of the reaction by removal of the iodine liberated from the sphere of reaction. At the end of the requisite period the excess of thiosulphate is back-titrated with standard iodine solution.

Picking Arms for Over Pick Cotton Looms

The draft Specification for Picking Arms (or Sticks) for Over Pick Cotton Looms prescribes requirements for three sizes of picking arms (or sticks) made from wood for use in over pick looms for weaving cotton fabrics.

The picking arm (or stick) on an over pick loom swings in a horizontal path actuating the picker through the picking band; the picker in turn propels the shuttle across the loom. A corresponding set of picking arm, picking band and picker at the other end of the loom propels the shuttle back. The picking arms thus drive the shuttle back and forth, as long as the loom is working.

DRAFT INDIAN STANDARDS TO BE CIRCULATED

During the period under report, the following draft Indian Standards were being processed to be put into wide circulation in the near future:

1) Specification for Stainless Steel Milk Cans
2) Method of Determination of Freezing Point of Milk
3) Schedule of Unit of Weights of Building Materials
4) Methods of Sampling of Industrial Water for Physical and Chemical Tests
5) Requirements for River Water
6) Specification for Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting (for Working Voltages up to and Including 11 kV)
7) Specification for Braided Cables with Copper Conductors for Overhead Transmission Lines
8) Glossary of Terms Relating to Refractory Materials
9) Wrought Aluminium for Electrical Purposes — Wire (Other than that Used for Overhead Conductors)
10) Cotton Tape for Electric Purposes
11) Raw Hide Round Foot Pattern 4B Pickers for Cotton Overpick Looms
12) Raw Hide Pickers for Jute Looms

New Subjects Approved for Formulating Indian Standards

The following list gives the new subjects approved by the Division Council concerned or its Standing Working Committee during December 1960 *and January* 1961 *for formulation of Indian Standards.*

Agricultural and Food Products Division

Dried Salted Mackerel
Canned, Dried and Frozen Prawns
Canned Mackerel in Oil
Canned Pomfret in Oil
Canned Sardines in Oil
Honey Extractor, Radial Type
Malted Milk Powder Containing Cocoa

Building Division

Pan Type Concrete Mixers
Asphalt Pavers and Spreaders
Sandstone Slab for Use as Flooring and Lining
Acid Resistant Ceramic Floor Tiles

Structural and Metals Division

Methods of Chemical Analysis of Nickel Anodes, Refined Nickel and Foundry Nickel
Methods of Chemical Analysis of Chromite
Ingot Moulds
Chilled Iron Rolls
Cast Iron-pipe Flanges and Flanged Fittings for Petroleum Industry
Cast Iron Traps
Code of Practice for Laying Cast Iron Pipes
Aluminium Bronze Ingots and Castings for Overhead Fittings in Electric Traction
Brass Wire for Gold Heading and Free Cutting Purposes
Copper and Copper Alloy Pipe Fittings
Cast Nickel and Silver Alloys
Rationalization of Copper and Copper Base Alloys

THE SECOND MIDDLE EAST STANDARDIZATION CONFERENCE — *Continued from p.* 123

countries to restrict atomic researches to those branches which will lead to the progress and peace for science, industry and mankind.

TECHNICAL SESSIONS

During the Conference, the following nine technical sessions were also held at which 46 papers were presented:

a) Chemistry and Petroleum;
b) Time, optical and accoustical measurements;
c) Mechanical standards and measurements;
d) Textiles;
e) Food and agricultural products;
f) Precision measurements;
g) Electrical specifications and measurements;
h) Refractories and building materials;
j) Material testing.

These sessions were held simultaneously and valuable information was exchanged among the delegates.

Draft Standards from Commonwealth Countries

The following draft standards from Commonwealth countries were received for comments during the period 6 December 1960 to 15 January 1961. Copies of these documents are available in the ISI Library for reference.

Australia

- Doc-521 Rough Sawn South-Eastern Australian Eucalypt Hardwood
- Doc-522 Dental Casting Investment
- Doc-523 Voltage and Equipment for AC Transmission & Distribution System
- Doc-527 Electroplated Coatings of Nickel and Chromium
- Doc-528 Fire-Board Containers for General Purposes
- Doc-529 Pressure Sensitive Adhesive Tapes

Canada

- CSA A23.1 Concrete Materials and Methods of Concrete Construction
- CSA A119.1 Split Barrel Sampling of Soils
- CSA A119.2 Thin Walled Tube Sampling of Soils
- CSA A119.3 Dynamic-Cone Soil Penetration Test
- CSA A126 Vinyl Asbestos Flour Tile (Semi-Flexible Homogeneous
- CSA B54.1 Determination of Non-Combustibility in Building Materials
- CSA 0118 Western Red Cedar Shingles Machine Grooved Shakes and Hand Split Red Cedar Shakes
- CSA 0132.2 Wood Doors

New Zealand

- D6281 Fire Protection
- D6326 Steel Construction
- D6467 Grades of Meat for Sale on the Local Market and Definition of Joints and Cuts

Rhodesia & Nyasaland

- D(BC5)12 Method of Testing Clay Building Bricks
- D(HM)3 Marketing Articles Made of Sterling Silver
- D(HM)4 Marketing Articles Made of Gold

South Africa

- SABS 15/10/11/1 Portland Blastfurnace Cement
- SABS 15/10/11/3 Milled Granulated Blastfurnace Slag
- SABS 15/3/15/1 Cotton Hosiery Yarns
- SABS 15/5/2/2 Paper Towels
- SABS 15/31/11/3 Class Room Tables and Chairs
- SABS 19/9/9/11 The Erection, the Use, Storage and Inspection of Scaffolds
- SABS 15/6/30 Standard Test Methods for Paints
- SABS 15/9/30 Children Footwear
- SABS 15/36/9 Salt
- SABS 15/26 Gas Cylinder Trolleys
- SABS 653 Brandering and Battens
- SABS 654 Shelving

United Kingdom

- AA(MEE)5286 Cast Iron Straightedges
- AA(MEE)5287 Engineers' Squares
- AA(MEE)5366 Steel Boilers and Superheated Tubes
- AA(ELE)5668 Electrically Heated Equipment for Aquaria
- AA(WOT)5690 Weights of Retail Packages of Knitting of Rug, Yarns
- AA(OSC)5699 Technical Lanolin, Anhydrous, or Technical Wool Fat
- AA(S)5749 Personal Stationery
- AA(ELE)5838 Method of Test for Spontaneous Ignition Temperature
- AA(ASB)5946 Asbestos Cement Pipes and Fittings for Sewerage and Drainage
- AA(CRE)6060 Mining type Transformers: Part I — Oil Immersed Transformers
- AA(M)6064 Aluminium Die Dishes
- AA(B)6083 Aluminium Alloy Refuse Storage Containers
- AA(RUC)6088 Method of Testing Vulcanized Rubber; Determination of Ash and Zinc Oxide
- AA(ISE)6103 Grey Iron Casting
- AA(ELE)6122 Air Break Switches and Isolators: Part II Switches and Isolators for 250 and 440 and Current of 60 to 800 Amps
- AA(RUC)6132 Moulded Rubber: Hot Water Bottles
- AA(DAC)6203 Capacity of Glass Milk Bottles
- AA(ELE)6240 Surface Mounted 13-Amperes Switch Socket-Outlets
- AA(RUC)6260 Method for Determination of Rubber to Metal Adhesion
- AA(CME)6291 16 mm Film Spools of 2 400 ft Capacity
- AA(MEE)6315 Endless V Belt Drive for Industrial Purposes
- AA(T)6576 Terms Relating to Ropes and Cordages
- AA(OEM)6605 Adding Machines
- AA(ELE)6636 Dust Tight Enclosures for Electrical Apparatus
- AA(ACM)6795 Measurement of Noise Emitted by Motor

A CORRECTION

It is regretted that the ISI Certification Mark in respect of tea-chest metal fittings covered by IS: 10-1953 Specification for Plywood Tea-Chests as printed on p. 25 of Jan-Feb 1961 issue of this Bulletin is incorrect. The correct mark is as under:

METAL FITTINGS

ISI

IS:10

STANDARDS ADDED TO ISI LIBRARY

The list includes standards received in ISI Library during 16 November 1960 to 15 January 1961. Full titles of only those standards are given which, besides being accessioned in the Library, are also stocked by ISI for sale. Numbers of all other standards are listed under their respective general classification headings. Readers, who are interested in obtaining their titles or any other information concerning them, are requested to address the Librarian.

The standards are in the official language(s) of the country of origin.

003.62 Notations. Symbols

Finland: SFS C1.28 to .31
Japan: JIS Z 8206: 1960 Graphical Symbols for Process Chart
USA: ASAY32.12: 1960 Metallizing Symbols

31 Statistics

Netherlands: NEN 3117

354.14 Badges

India-Ministry of Defence: IND/GS/DRG 2312

511.168.3 Conversion Table

Germany: DIN 4892

526.8 Surveying

Norway: NS 742; 743; 749

53 Physics and Mechanics

France: NF S 30-002
USA: ASA S1.6: 1960 Preferred Frequencies for Acoustical Measurements
ASA S 2.4: 1960 Specifying the Characteristics of Auxilliary Equipment for Shock and Vibration Measurements
ASA Z 71.1: 1960 ASTM Thermometers (Including Tentative Revisions)
USA-National Bureau of Standards: Monograph No. 15
USSR: GOST 6507; 6636; 9500

614.8 Accident Prevention. Safety

Australia: SAA CZ.11: 1960 Respiratory Protective Devices
Japan: JIS B 9906: 1960 Hose Mask
USSR: GOST 182

615.47 Medical and Surgical Instruments

Czechoslovakia: CSN 80 4110, 4120, 4122, 4123, 4129, 4131, 4134
Norway: NS 604
UK: BS 3271: 1960 Surgical Elastic Band Trusses

616 Pathology

USA: ASA Z 79.1: 1960 Anesthetic Equipment: Endotracheal Tubes

620.1 Materials Testing

Japan: JIS B 0655: 1960 Surface Roughness Measuring Instrument (R.M.S. Method)

621-1/-9 Machinery Details

Canada: 59-GP-2
Japan: JIS B 1573: 1960 Oil Cup
JIS B 1574: 1960 Grease Cup
USA: ASA B 5.15: 1960 Involute Splines, Serrations and Inspection
USSR: GOST 5468; 9347

621.18 Steam Boilers

Canada: CSA B 51
Japan: JIS B 8203: 1960 Construction of Cast Iron Boilers
USA: ASA B 36.14: 1960 Seamless Steel Boiler Tubes for High-Pressure Service
USSR: GOST 9493

621.3 Electrical Engineering

Australia: SAA C.88: 1960 Dimensions of Switch-Board Panels (Mineral-Base Type)
Canada: CSA B 72; C22.1
Finland: SFS C.I.25 to .27; .32; C.V.66; 67; C.X.2
Germany: VDE 0710
India-Ministry of Defence: IND/SL 0567; ILE Report 10; 14; 15
Japan: JIS C 8347: 1960 Insulator-Bushings (for Steel Conduit Tubes)
JIS C 8348: 1960 Connectors for Flexible Steel Conduit Tubes (Electric Wiring)
JIS C 8354: 1960 Junction Boxes (for Metal Floor Duct)
Poland: PN T-82106
Portugal: P 261
UK: BS 607: 1960 Concrete Poles for Electrical Transmission and Traction Systems
BS 936: 1960 Oil Circuit-Breakers for Medium-Voltage A.C. Systems
BS 3258: 1960 Silicone-Rubber-Insulated Cables and Flexible Cords
UK-Electrical Research Association: ERA D/119
USA: ASA C 8.13: 1960 Varnished Cloth Insulated Cables
ASA C 59.2: 1960 Methods of Testing Electrical Insulating Oils
ASA C 59.13: 1960 Methods of Testing Sheet and Plate Materials Used for Electrical Insulation
ASA C 59.22: 1960 Methods of Test for Power Factor and Dielectric Constant of Electrical Insulating Oils of Petroleum Origin
ASA C 59.28: 1960 Methods of Conditioning Plastics and Electrical Insulating Materials for Testing
ASA C 78.1301: 1960 Physical and Electrical Characteristics of 250-Watt BT-28 (H5) Mercury Lamp
ASA C 78.1308: 1960 Physical and Electrical Characteristics of 175-Watt BT-28 (H22) Mercury Lamp
ASA C 78.1315: 1960 Physical and Electrical Characteristics of 250-Watt BT-28 (H5) Mercury-Fluorescent Lamp
ASA C 78.1316: 1960 Physical and Electrical Characteristics of 175-Watt BT-28 (H22) Mercury-Fluorescent Lamp
ASA C 78.1318: 1960 Physical and Electrical Characteristics of 1000-Watt (H12) BT-56 Mercury-Fluorescent Lamp
USA-Electronic Industries Association: EIA RS-154; -233
USA-National Electrical Manufacturers Association: NEMA EI 2; SH 3; TR 1; WC 4
USSR: GOST 2327; 2583; 2824; 5944; 7590; 8039; 8623; 9388; 9486; 9503

621.5 Pneumatic Machines. Refrigeration Technology

Norway: NS 547; 548
USSR: GOST 9515

621.6 Fluid Distribution. Storage, Containers. Pipes, Flanges, etc

France: NF M88-701; PN E29-801; M88-704
India-Ministry of Defence: IND/SL 5900
Italy: UNI 4401
Japan: JIS B 2061: 1960 Water Taps (Bib and Faucet)
JIS B 2210: 1960 Standard Pipe Flanges for 2 kg/cm² Nominal Pressure
JIS B 2222: 1960 10 kg/cm² Inserted Welded Flanges
JIS B 2223: 1960 16 kg/cm² Inserted Welded Flanges
JIS B 2224: 1960 20 kg/cm² Inserted Welded Flanges
JIS F 7334: 1960 Marine Hose Valves
JIS F 7335: 1960 Marine Hose Connections
JIS F 7401: 1960 Marine Escape Valves
JIS W 2910: 1960 High Pressure Air Valve for Aircraft
Netherlands: NEN 421; 3257
UK: BS 1710-1960 Identification of Pipelines
USA: ASA B 16.1: 1960 Cast-Iron Pipe Flanges and Flanged Fittings
ASA B 16.2: 1960 Cast-Iron Pipe Flanges and Flanged Fittings
ASA G 17.3: 1960 Forged or Rolled Steel Pipe Flanges, Forged Fittings and Valves and Parts for High-Temperature Service
ASA G 26.1: 1960 Cast Iron Culvert
ASA G 37.1: 1960 Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
ASA G 46.1: 1960 Tentative Specifications for Forged or Rolled Steel Pipe Flanges, Forged Fittings, Valves and Parts for General Service
USSR: GOST 9086

621.65 Pumps

Japan: JIS B 8314: 1960 Electric Shallow Well Pump
USSR: GOST 9366

621.7 : 744 Technical Drawing

Netherlands: NEN 115
USA: ASA Y 14.15: 1960 Drafting Standards Manual: Electrical Diagrams
USSR: GOST 9510

621.753 Gauging. Tolerance

USSR: GOST 1774; 6400; 6521; 9487; 9504

621.791 Welding

Italy: UNI 4402 to 14
Japan: JIS Z 3171-73: 1960 Method of Testing on Notched Specimens of Material for Welded Structures
JIS Z 3221: 1961 Arc Covered-Electrode for Stainless Steel
JIS Z 3251: 1960 Arc Covered-Electrode for Hard Facing

621.798 Packing and Dispatch

Australia: SAA N21: 1960 Fibreboard Containers for Butter (for Export Purposes)
Japan: JIS Z 0205: 1960 Incline Impact Test for Shipping Container and Receptacle
JIS Z 0209: 1960 General Rules of Revolving Hexagonal Drum Test for Package and Shipping Container
JIS Z 0220: 1960 Testing Method for Exudation Resistance of Tarpauline Paper for Wrappings
JIS Z 0601: 1960 Inspecting Standard for Packing of Silk Fabric and Rayon Fabric for Export
JIS Z 0602: 1960 Method of Packing Silk Fabric and Rayon Fabric for Export
JIS Z 0703: 1960 Packaging and Packing of Microscopes for Export
JIS Z 0705: 1960 Packaging and Packing of Sewing Machine for Home Use for Export
JIS Z 0707: 1960 Packaging and Packing of Hand Refractometer for Export
JIS Z 0708: 1960 Packaging and Packing of Abbe Refractometer for Export
JIS Z 0709: 1960 Packaging and Packing of Lens Meter for Export
JIS Z 0711: 1960 Packaging and Packing of Optical Meter for Export
JIS Z 0712: 1960 Packaging and Packing of 35 mm Sound Projectors for Export
JIS Z 0713: 1960 Packaging and Packing of 16 mm Sound Projectors for Export
JIS Z 0714: 1960 Packaging and Packing of Slide Projectors for Export
JIS Z 0902: 1960 Packaging and Packing of Reagents for Export
JIS Z 1402: 1960 Wooden Boxes for Export Packing
UK: BS 3268: 1960 Chip Baskets
USA: ASA MH2.11-14: 1960 Metal Drums
USSR: GOST 9396; 9495

621.822 Bearing

Japan: JIS B 1508: 1960 Taper for Ball and Roller Bearings
JIS B 1541: 1960 General Rules for Inspection of Ball and Roller Bearings
JIS B 1542: 1960 Inspection Methods for Radial Ball Bearings
JIS B 1581: 1960 Metal Powder Sintered Bearings (Oil Impregnated)
USA: ASA B 54.1: 1960 Identification Code for Ball and Roller Bearings
USSR: GOST 4657

621.833 Gears

USSR: GOST 9364, 68

621.86 Mechanical Handling and Hoisting Equipment

France: NF E 22-022; H50-006

621.873 Crane

Finland: SFS E.I.13 to .16
France: NF E52-081

621.876 Lifts. Elevators

Japan: JIS C 9620: 1960 Electric Hoist
USSR: GOST 9322

621.88 Means of Attachment. Fastenings

Canada: CSA B71·5
Denmark: DS 974 to 978
Finland: SFS C.V. 57 to 59
France: FDN E 27-000; NF F 10-401; -402; -405; PN E 03-004; -005; E 27--111; -411
Germany: DIN 1436; 2999
India-Ministry of Defence: IND/GS 976
Japan: JIS B 0225: 1960 Cycle Threads
JIS B 1178: 1960 Foundation Botts
JIS B 1251: 1960 Spring Lock Washer
JIS B 1255: 1960 Toothed Lock Washers
JIS B 4604: 1960 Adjustable Wrench
JIS B 4606: 1960 Pipe Wrench
JIS B 4609: 1960 Screw Drivers
JIS B 4623: 1960 Cutting Pliers
JIS B 4624: 1960 Round Nose Pliers
JIS B 4625: 1960 Cutting Nippers
JIS B 4635: 1960 Heavy Duty Cutting Nippers
JIS B 4637: 1960 Extension Bar for Socket Wrench
JIS B 4647: 1960 Chain Pipe Wrench
Netherlands: NEN 81; 83; 156; 159; 730; 1242, 86; 1489; 2324, 25, 28 to 30, 38, 39
Portugal: P 246; 249 to 252
USA: ASA B 1.1: 1960 Unified Screw Threads
ASA B2.1: 1960 Pipe Threads (Except Dryseal)
ASA B2.2: 1960 Dryseal Pipe Threads
ASA B18.2: 1960 Square and Hexagon Bolts and Nuts
ASA B18.4: 1960 Large Rivets
ASA G38.1: 1960 Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
USSR: GOST 1144; 9465, 84

621.89 Lubrication

USA: ASA Z11.104: 1960 Method of Test for Effect of Grease on Copper
USSR: GOST 5656; 9352; 9490

621.9 Machine Tools

Germany: DIN 849; 855
India-Ministry of Defence: IND/GS 995
Italy: UNI 4399
Japan: JIS B 4052: 1960 Coarse Grain Grinding Wheel Recommendation
JIS B 4351: 1960 Straight Bevel Gear Generating Tools, Type G
JIS B 4354: 1960 Gear Hobs
JIS B 4412: 1960 Adjustable Reamers
JIS B 4451: 1960 Round Dies
JIS B 4643: 1960 Bolt Clippers
JIS B 4703: 1960 Files
JIS B 4705: 1960 Carpenter Files
JIS B 4706: 1960 Mill Saw Files
JIS B 4751: 1960 Hand Hacksaw Blades
JIS B 4752: 1960 Power Hacksaw Blades
JIS B 4802: 1960 Circular Saws for Wood and Timber
JIS B 4803: 1960 Band Saws for Wood and Timber
JIS B 4902: 1960 Pneumatic Drill
JIS B 5002: 1960 Shape of Shank for Press Dies
JIS B 5003: 1960 Stud Shank for Press Dies
JIS B 6005: 1960 Scroll Chuck with Soft Jaws
JIS B 6202: 1960 Accuracy Test of Engine Lathe
JIS B 6237: 1960 Running Test of Knee Type Plain Milling Machine and Universal Milling Machine
JIS B 6243: 1960 Running Test of Internal Grinding Machine
JIS B 6244: 1960 Running Test of Surface Grinding Machine (Horizontal Spindle Rectangular Table Type)
JIS B 6502: 1960 Accuracy Test of Hand Planer
UK: BS 498: Part 1: 1960 Files and Rasps: Rasps and Engineers' Files
USA: ASA B5.3: 1960 Milling Cutters, Nomenclature, Principle Dimensions, etc
ASA B5.18: 1960 Spindle Noses and Arbors for Milling Machines
USSR: GOST 600; 979; 2447, 56; 4010; 5348; 7766; 9304, 05; 9408, 72 to 74, 79; 9505

624.8 Movable Bridges

Canada: CSA S20

625.1/.6 Railway Engineering

France: NF F01-407; F50-002
USSR: GOST 5051, 52

625.83 Paving

USA: ASA 09.1: 1960 Wood Paving Blocks for Exposed Platforms, Pavement Driveways, and Interior Floors Exposed to Wet and Dry Conditions

629.113 Automobile Engineering

India-Director General of Supplies and Disposals: G/Misc. 114
Israel: SI 341
Japan: JIS B 9302: 1960 Rear Cart
JIS B 9416: 1960 Air Valves for Bicycles
JIS B 9425: 1960 Rear Reflector for Bicycles
JIS B 9431: 1960 Front Fork for Bicycle

629.12 Shipbuilding

France: PN S64-011, -012
Japan: JIS F 2005: 1960 Closed Fairleads (Panama Chocke)
JIS F 2007: 1960 Mooring Pipes
JIS F 2008: 1960 Spindle Type Hand Steering Gears
JIS F 2408: 1960 Gross — Neck Ventilators
JIS F 2702: 1960 Mouth Pieces for Voice Tube
JIS F 3003: 1960 Pipe Head Caps
JIS F 3006: 1960 Ships Drain Plugs
JIS F 3013: 1960 Scupper Fittings for Ship's Cold Store
JIS F 3014: 1960 Drain Plugs of Ship's Tiling Batchtub
JIS F 3015: 1960 Gratings of Ship's Scupper Pipe
JIS F 3202: 1960 Hand Winches for Accommodation Ladders Used for Ships
JIS F 3403: 1960 Ship's Rigging Screws
JIS F 3421: 1960 Ship's Steel Cargo Lifting Blocks

JIS F 3422: 1960 Ship's Snatch Blocks
JIS F 3424: 1960 Ships Steel Block for Hemp Rope Guy
JIS F 3432: 1960 Ships' Steel Wire Sockets
JIS F 7002: 1960 Standard for Equipment of Techometers for Marine Engine
JIS F 8403: 1960 Front Glasses for Marine Electric Lamps

629.13 Aeronautical Engineering

Japan: JIS W 2005: 1960 Standard Practice for Riveting for Aircraft
JIS W 2502: 1960 Size of Tires for Aircraft
JIS W 2503: 1960 Contours of Rims for Aircraft
JIS W 2909: 1960 Inspection for Aircraft Hydraulic System
JIS W 4405: 1960 Tank-Mounted Booster Pumps for Aircraft

63 Agricultural and Animal Produce

Australia: SAA N.32: 1960 Pipes (Stainless Steel) and Pipe Fittings for Milk and Processed Milk Products
France: PN U43-151
Netherlands: NEN 747
Poland: PN R-74450 to 456
Standards Association of Rhodesia and Nyasaland: RNS K1
USA: ASA K62.23: 1960 Common Name for the Pest Control Chemical 4-Chloro-2-Butynyl m-Chlorobanilate Barban
USSR: GOST 197; 3494, 97; 7245; 9331

64 Domestic Science. Catering, Etc

Canada: 22-GP-38a
India-Ministry of Defence: IND/SL 0037
Netherlands: NEN 1006; 1770; 2246 to 49
UK: BS 3269: 1960 Chopping Boards for School Catering
BS 3270: 1960 Plywood Pastry Boards for School Catering

651.71 Office Equipment

Japan: JIS S 1023: 1960 Office Wooden Furniture (Desk, Table and Chair)
JIS S 1024: 1960 Office Wooden Furniture (cabinet)
JIS S 1031: 1960 Office Steel Furniture
Portugal: NP 4 to 17, 24
USA: ASA X2.5.20: 1960 Minimum Requirements for Office-Type Dictating Equipment

658.532 Time Chart

USA: ASA Y15.2: 1960 Time-Series Charts

661 Chemicals (Fine, Heavy, Etc)

France: NF T20-315; -321 to -326; -329 to -332; -341; -500; -501; -504; -505; -506; -508; -509; T73-010
India-Ministry of Defence: IND/SL 0652, 66; 1569, 70, 72; IND/SL/QMG 4811
Japan: JIS K 1524: 1960 Methyl Ethyl Ketone
South Africa: SABS 618
UK-Ministry of Defence: DEF 75
USSR: GOST 2222; 5457; 5948; 9337; 9476, 85

662.6/.9 Fuels, Heating. Combustion

Canada: 3-GP-7
Chile: INDITECNOR 24-13
Poland: PN C-97954 to 957
USA: ASA Z 11.37: 1960 Method of Test for Knock Characteristics of Motor Fuels Below 100 Octane Number by the Motor Method
ASA Z 11.69: 1960 Method of Test for Knock Characteristics of Motor Fuels Below 100 Octane Number by the Research Method
ASA Z 11.105: 1960 Method of Test for Mercaptan Sulfur in Jet Fuels
USSR: GOST 9414, 82

664 Food Industries. Preservation

Israel: S.I. 197; 338

665.5 Petroleum Industry

USA-American Petroleum Institute: API RP39; 40
USSR: GOST 1510; 2517; 9471, 94

666.1/.2 Glass Industry

Finland: SFS R.II.1, .2
India-Ministry of Defence: IND/SL 5897
Japan: JIS R 3202: 1960 Polished Plate Class
JIS R 3203: 1960 Figured Class
JIS R 3204: 1960 Wired Glass

666.7 Refractory Material

USSR: GOST 2642

666.8/.9 Gypsum, Lime, Cement, Etc

USA: ASA A49.3: 1960 Gypsum Plasters
ASA A70.1: 1960 Methods of Testing Gypsum and Gypsum Products
ASA A102.1: 1960 Vitrified Clay Filter Block for Trickling Filters
USSR: GOST 5338

667.6 Paint and Varnish Industry

Canada: 1-GP-47a; -71; -84a; -94a; -104a; -106a; -108a; 111a; -112; 2-GP-42
Netherlands: NEN 305; 3053
South Africa: SABS 436
UK-Ministry of Defence: DEF 1222
USSR: 1709

667.8 Wax, Polishes and Cleaning Compounds

Canada: 2-GP-112; 53-GP-70

668.8 Organic Dyestuff

USSR: GOST 9386, 90

669.1 Ferrous Metallurgy

France: FDN A30-009; NF A72-11
Norway: NS 481
USA: ASA A50.2: 1960 Rail-Steel Bars for Concrete Reinforcement
USA-Metal Powder Industries Federation: MPIF 32
USSR: GOST 2246; 9488

669.2/.8 Non-Ferrous Metallurgy

Czechoslovakia: CSN 42
Denmark: DS 15000, 204, 252, 502
Japan: JIS Z 1520: 1960 Laminated Aluminium Foil
USA: ASA G8.2: 1960 Zinc-coated (Galvanized) Iron or Steel Sheets, Coils and cut Lengths
ASA G8.13: 1960 Recommended Practice for Safeguarding Against Embrittlement of Hot Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
ASA G8.14: 1960 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASA G53.5: 1960 Electrodeposited Coating of Nickel and Chromium on Zinc and Zinc-Base Alloys
USSR: GOST 1020; 1219; 1789; 2060; 6511; 9457, 98

672.6 Chain

Italy: UNI 4415

674 Wood Industry

Australia: SAA 0·72 to 0·75: 1960 Radiata Pine: Sawn Qualities for Dressing and Milled Products
Czechoslovakia: CSN 48 0140; 1582
France: NF B53-503
India-Ministry of Defence: IND/GS 987; 992
Japan: JIS Z 2141: 1960 Method of Abrasion Test for Wood
USA: ASA 013.1: 1960 Method of Test for Ash in Wood
ASA 013.2: 1960 Method of Test for Alpha-Cellulose in Wood
ASA 013.3: 1960 Method of Test for Holocellulose in Wood
ASA 013.4: 1960 Method for Preparation of Extractive-Free Wood
ASA 013.5: 1960 Method of Test for Lignin in Wood
ASA 013.6: 1960 Method of Test for Alcohol-Benzene Solubility of Wood
ASA 013.7: 1960 Method of Test for Ether Solubility of Wood
ASA 013.8: 1960 Method of Test for One percent Caustic Soda Solubility of Wood
ASA 013.9: 1960 Methods of Test for Water Solubility of Wood
ASA 013.10: 1960 Method of Test for Methoxyl Groups in Wood and Related Materials
USSR: GOST 9330

676 Paper and Pulp Industries

France: NF QD3-016, -017; S21-002, -003
India-Ministry of Defence: IND/GS 997
Japan: JIS Z 1514: 1960 Polyethylene Treated Paper
JIS Z 1515: 1960 Vinylidene Chloride Treated Paper
USSR: 41; 46; 4598; 9481

677 Textile Industry

Canada: 40-GP-2
Czechoslovakia: CSN 02 4310 to 4314, 4320 to 4325, 4341 to 4349, 4355; 80 4116
France: NF G01; G07-005; G14-001, -002, -008
Netherlands: NEN 2120
Norway: NS 630
Poland: PN P-63000; -82640; -82655
Portugal: P. 254
UK: BS 3264: 1960 Wood Tubes for Cheese Winding Frames
BS 3267: 1960 Steel Pattern Cards for Box-Motion Control on Looms
USA: ASA L14.34: 1960 Methods of Testing and Tolerances for Single Jute Yarn
ASA L14.36: 1960 Methods of Testing and Tolerances for Glass Yarns
ASA L14.44: 1960 Methods of Testing and Tolerances for Jute Rove and Plied Yarn for Electrical and Packing Purposes
ASA L14.45: 1960 Methods of Testing and Tolerances for Rope Made from Bast and Leaf Fibres
ASA L14.46: 1960 Methods of Testing and Tolerances for Spun Twisted or Braided Products Made from Flax, Hemp, Ramie, or Mixtures Thereof
ASA L14.48: 1960 Practice for Use of Tex System to Designate Linear Density of Fibers, Yarn Intermediates, Yarns and Other Textile Materials
ASA L14.104: 1960 Method of Test for Average Fiber Diameter of Wool, Tops Card Sliver, and Scoured Wool by Micronaire Method
ASA L14.105: 1960 Alkali-Solubility of Wool
USSR: GOST 6729

(*Continued on p.* 158)

New ISI Members

Enrolled During the Period 1.12.60 to 31.1.61

Sustaining Members

Achhruram Sohanlal, Calcutta
All India Medical Corporation, Bombay
Assam State Electricity Board, Shillong
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Bharat Manufacturing Co., Bombay
Bombay Textile Research Association, Bombay
Deccan Sugar & Abkhari Co. Ltd., Madras
Glolite Electricals, Bombay
Gujarat Electricity Board, Baroda
India Radiators Ltd., Madras
Jewell Filter Co. Ltd., Calcutta
Kuljia Corporation, Calcutta
Manjeet Engineering Industries, New Delhi
Meters & Instruments Private Ltd., Chandigarh
Pepper & Ginger Merchants' Association Ltd., Bombay
Prabhat Electric Equipment Corporation, Bombay
Prem Industrial Corporation, Madras
Rajasthan State Electricity Board, Jaipur
Sandvik Asia Ltd., Bombay
South Indian Lucifer Match Works, Sivakasi
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Indian Lightgauge Metal Products Private Ltd., Bombay
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Steelways, Calcutta
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Wolverhampton Electrical Division, Calcutta

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Mittal, I. P., New Delhi
Narasimhan, S., Coimbatore
Natarajan, K., New Delhi
Sarin, Prem Kumar, Batala
Shah, Kaniyalal, T., Madras
Shah, P. P., Baroda
Sher Singh, Lucknow
Sheth, P. B., Ahmedabad

STANDARDS ADDED TO ISI LIBRARY — *Continued from p. 157*

678 Rubber and Plastic

France: NF T12-004; -011
UK: BS 903: Part A17: 1960 Methods of Testing Vulcanized Rubber: Determination of the Permeability of Rubber to Gases
BS 3263: 1960 Rubber Closures for Injectable Products
USA: ASA K65.5: 1960 Method of Test for Haze and Luminous Transmittance of Transparent Plastics
ASA K65.11: 1960 Methods of Test for Ammonia in Phenol-Formaldehyde Molded Materials
USSR: GOST 267; 9501

681.2 Instrument Technology

USA: ASA S4.1: 1960 Methods of Calibration of Mechanically Recorded Lateral Frequency Records
USSR: GOST 9384; 9483

683.954 Stoves

Israel: S.I.340

685.3 Footwear

India-Ministry of Defence: IND/TC 3758; 3801
USSR: GOST 9502

686.868.7 Sharpener

Japan: JIS S 6018: 1960 Pencil Sharpener

687.055 Sewing Machine

Japan: JIS B 9015: 1960 Arm Bed of Sewing Machine for Home Use
JIS B 9025: 1960 Upper Shaft of Sewing Machine for Home Use
JIS B 9026: 1960 Lower Shaft of Sewing Machine for Home Use
JIS B 9027: 1960 Needle Bar of Sewing Machine for Home Use
JIS B 9028: 1960 Presser Bar of Sewing Machine for Home Use
JIS B 9029: 1960 Crank Connecting Rod of Sewing Machine for Home Use
JIS B 9030: 1960 Feed Rock Shaft of Sewing Machine for Home Use
JIS B 9032: 1960 Oscillating Rock Shaft of Sewing Machine for Home Use
JIS B 9033: 1960 Fork Rod of Sewing Machine for Home Use
JIS B 9035: 1960 Thread Take Up Lever of Sewing Machine for Home Use
JIS B 9036: 1960 Thread Take Up Cam of Sewing Machine for Home Use

687.1 Clothing Ready Wear

Canada: 49-GP-1, -3

687.9 Brush

India-Ministry of Defence: IND/GS 988; 993; 994
USSR: GOST 9506

69 Building Industry, Materials, Trades, Construction

UK: BS 1151: Part 2: 1960 ' Guaranteed Minimum ' Reckoners for the Building and Civil Engineering Contracting Industries
BS 3260: 1960 PVC (Vinyl) Asbestos Floor Tiles
BS 3261: 1960 Flexible PVC Flooring
USA: ASA A42.5: 1960 Lime-Cement Stucco
ASA A79.1: 1960 Hollow-Load-Bearing Concrete Masonry Units
ASA A80.1: 1960 Hollow-Non-Load-Bearing Concrete Masonry Units
ASA A81.1: 1960 Solid Load-Bearing Concrete Masonry Units
ASA A101.1: 1960 Ceramic Glazed Structural Clay Facing Tile, Facing Brick and Solid Masonry Units

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Japan: JIS B 7105: 1960 Distance Scales Marked for Photographic Lenses
JIS B 7127: 1960 Mounting Threads and Flanges Focal Distance for Lenses on 16 mm and 8 mm Motion Picture Camera
JIS B 7130: 1960 Spindles Using for Spool of 8 mm Motion Picture Cameras
JIS B 7131: 1960 Distance Scales Marked of Photographic Lenses for 8 mm and 16 mm Motion Picture Camera
JIS B 7167: 1960 Projection Lense and Lense Holder for 35 mm Motion Picture Projector
JIS B 7168: 1960 Projection Lense for 16 mm Motion Picture Projection
JIS B 7187: 1960 Method of Micro Film Copying
JIS B 7188: 1960 Winding Method of Micro Film on Reel
JIS K 7552: 1960 Dimensions for 35 mm Cinema Film (Nega)
UK: BS 2013: 1960 8 mm Projector Spools
BS 2014: 1960 16 mm Projector Spools
USA: ASA PH1.10: 1960 Dimensions for Roll Film and Leaders and Trailers for Aerial Photography
ASA PH2.5: 1960 Method for Determining Speed of Photographic Negative Materials (Monochrome, Continuous-Tone)
ASA PH4.2: 1960 Sheet Film and Plate Processing Tanks
ASA PH4.3: 1960 Photographic Trays
ASA PH4.4: 1960 Channel-Type Photographic Processing Hangers for Sheet Films and Plates
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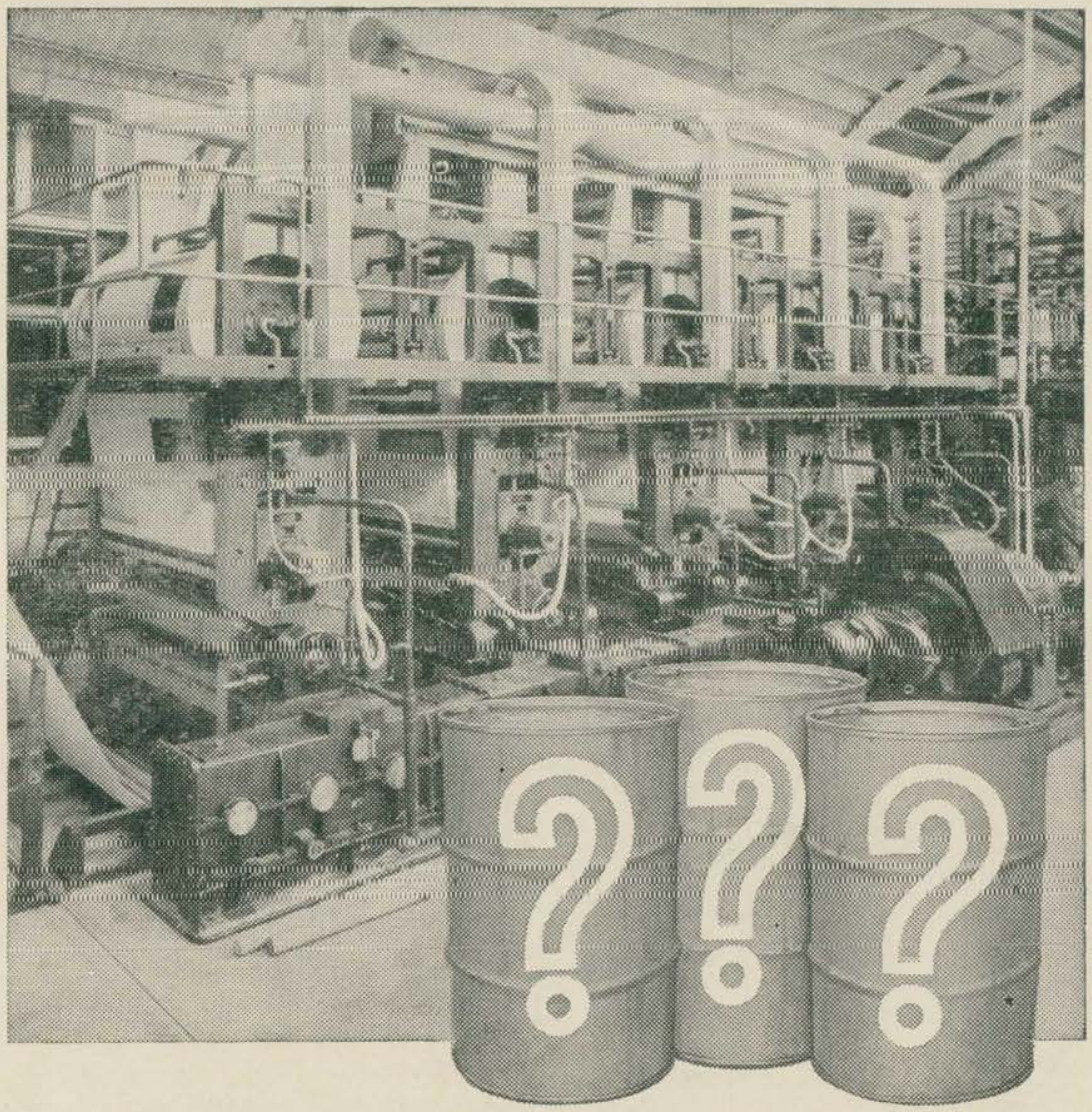
ASA PH4.153: 1960 Photographic Grade Paraformaldehyde $(HCHO)_n.H_{20}$ (Trioxymethylene)
ASA PH4.304: 1960 Photographic Grade Sodium Ferrocyanide $Na_4Fe(CN)_6$ (Yellow Prussiate of Soda)
ASA PH22.76: 1960 Threaded Lens Mounts for 16 mm and 8 mm Motion-Picture Cameras



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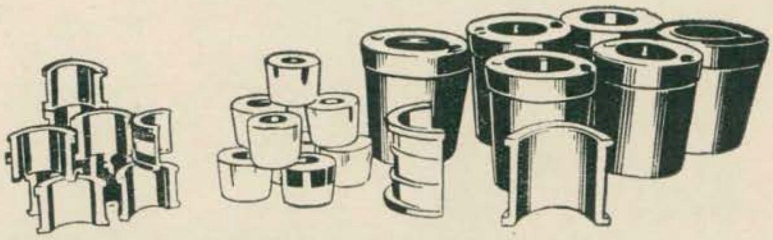

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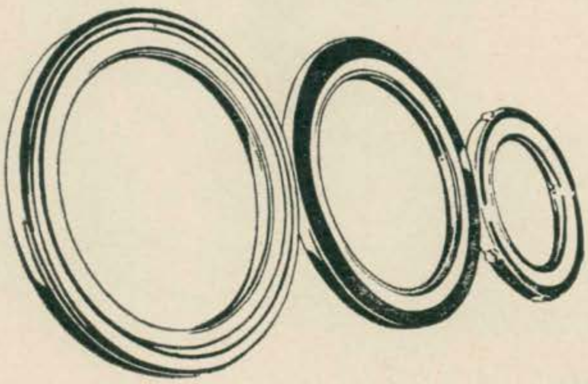

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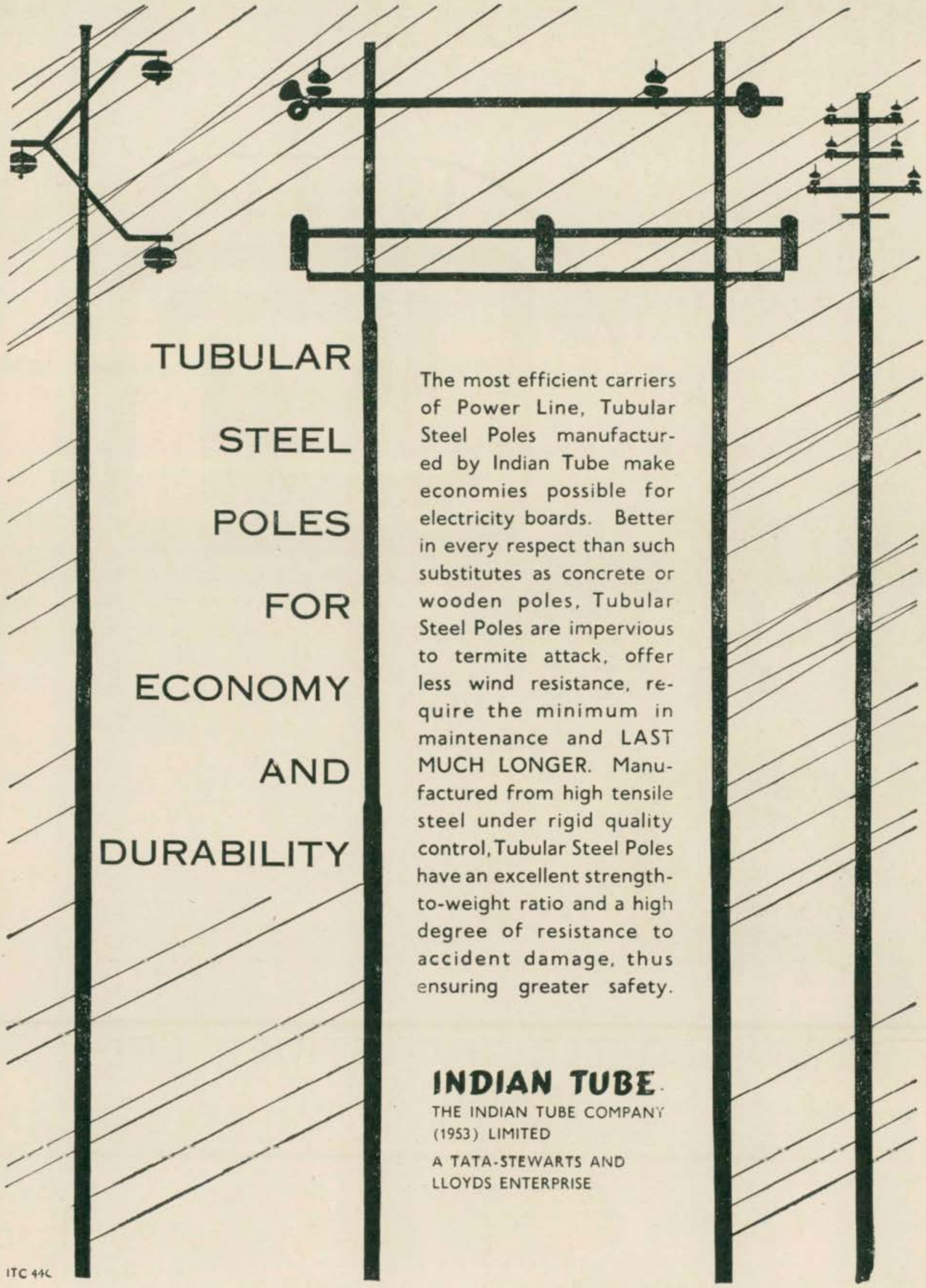
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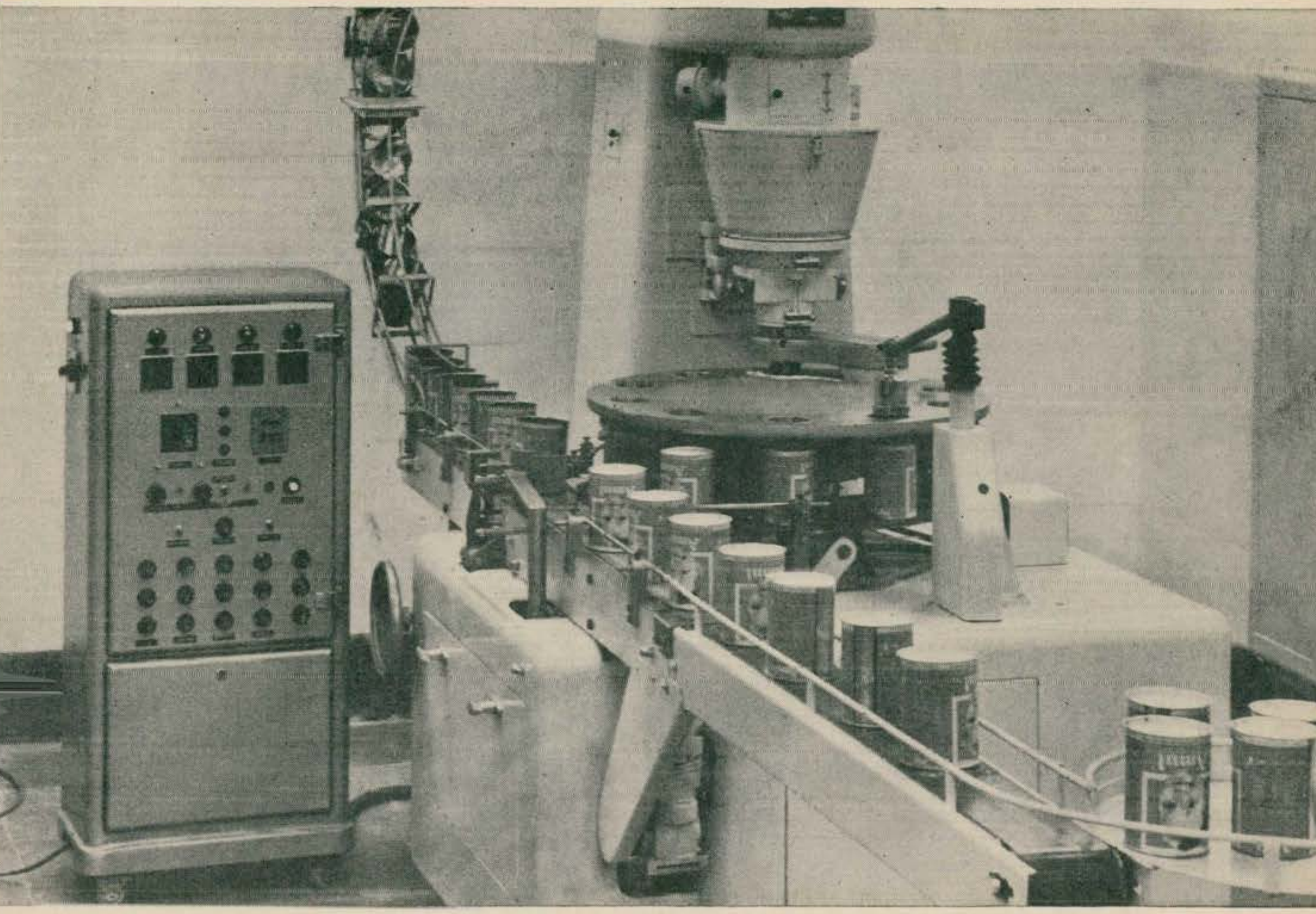

IN THIS ISSUE

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MANAK BHAVAN, 9 MATHURA ROAD
NEW DELHI 1

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New Delhi 1, INDIA

Grams: 'Manaksanstha' New Delhi *Phones:* 45011-17

ISI BULLETIN

FOUNDED 1949

Vol 13 JUL-AUG 1961 No. 4

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Picture on Cover — The filling room in an Indian factory of Infant Milk Food produced in conformity with IS: 1547-1960. The empty cans coming down the conveyor to the filling equipment emerge filled and are carried forward on the conveyor belt for the last operation of closing the bottom (not shown in the picture).

The technological efforts made for making this standard product available to consumers and the operation of the ISI Certification Marks Scheme are briefly covered in the article appearing on p. 170.

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NEW ISI BRANCH OFFICE AT KANPUR

In pursuance of its policy of having close liaison with the industry and trade in different parts of the country, ISI has opened a new Branch Office at Kanpur and it has started functioning from 9 August 1961. The Branch Office, located for the time being at 14/69 Civil Lines, Kanpur, is the fourth in the series; the previous three branch offices have already been functioning at Bombay, Calcutta and Madras.

The Kanpur Branch Office will serve the cause of standardization in UP and other areas close to it. It will provide up-to-date information about standardization activities in India and abroad and the operation of ISI Certification Marks Scheme. In addition, Indian Standards and other publications of ISI will be stocked for sale. The Branch Office will also register orders for the supply of British, American and other foreign standards.

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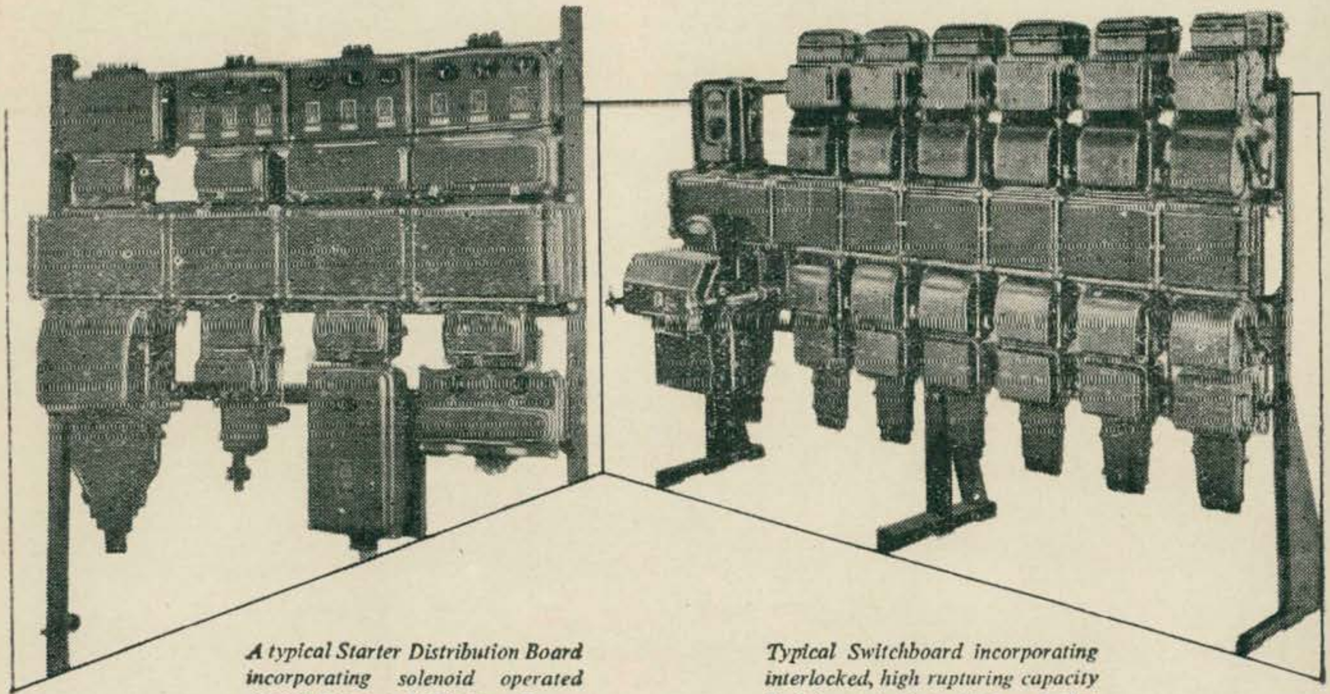

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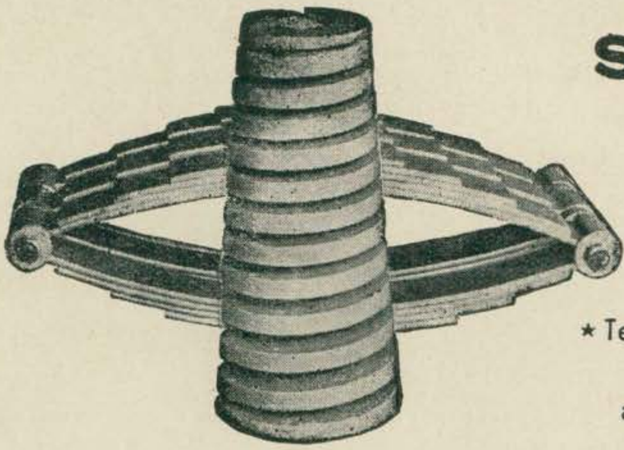

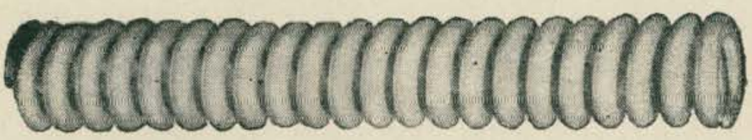

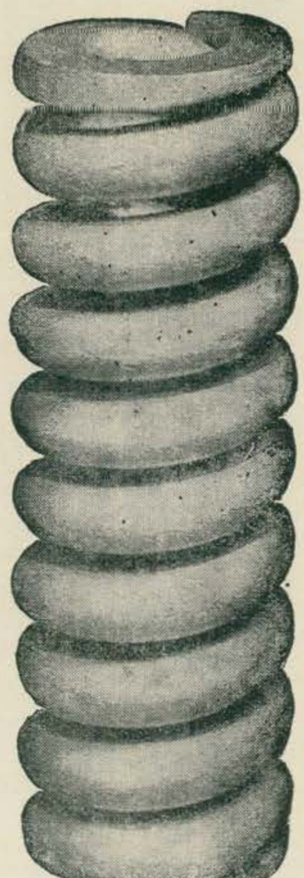

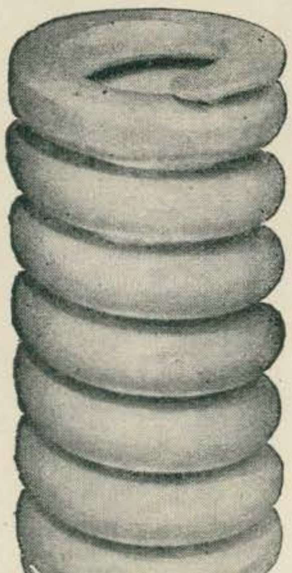

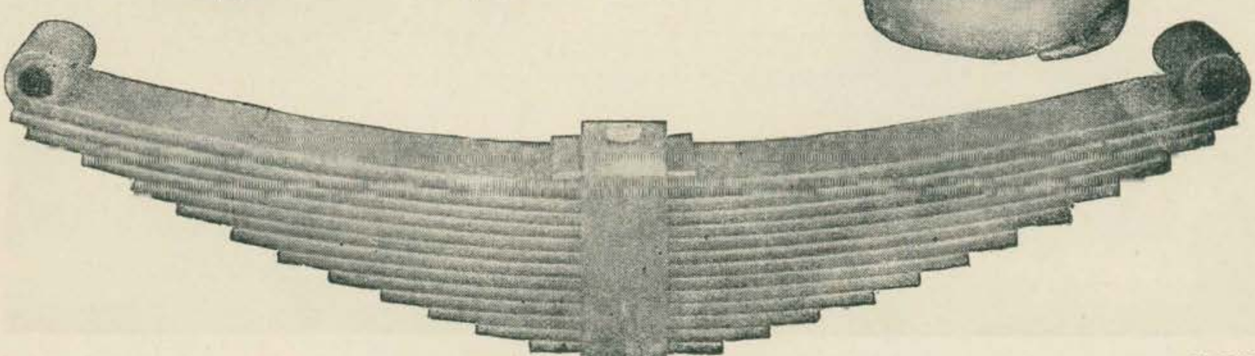

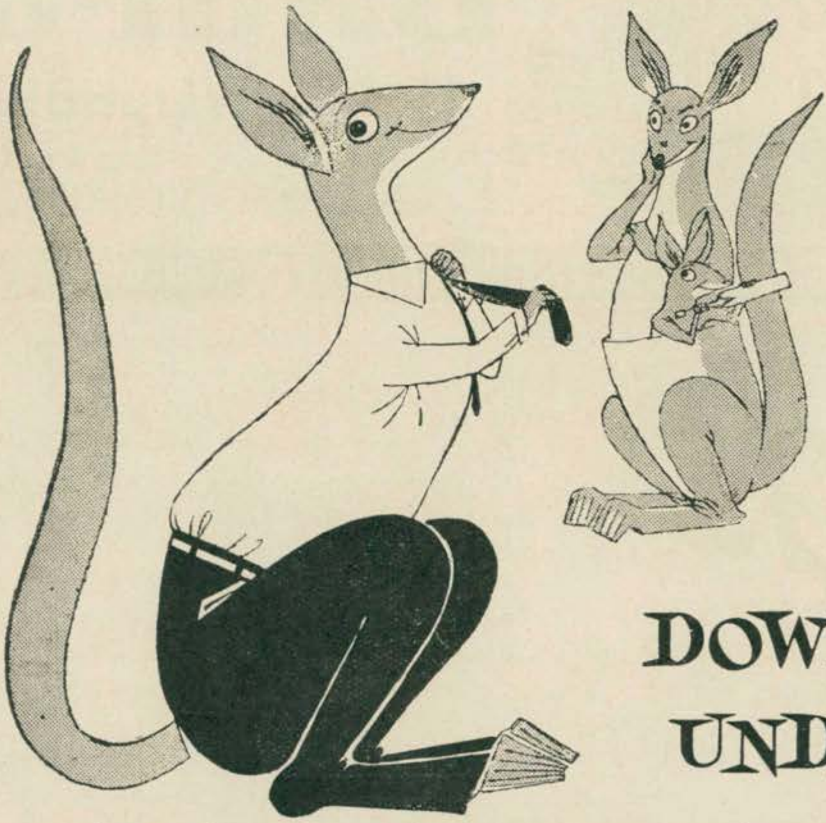

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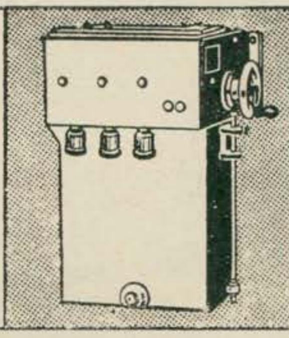
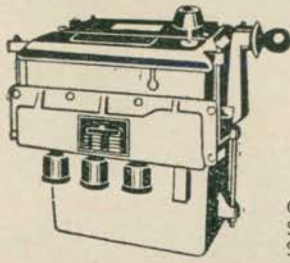
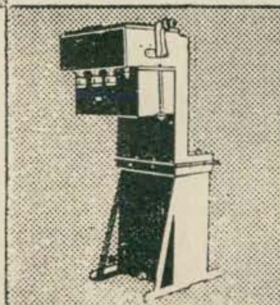


Oil Immersed
Combined
Rotor-Stator
Starters

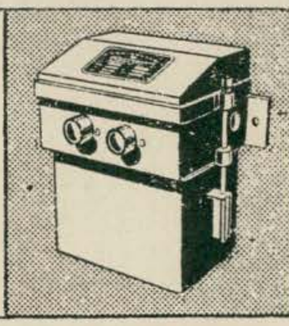
Air Break
Star/Delta
Starters



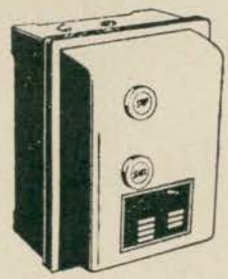
Oil Immersed
Star/Delta
Starters



Auto
Transformer
Starters



Oil Immersed
Push Button
Direct-on-Line
Starters



Direct-on-Line
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Starters

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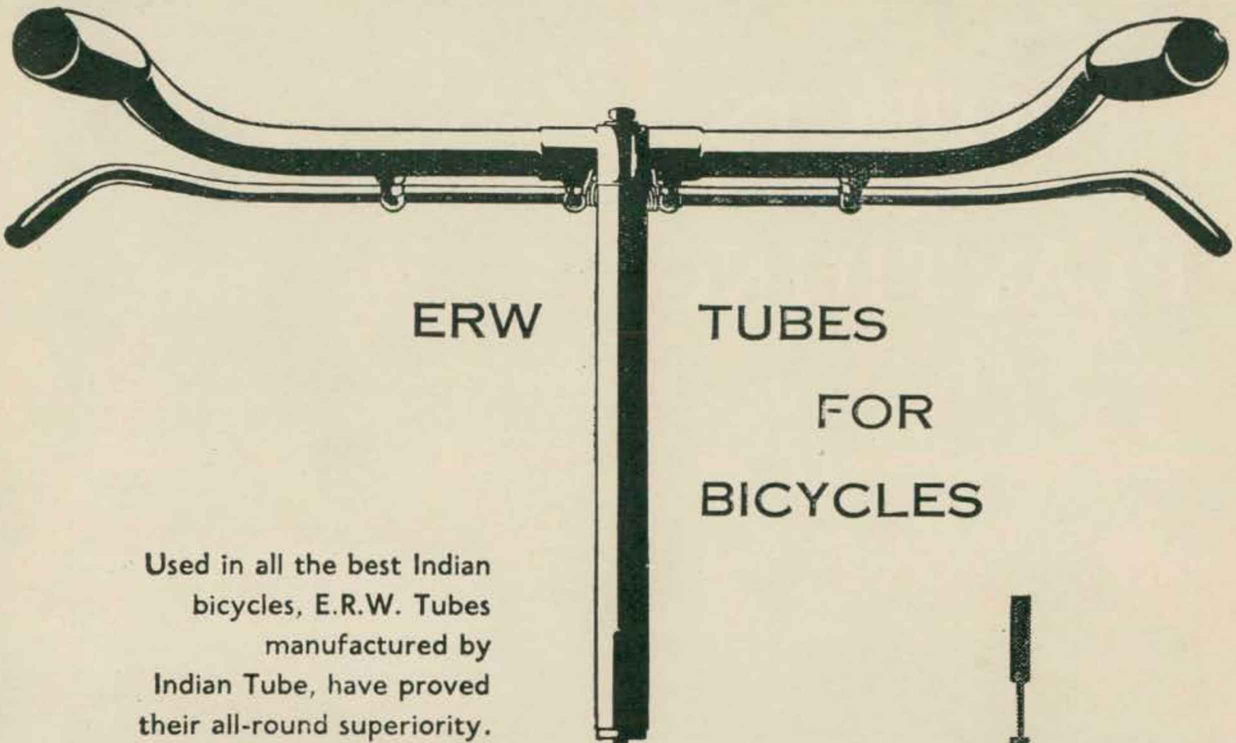

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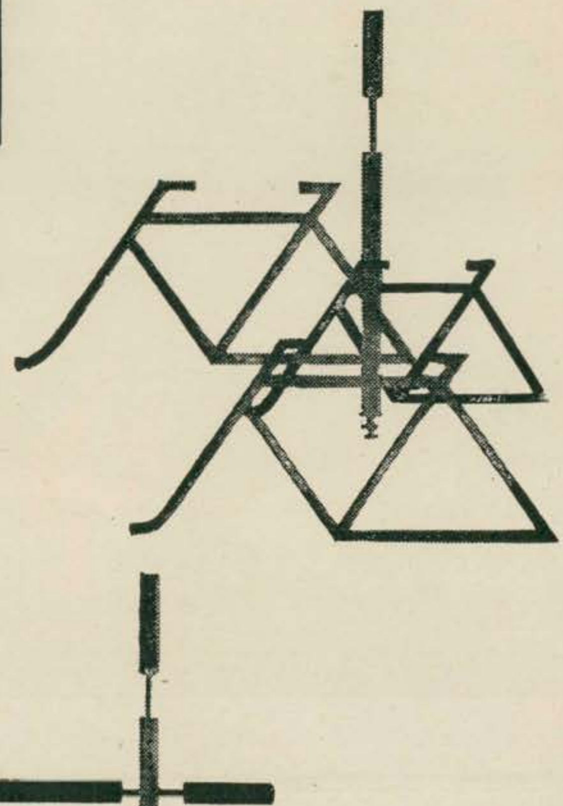

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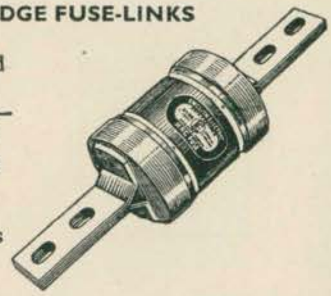
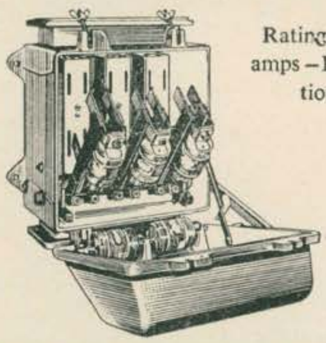


COMBINATION FUSE-SWITCHES



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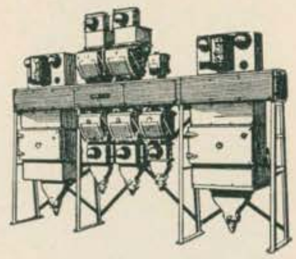

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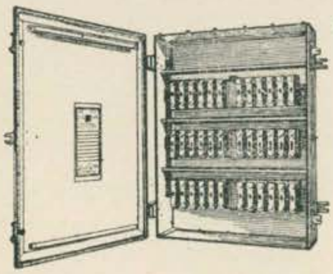
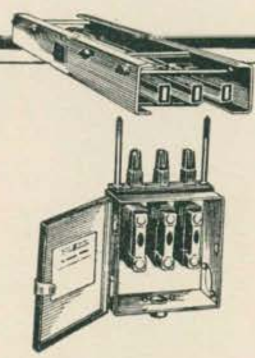


Robust, dust and moisture proof construction—Type tested for 35 MVA rupturing capacity—Ratings from 15 to 100 amps.



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EEC-71

ISI BULLETIN

Vol 13 JUL-AUG 1961 No. 4

Standardization, Simplification and Value Analysis— Role of ISI

DR. LAL C. VERMAN

WITH the rapid industrialization of the country through planned effort over the past ten years, there is an increasing awareness of the need to conserve available resources, economize in production techniques, improve quality of products, eliminate wastes and rationalize distribution and consumption. It is natural, therefore, that standardization, simplification, value analysis and many other modern techniques have acquired special significance at this stage of India's industrial development.

As early as 1947, standardization activity began to be organized in the country through the establishment of the Indian Standards Institution. Simplification being an integral part of standardization has continuously received attention of the Institution ever since. Value analysis, on the other hand, is a subject which, though not directly connected with standardization, does stand to become much more effective if the field of its enquiry were to be covered by standards. It would thus appear that ISI could and should play an important part in the development of indigenous industries and bring about such economies and savings which alone can ensure a bright future.

In this paper, a few illustrative examples of ISI work are briefly cited under the three heads of standardization, simplification and value analysis, indicating the actual and the potential contribution which it has made and can make to the national economy. The division is entirely arbitrary for it will be noted that standardization is an all-pervading activity with but one aim — that of economy — whether of materials, products or human effort.

This paper was read at a Conference organized by the Delhi Management Association last April (see p. 179). With the help of a few chosen illustrative items of ISI work, the paper brings out the actual and potential contribution made by ISI to the national economy through standardization, simplification and value analysis — *Ed.*

STANDARDIZATION

The **ISI Steel Economy Project** — a comprehensive programme of standardization aimed at conservation of steel at all stages including manufacture, design, fabrication, construction, and maintenance — was initiated in the early 'fifties. India was, then, producing a little over one million tons of finished steel, and through successive five-year plans it was proposed to be increased to 10 million tons by 1966. However, it was soon realized that even with this achievement, there would still remain a considerable gap between supply and demand of steel in the years to come. Energetic effort to conserve this basic material was, therefore, called for.

The re-design of hot-rolled structural sections is one of the significant achievements of this project. The series of new sections, standardized by ISI and based on a 25-mm module, are about 10 percent more economical in material, being that much lighter, for equivalent load-carrying capacity. Then, the structural design codes have been revised and factors of safety liberalized. These steps are likely to lead to a further economy of about 10 percent. The light-gauge cold-formed sections are also being standardized to the extent they can be, and a design code for their use has been published. These light-gauge structures are highly economical and are known to effect a saving of up to 40 percent of steel. Welding makes another important contribution to the saving of steel and many standards concerned with welding practice, materials and equipment are being presently processed.

If a conservative estimate is made, it can safely be said that something like 20 percent steel can be saved if all these measures were fully implemented. In the context of 10 million tons' production an appreciable quantity of which is to be used for structural purpose, a saving of even one million tons per year would amount to about Rs 60 to 70 crores, besides the saving of investment in additional plant capacity.

The new series of Indian Standard structural sections have already begun to be produced in the new mills of both public and private sectors. The older mills have also prepared their programme for producing the new sections. The Government of India have taken a decision recently to have all steel manufactured in the country to be certified under the Indian Standards Institution Certification Marks Scheme. Implementation of this decision will enable the large production volume of steel shortly to be produced, to be covered by a simple scheme of testing and certification, which relies for its effectiveness on the self-interest and integrity of the manufacturer and which has the requisite overall supervision by ISI. It is further hoped that in due course the so-called untested steel will disappear from the Indian market or at least be considerably reduced in volume.

The Steel Economy Project of ISI is a class by itself, for it attempts through standardization of various facets of steel industry to bring about an overall economy in the national context. Another project which may be considered on somewhat similar footing is the **modular co-ordination in the field of building industry**. Progress in this field has not, however, been as rapid, due perhaps to the relatively more dispersed character of the interests concerned. The object is to standardize all components and materials for buildings on the basis of a size module, which will enable building designs to be executed more expeditiously, building construction to be carried out more economically, and the costs reduced appreciably through reduction of wastage of labour and materials. The overall task requires bringing together under one canopy of the programme a large number of interests including owners and erectors, architects and designers, builders and contractors, manufacturers and fabricators, labour and management. It is the hope of ISI that such a co-operative venture will be possible, which is so essential in alleviating the housing situation as it exists today.

A similar project which ISI completed a few years ago dealt with **foodgrain storage**, which had the object of preserving foodgrains while in storage or transit, whether in the village or the city, while in farmers' possession or passing through a *mandi*. A comprehensive set of standards issued by ISI, some of which are available in Hindi, deal with all aspects of the subject. It is, however, difficult to estimate the extent of contribution that these standards have made to the food economy of the country. Nevertheless, it is our hope that the guidance contained in them will prove useful at least to the primary producers at the village level.

Many other Indian Standards have helped regulate existing industries, and bring into being new industries. It is not possible to touch upon even a few of them. So let us pass on to Simplification.

SIMPLIFICATION

Simplification, or variety reduction as it is otherwise known, is an important aspect of standardization activity. The decision of the Government of India to adopt the metric system of weights and measures has, however, provided a unique opportunity for ISI to introduce simplification while converting old standard sizes to the new metric sizes.

To guide selection of a series of sizes as well as to secure a measure of uniformity in practice in the choice of the series, ISI is propagating the use of **preferred numbers** which have been adopted by the International Organization for Standardization. These numbers which provide the very foundation for simplification are conveniently rounded off values derived from certain geometric series, including the integral power of 10. Their use in standardization work is based on the experience that consumers' requirements for a range of sizes of a product are frequently satisfied when the range follows, more or less closely, a geometric progression, even though the selection is made without any consideration of theory. Preferred numbers were first used in France towards the end of the nineteenth century, and since then successful attempts at simplification on the basis of these numbers have been made in a number of countries. It has now been widely accepted that adoption of these numbers in grading a series of articles saves unnecessary variations and enables the requisite range to be covered by a minimum number of sizes, with resulting economy in manufacture and use.

Preferred numbers have been freely used by ISI in establishing new range of sizes of many basic products. Thus, Indian Standard Preferred Sizes for Wrought Metal Products (IS:1136-1958); Indian Standard Thicknesses of Sheet and Diameters of Wire (IS:1137-1959); Indian Standard Sizes of Metal Strip, Sheet, Bars, Flats and Plate (IS:1138-1958); etc; have been issued for guidance of producing and consuming industries who have the job of creating new metric designs based on such semi-finished products. In the field of packaging, application of preferred numbers means simplification of sizes of containers.

Opportunity is being taken to introduce such simplification along with the advent of metric system. To quote just one example, a survey made by ISI showed that 350 sizes of drums and kegs were being manufactured in the country for packaging paints, oils and other similar products. It has now been possible to reduce this number to 25, out of which only 15 are indicated as preferred standard sizes, the remaining ten transitional sizes being such as would in due course disappear from use. Similar attempts have succeeded in reducing 63 jute mill bobbins sizes to 3, 34 grades of sugar to 16, and so on.

Another important piece of simplification is in the realm of **alloy and special steels**. Indian industry continues to import equipment and know-how from all parts of the world, which results in a demand for literally hundreds of types of special, alloy and tool steels based on a variety of overseas specifications. Thus, definite need exists for SAE and AISI steels of USA, EN steels of UK, ST steels of Germany and many others, though quantities involved for each type and variety are small. The present position being highly wasteful, ISI has organized a special project which besides attempting rationalization of varieties has for its object to minimize the use of imported alloying elements, such as nickel and molybdenum and to develop steels using indigenously available alloying elements, such as manganese and chromium. This project has already made good enough progress to provide the basis for designing the production schedules of the new alloy steel plant currently under construction in the public sector at Durgapur.

VALUE ANALYSIS

One of the objectives of value analysis is to promote the use of cheaper or more readily available materials for a given purpose or end use. The standardization programme of ISI assists in achieving this objective in certain cases by providing specifications for alternate materials which could readily be produced in the country and replace a more costly product. In this connection, examples may be cited of the specifications for portland blast-furnace-slag cement, standard sand for cement testing, tamarind kernel powder for sizing jute and cotton textiles, and several others.

The **blast-furnace-slag** which is a waste product is often utilized in other countries for producing portland cement by inter-grinding it with cement clinker. The Indian slag had never been so utilized in the past and ISI was called upon to prepare a specification so that production could be started. Presently, one factory for producing blast-furnace-slag cement has been erected while others are being planned. It is hoped that the teething troubles of this new industry will soon be overcome and we shall have in India the possibility of extending our cement resources by making use of an erstwhile waste material, so difficult to dispose of.

Testing of cement in laboratories and in production units requires the use of a standard sand which until recently had been imported from UK. The material known as the Leighton Buzzard Sand used to cost about Rs 1 000 per ton delivered at Indian ports. It consists mainly of ordinary silica grains of a particular size and shape free from extraneous material. It will be appreciated that the country with vast resources of all varieties of siliceous sands had to depend for a small quantity of sand for testing purposes on other countries. While the search for a standard sand started as long ago as the middle 'thirties, **the adoption of an indigenous sand as a standard material** for testing was not possible until ISI issued a standard on this subject in 1955. Even then its manufacture was non-existent and it was through a sustained effort on the part of the Institution that the manufacture of an Indian Standard Sand was started in Madras. It is now available at about Rs 300 a ton and demand for it is arising in certain neighbouring countries which had also depended in the past on the Leighton Buzzard source.

Tamarind kernel powder is a new material of commerce developed through research effort of the Forest Research Institute, Dehra Dun. Though not itself starchy, it has the potentiality for replacing starch which is used for sizing cotton and jute textiles in large quantities. The interest in developing tamarind kernel powder manufacture in India originated during the last war when foodgrain cereals were in short supply. Even now the shortage of foodgrains constitutes a serious national problem and the importance of replacing starch by tamarind kernel powder can well be appreciated. It was in the early 'fifties that the Indian Standard for this material was issued and since then its production and use in the textile industry has considerably increased, thus helping to minimize the use of foodgrain cereals for the manufacture of sizing materials.

CONCLUSION

In conclusion it may be said that ISI has so far published and has under print over 1 660 Indian Standards, which cater for the various needs of trade and industry of the country. In laying down these Indian Standards, persistent effort has been made to ensure development of indigenous industries and maximum utilization of indigenous materials. The impact of the Institution's effort on the national economy cannot be readily estimated in monetary terms, but it is a truism which may be emphasized that the size of this impact will largely be determined by the thoroughness with which Indian Standards are implemented in actual practice.

There is no doubt that ISI has received and is receiving excellent co-operation and encouragement from all interests in the country. There still remains a great deal of scope for more positive action on the part of industrial management for implementation of Indian Standards, which implies manufacture of products strictly in accordance with Indian Standards, getting them certified by ISI, and insisting on making all their own purchases on the basis of Indian Standards.

Time has come when standardization and simplification should be taken up as a management function and receive as detailed and exhaustive an attention of management as any other more orthodox function, such as sales promotion or advertising. The Indian Standards Institution is responsible for this function at the national level, and industrial management has its own complementary part to play at the company level, which implies that all purchasing, manufacturing, sales and distribution should be geared to national standards, wherever available, or to company's own standards where necessary. I would not enter into the details of how this is to be accomplished, but it is imperative that the importance of standardization as a management function be recognized.

INDIAN STANDARDS CONVENTION, 1961

As announced earlier, the sixth Indian Standards Convention will be held at Kanpur from 25 to 31 December 1961. The main feature of the Convention will be the following nine technical sessions; the names of chairmen and secretaries are indicated against each:

Session	Subject	Chairman	Secretary (From ISI)
S-1	Productivity in Building Design and Construction	Shri C. P. Malik, Director, National Buildings Organization	Dr. H. C. Visvesvaraya
S-2	Review of Indian Experience with Certification Marking	Shri S. Ranganathan, Secretary, Ministry of Commerce and Industry (Co-Chairman Shri Prabhu V. Mehta, Chairman, ISI Certification Marks Advisory Committee)	Shri C. N. Modawal
S-3	Packaging	(to be decided)	Shri S. Subramanyan
S-4	Company Standardization Practices	Mr. R. G. D'Costa, General Manager, TELCO	Shri T. Purnanandam
S-5	Introduction of Metric System in Engineering Industries	Shri K. V. Venkatachalam, Joint Secretary, Ministry of Commerce and Industry	Shri S. K. Sen
S-6	Adoption of Universal Count System in Textiles	Shri Srinagabhushana, Principal Sri Krishnarajendra Silver Jubilee Technological Institute, Bangalore	Shri Maharaj Kishen
S-7	Housing and Preservation of Documents	Dr. S. R. Ranganathan, Chairman, ISI Documentation Sectional Committee	Shri V. P. Vij
S-8	Safe Use of Electricity in the Home	Shri S. S. Kumar, Chairman, Central Water and Power Commission	Shri Y. S. Venkateswaran
S-9	Non-destructive Testing of Metals	Shri S. K. Nanavati, Deputy General Manager, TISCO	Shri B. S. Krishnamachar

Approval to preside at the session is awaited from Shri Srinagabhushana and Mr. D'Costa.

Calibration of Graduated Glassware with Distilled Water

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An attempt has been made in this paper to simplify the formula on the basis of which calculations have been made in B.S. 1797 : 1952 Tables for Use in the Calibration of Volumetric Glassware, corresponding to which an Indian Standard is under preparation. It is pointed out that for a standard temperature of 27°C, which has been recommended by the Glassware Sectional Committee of ISI for marking of capacities of volumetric glassware, the simplified formula recommended in this paper can be used without affecting the desirable accuracy, keeping class 'A' glassware in view. The accuracy requirements of data to be used in the simplified formula for preparing these tables are also given—*Ed.*

1. CORRECTION FACTORS

1.1 To find the accuracy of marking on a graduated vessel, the common method is to calibrate the vessel by finding weight in grams of distilled water delivered or contained, as necessary, at the ambient temperature and then to add a suitable correction factor to get the correct volume in millilitres at the standard temperature. The value of the correction factor per ml of nominal capacity will depend on the following conditions:

a) Standard temperature,
b) Temperature of water,
c) Coefficient of expansion of vessel,
d) Density of weights used, and
e) Density of air.

1.2 How the values of the correction factors may be calculated will now be shown. Considering the equilibrium during weighing, at the balance point, at t°C, it is obvious that:

$$M - \frac{M}{D} \cdot a = W - \frac{W}{d} \cdot a$$

$$\text{or,} \quad M = \frac{W\,(1 - a/d)}{(1 - a/D)} \quad \ldots . \, (1)$$

where

M = mass of water (g),
D = density of water at t°C (g/ml),
a = density of air at the time (g/ml),
W = observed weight (g), and
d = density of weights used (g/ml).

1.3 Also, if V_t and V_s represent respectively the volumes at t°C and at the standard temperature of s°C, and the coefficient of expansion of the vessel be y per degree Centigrade, then

$$V_t = V_s \cdot \frac{1+y.t}{1+y.s} = \frac{M}{D}$$

$$\text{or,} \quad M = V_s \cdot D \cdot \frac{1+y.t}{1+y.s} \quad \ldots \, (2)$$

1.4 Eliminating M from equations (1) and (2), we get:

$$W\frac{(1-a/d)}{(1-a/D)} = V_s \cdot \mathrm{D} \cdot \frac{(1+y.t)}{(1+y.s)}$$

And, therefore

$$W = V_s \cdot \frac{(D-a)\,(1+y.t)}{(1-a/d)\,(1+y.s)}$$

1.5 Now, if C be the correction factor per ml of nominal capacity (V_s), then by adding a correction of $V_s.C$ to the observed weight (W) of water, we should get the correct volume of the vessel at the standard temperature, that is:

$$V_s = W + V_s.C$$

$$\text{or,} \quad V_s.C = V_s - W$$

$$= V_s - V_s \cdot \frac{(D-a)\,(1+y.t)}{(1-a/d)\,(1+y.s)}$$

$$= V_s\left\{1 - \frac{(D-a)\,(1+y.t)}{(1-a/d)\,(1+y.s)}\right\}$$

$$\text{or,} \quad C = 1 - \frac{(D-a)\,(1+y.t)}{(1-a/d)\,(1+y.s)} \quad \ldots \, (3)$$

1.6 On simplifying:

$$C = 1 - \frac{(D-a)\,\{1+y\,(t-s)\}}{(1-a/d)} \quad \ldots \, (4)$$

The last step introduces an error (E_1) of (—) $(D-a)$ $(1-a/d)^{-1}.y^2.s$ $(t-s)$, which is of the order of (—) 0·000 000 002 7 for boro-silicate-glass vessels, and (—) 0·000 000 024 3 for soda-glass vessels for each degree Centigrade value of $(t-s)$ when the standard temperature is 27°C. It can be seen that the error will be negligible at all working temperatures.

2. DESIRABLE ACCURACY

2.1 The formula (4) has been used for calculating values given in the calibration tables included in B.S. 1797 : 1952 Tables for Use in Calibration of Volumetric Glassware. An examination of these tables shows that the given values for $V_s.C$ have been retained up to third place of decimal for nominal capacities up to 100 ml and up to second place of decimal for higher nominal capacities. The corresponding highest retained accuracy of the value of C is up to the fifth place of decimal. It follows that a formula which gives values of C within an error of −0·000 005 should be sufficiently good. That this should be so can also be seen by the accuracy requirements of class 'A' volumetric glassware (*see* Table I).

2.2 Against a permissible tolerance of 0·000 6 ml/ml the corresponding error of rounding of ±0·000 005 amounting to less than hundredth part of the tolerance is negligible.

TABLE I PERMISSIBLE TOLERANCE ON CAPACITY OF CLASS 'A' VOLUMETRIC GLASSWARE

(*Clause* 2.1)

Article	Nominal Capacity (ml)	Tolerance Allowed (±ml)	Tolerance per ml of Nominal Capacity (±ml)
Burette	100×0·2	0·10	0·001 0
One-mark bulb pipette	100	0·06	0·000 6
One-mark graduated flask	100	0·06	0·000 6

3. SIMPLIFIED FORMULA

3.1 It will now be shown how far the formula (4) can be further simplified without introducing a total error not exceeding $\pm 0{\cdot}000\,001$ in the value of C. Formula (4) can be rewritten as:

$$C = 1 - (D-a)(1+a/d)\{1+y(t-s)\}$$

This introduces an error (E_2) of

$$(+)(D-a)\frac{a^2}{d^2}\left\{1+y(t-s)\right\}$$

which is of the order of (+) 0·000 000 02 only. On further simplification:

$$C = 1 - \{D-a(1-D/d)\}\{1+y(t-s)\}$$

This introduces an error (E_3) of

$$(-)\frac{a^2}{d}\left\{1+y(t-s)\right\}$$

which is of the order of (—) 0·000 000 17. Finally:

$$C = 1 - \left\{D - a\left(1-\frac{D}{d}\right) + y.D(t-s)\right\} \quad \ldots (5)$$

The error (E_4) of

$$(-)\,a\left(1-\frac{D}{d}\right)\cdot y\cdot(t-s)$$

introduced here is of the order of (—) 0·000 000 01 for boro-silicate-glass and (—) 0·000 000 03 for soda-glass for each degree Centigrade value of $(t-s)$.

3.2 The total effect of all the errors introduced in arriving at formula (5) is illustrated in Tables II and III. In the case of boro-silicate-glass vessels, the maximum error is $-0{\cdot}28\times10^{-6}$, whereas in the case of soda-glass vessels it ranges between $+0{\cdot}39\times10^{-6}$ and $-0{\cdot}69\times10^{-6}$. Thus, use of formula (5) is justifiable for the reasons that the maximum error introduced is only a small fraction (1/7th) of the error of rounding in framing the calibration tables, and affects the permissible tolerance of class 'A' volumetric glassware only by a thousandth fraction.

4. MERITS OF SIMPLIFIED FORMULA

4.1 The formula (5) not only makes the calculation of data for the calibration tables much easier than formula (4), but clearly indicates what accuracy is desirable in the values of influencing factors, namely, density of water, density of air, density of weights used, coefficient of expansion of glass and the temperature.

4.2 The simplified formula:

$$C = 1 - D + a\left(1-\frac{D}{d}\right) + y.D(s-t)$$

can be considered to be made up of three parts:

a) $1-D$,

b) $+a\left(1-\frac{D}{d}\right)$, and

c) $+y.\,D(s-t)$.

Values of each part may be calculated separately and added together.

4.2.1 Part (a) gives the effect of change of density of water on the value of C. Although the term D appears also in the other parts, yet its significance there is much less. Any error in the value of D will introduce about an equal error in the value of C. Since it is desired that the value of C should be correct to the sixth decimal place, it is necessary that density of water also should be known correct to the sixth place of decimal.

4.2.2 Part (b) gives the influence of values of a and d on values of C. It is obvious that any error in a will introduce about an equal error in C. The value of a also should, therefore, be known correct to the sixth place of decimal. The density of plated brass weights is 8·4. An error of 0·1 in value of d introduces an error of nearly 0·000 001 7 in C. In order that the error in value of C caused by an error in d should not exceed —0·000 001, the specific gravity of weights used should be known correct within $\pm 0{\cdot}06$. For calculation of part (b) the accuracy in the value of D up to the third place of decimal is fairly high because in this part, a variation of 0·001 in the value of D will introduce an error of only $\pm 0{\cdot}000\,000\,7$.

4.2.3 Part (c) of the formula shows the significance of y. An error in value of y will introduce an equal error in value of C for each degree Centigrade value of $(s-t)$. If the temperature of water at the time of calibration varies within 10°C from the standard temperature, then for the limiting error of —0·000 001 in value of C, the permissible error in value of y should be only —0·000 000 1. In other words, y should be known correct to the seventh place of decimal. Since the value of coefficient of expansion of glass is usually not known up to such high accuracy, it is important that the temperature at the time of calibration should be very close to the standard temperature. In computing values of part (c) of the formula, the value of D need not be known better than up to third decimal place.

4.3 An error in noting the temperature of water will be significant to the extent to which density of water changes with change of temperature. For example, at 27°C an error of one-twentieth of a degree in the temperature will affect the value of D by as much as —0·000 015. Since measurement of temperature sufficiently accurate for higher

TABLE II TOTAL ERROR IN VALUE OF 'C' IN THE USE OF FORMULA (5) FOR BORO-SILICATE-GLASS VESSELS

(*Clause* 3.2)

(*Note — Standard temperature taken as* 27°C. *Multiply all values by* 10^{-6})

Errors	17°C	22°C	27°C	32°C	37°C
E_1	+0·03	+0·01	nil	−0·01	−0·03
E_2	+0·02	+0·02	+0·02	+0·02	+0·02
E_3	−0·17	−0·17	−0·17	−0·17	−0·17
E_4	+0·10	+0·05	nil	−0·05	−0·10
Total error	−0·02	−0·09	−0·15	−0·21	−0·28

TABLE III TOTAL ERROR IN VALUE OF 'C' IN THE USE OF FORMULA (5) FOR SODA-GLASS VESSELS

(*Clause* 3.2)

(*Note — Standard temperature taken as* 27°C. *Multiply all values by* 10^{-6})

Errors	17°C	22°C	27°C	32°C	37°C
E_1	+0·24	+0·12	nil	−0·12	−0·24
E_2	+0·02	+0·02	+0·02	+0·02	+0·02
E_3	−0·17	−0·17	−0·17	−0·17	−0·17
E_4	+0·30	+0·15	nil	−0·15	−0·30
Total error	+0·39	+0·12	−0·15	−0·42	−0·69

precision is not generally practicable, this affords another support for use of the simplified formula (5). In fact, for finding values of C up to 27°C it would be justifiable to simplify the formula (5) to:

$$C = 1 - D + a\,(1 - 1/d) + y(s - t) \quad \ldots(6)$$

where the additional error (E_5) introduced is

$$(+)\,(1 - D)\,\{y(s - t) - a/d\}$$

and the total error, as indicated in Table IV, is sufficiently small.

4.4 Total maximum error in above case is 0·000 000 65 which is one-eighth of the error of rounding in calibration table and approximately one-thousandth of permissible tolerance of class 'A' ware. In compiling tables for calibration with water, an average density of air has to be assumed. When the actual density of air is a', a small additional correction c is necessary.

From part (b) of the formula given under **4.2**:

$$c = (a' - a)(1 - D/d)$$

which without any significant loss of accuracy may be reduced to:

$$c = (a' - a)\,(1 - 1/d).$$

5. CONCLUSIONS

5.1 To sum up, it has been established that for purposes of framing tables of calibration for volumetric glassware, using distilled water, the following formulæ can be used when the standard temperature is 27°C:

$C = 1 - D + a\,(1 - 1/d) + y\,(s - t)$ for values of t up to 27°C, and

$C = 1 - D + a\,(1 - D/d) + y\,(s - t)D$ for values of t higher than 27°C.

5.2 Accuracy requirements of data to be used in the above formulæ are given in Table V.

TABLE IV ERRORS IN VALUE OF 'C' WHEN FORMULA (6) IS USED

(*Clause* 4.3)

(*Note — Multiply all values by* 10^{-6})

Glass	E_1 to E_4	E_5	Total Error in Formula (6)
Boro-silicate-glass			
17°C	−0·02	−0·05	−0·07
22°C	−0·09	−0·20	−0·07
27°C	−0·15	−0·50	−0·65
Soda-glass			
17°C	+0·39	+0·19	+0·58
22°C	−0·12	+0·02	+0·14
27°C	−0·15	−0·50	−0·65

TABLE V CONSISTENT VALUES OF ACCURACY REQUIREMENTS OF DATA FOR MAKING TABLES FOR CALIBRATION WITH WATER

(*Clause* 5.2)

Expression in the Formulae	Term (*See* **1**)	Variation of the Term which will Cause an Error of 0·000 001 in Value of C	Decimal Place of Accuracy Requirements in the Term
$1-D$	D	0·000 001	*6th
$a(1-D/d)$ (approx value of a is 0·001 2).	a	0·000 001	6th
	D	0·007	2nd, preferably 3rd
	d	0·06	1st, preferably 2nd
$D.y.(s-t)$ (value of s taken as 27°C):			
a) for boro-silicate-glass — y assumed as 0·000 01	y	$0{\cdot}000\,001/(s-t)$	†6th, 7th preferable if $(s-t)$ is more than 2°C
	t	0·1	—
	D	$0{\cdot}1/(s-t)$	2nd
b) for soda-glass — y assumed as 0·000 03	y	$0{\cdot}000\,001/(s-t)$	6th, 7th if $(s-t)$ is more than 2°C
	t	0·03	—
	D	$0{\cdot}3/(s-t)$	2nd, 3rd if $(s-t)$ is more than 6°C

*As the value of density of water changes with temperature, an error in noting the temperature of water used for calibration will involve an error in the value of D. Corresponding to the accuracy of 0·000 001 in value of D, the accuracy required for temperature measurement is high, as, for example, at 27°C, the temperature should be known correct up to ±0·003°C.

†This shows that for work of high precision it is necessary to have the temperature of the place of work controlled at the standard temperature.

INDIAN STANDARD GLOSSARY OF TERMS RELATING TO HIDES, SKINS AND LEATHER

The Institution has under print a Glossary of Terms Relating to Hides, Skins and Leather (IS: 1640-1960). The Glossary has been compiled to facilitate unambiguous exchange of commercial and scientific information within the industry and among the overseas buyers of these materials, and to inculcate an increasing scientific bias in the use of current terms. The standard includes about 1 500 indigenous terms currently in use in the trade in Indian hides, skins and leather. It also gives their synonyms and more common terms in vogue, but does not include terms relating to footwear and other trades, general, chemical and other terms pertaining to proprietary and patented items.

The utility of the Glossary has been enhanced by a careful scrutiny of botanical nomenclature and allied information given in it by the Department of Botany, University of Delhi; Division of Botany, Indian Agricultural Research Institute; Publications Directorate, Council of Scientific and Industrial Research; and Forest Botany Division of the Forest Research Institute, Dehra Dun.

A number of photographs highlighting some important aspects, such as typical grain patterns of hides and skins, flesh and hair sides of goat skin and pox marks on leather has further enhanced the value of the Glossary. It will be no exaggeration to mention that the Glossary will be the only comprehensive publication of its kind in the field of leather technology.

Standardization of Designs and Formulations

Points for Guidance of Committees Under Chemical Division Council

0. FOREWORD

0.1 The ISI Directorate has been receiving requests, in the past, from different quarters that the Institution should lay down standards giving design details of machinery employed in certain industries in India. This question was, in the first instance, raised and discussed at the tenth meeting of the Engineering Division Council (EDC) of ISI held on 29 November 1958 at New Delhi. After considerable discussion, the Council unanimously resolved as follows:

"The technical committees should exercize care and see that nothing that was included in the standards was in any way likely to hinder improvements in existing designs or development of new designs. Generally speaking, the standards should concern themselves with the dimensions that were essential for ensuring interchangeability, safety and performance; raw materials and processes wherever considered essential; minimum performance requirements expected of finished products; and methods of test for determining the specified requirements."

0.2 This question received further attention in ISI Directorate, and it was felt that the subject should be referred to various Division Councils in ISI for views and guidance to their respective committees. Consequently, the Chemical Division Council (CDC) at its Hyderabad session on 28 December 1959 considered the resolution passed earlier by EDC.

0.2.1 After some discussion, the views expressed by EDC were unanimously agreed to by the CDC and it authorized its Standing Working Committee (SWCC) to further examine the problem and lay down general directives for guidance of committees under CDC.

0.3 During discussion in SWCC it was pointed out that though such cases of mechanical design standardization would not arise very often in the work of CDC, problems of similar nature might, however, occur when dealing with formulation of standards for chemical products, such as specialized paints, paint removers, etc. As a result of detailed scrutiny of the work allotted to various committees under CDC, it was felt that it should not be the function of ISI to formulate standards that would, without proper justification, freeze designs and formulations, which legitimately form a part of company standardization.

0.3.1 The present note has emerged as a result of a co-operative study and, as requested by SWCC, is being published for general guidance of members of various sectional committees, subcommittees and panels under CDC as also others.

1. METHODS OF TEST

1.1 While formulating Indian Standards for methods of test either independently or as appendices to standard specifications for chemical products, only the minimum details of apparatus and designs to ensure the necessary accuracy, precision and reproducibility of the methods may be given. Detailed dimensions and requirements of apparatus which do not affect the accuracy and precision of the methods may preferably be omitted.

1.1.1 For instance, in a gas analysis apparatus only the dimensions of the burette and perhaps the dimensions of certain connecting tubes need be stipulated, all other dimensions being unimportant for test, accuracy and reproducibility.

1.1.2 Again, for example, in the case of a bomb calorimeter, details, such as the composition of the alloy steel used, type or pattern of the cover, type and size of the screw thread, details of the values and fittings may be left open; but it may be necessary to specify that it shall have a particular strength, shall be resistant to corrosion against the materials to be tested with, shall keep the requisite pressure without leakage, etc. There is, however, no bar to giving a typical example in more detail for guidance, but it should be made clear that all bombs need not comply with the design illustrated by the example and should primarily meet the essential requirements stated.

TABLE I COMMITTEES UNDER CDC WHERE CONSIDERATIONS OF DESIGNS AND FORMULATIONS ARISE

(*Clauses* 2.1 *and* 2.2)

Sectional Committee	Mechanical Designs	Chemical Formulations
CDC 6 Rubber Products	√	√
CDC 8 Paints and Allied Products	—	√
CDC 9 Lac and Lac Products	—	√
CDC 10 Glassware	√	√
CDC 13 Ink and Allied Products	√	√
CDC 16 Leather	√	√
CDC 17 Plastics	√	√
CDC 18 Classification and Labelling of Dangerous Substances	√	—
CDC 23 Coal Carbonization Products	—	√
CDC 24 Acids and Fertilizers	—	√
CDC 27 Ceramicware	√	√
CDC 28 Metal Containers	√	√
CDC 30 Adhesives	—	√
CDC 31 Brushware	√	√
CEDC 1 Lubricants	—	√
CETDC 3 Treated Fabrics	√	√

2. SPECIFICATIONS INVOLVING MECHANICAL DESIGNS AND CHEMICAL FORMULATIONS

2.0 It is expected that specifications prepared by the following Sectional Committees may not involve any standardization of mechanical design (except in respect of apparatus required for test methods as referred to in **1.1**) or designs in respect of chemical formulations:

CDC 1 Chemical Standards;
CDC 2 Alcohol and Allied Products;
CDC 3 Chemicals (Miscellaneous);
CDC 4 Fine Chemicals (Organic and Inorganic);
CDC 11 Essential Oils and Allied Products;
CDC 14 Solid Mineral Fuels;
CDC 15 Paper;
CDC 22 Petroleum Products;
CDC 25 Alkalis and Chlorine;
CDC 26 Water;
CDC 29 Methods of Test for Petroleum, Petroleum Products & Lubricants;
CDC 32 Petroleum Measurements; and
CAFDC 5 Oils, Fats and Soaps.

2.1 Such circumstances may, however, arise in respect of the other committees under CDC. These are indicated in Table I on p. 167.

2.2 Typical examples involving mechanical designs and chemical formulations in respect of Sectional Committees given in Table I are noted below:

Sectional Committee	*Examples of Mechanical Designs*	*Examples of Chemical Formulations*
CDC 6 Rubber Products	In published as well as in draft Indian Standards (under preparation) on hoses, details about construction of materials, dimensions of internal and external diameters, minimum number of reinforcement plies, thicknesses of lining, braid insulation, filler and cover have been specified. It is felt that while some of the requirements may be essential to ensure interchangeability and performance, other requirements, such as details about the quality of the fabrics, thickness of lining, braid insulation, filler and cover may be covered if possible by a functional test. If required, maximum weight of hose per unit length may be specified.	Detailed compositions of formulation mixtures for rubber products may be avoided if suitable functional tests can be provided. If, however, a certain function of a rubber component or a rubber product is dependent both on its composition and mechanical properties, it may become necessary to specify both.
CDC 8 Paints and Allied Products	—	In the case of paints, varnishes and allied materials, as a general guide to manufacturers and useful information to consumers, it may be necessary to give the formulations of particular ready mixed paints and varnishes in general terms, but at the same time ample freedom in the specification shall be provided to allow free play to the ingenuity of manufacturers. Specifying rigid formulation may be avoided, as far as possible, within the limits of essential requirements and performance.
CDC 9 Lac and Lac Products	—	The composition of various types of lac products, such as sealing wax need not be specified except as an example, if need be, because their performance attributes are more important.
CDC 10 Glassware	The dimensions of interchangeable joints and fittings, types of finish and bulb shape of thermometers, neck finishes and preferred nominal capacities of glass containers, preferred thicknesses of glass sheets, etc, may be specified. Even the general shape or pattern of glass apparatus may be specified, but their detailed dimensions and designs need not be introduced.	While it may be necessary to specify the alkalinity or neutrality of the glassware, the composition of the glass need not be specified.
CDC 13 Inks and Allied Products	Preferred sizes of chalks, crayons, typewriter ribbons, etc, may be given for guidance. But details, such as shapes and designs of ink bottles and other containers may be avoided.	Limits of some of the essential constituents, such as iron content of ferro-gallo-tannate inks, which control the performance of the end products may be given but not the details of hue and tint of writing inks and their formulation recipes.

infants fed on the two infant foods were quite satisfactory, comparing well with those of Indian infants fed on cow's milk and/or over proprietary infant foods.

Standardization

After research investigations regarding use of cow's and/or buffalo's milk for the manufacture of infant foods, standardization of composition, choice of equipment, shelf life and feeding trials were over, the need was felt for the formulation of suitable Indian Standards for the guidance of industry. The Indian Standards Institution on a request from the Central Committee for Food Standards of the Ministry of Health, Government of India, considered this subject and felt that it was time that Indian Standards were formulated so that manufacturers could base their production on these standards. Since, infant foods at present in use in this country could be divided into three categories, ISI has made available the following Indian Standards covering these three categories:

- IS: 1547-1960 Specification for Infant Milk Foods,
- IS: 1656-1960 Specification for Processed Cereal Infant Foods, and
- IS: 1657-1960 Specification for Special Infant Foods.

The specification for Infant Milk Foods prescribes the requirements and methods of test for infant milk foods intended for general feeding of infants as a substitute for mother's milk. The specification for Processed Cereal Infant Foods prescribes the requirements and methods of test for foods intended for feeding infants at the weaning stage as partial substitute for infant milk foods or for mother's milk. The specification for Special Infant Foods prescribes the requirements and methods of test for infant foods intended for feeding infants in special cases. These specifications have prescribed requirements in respect of moisture, total milk protein, milk fat, total carbohydrates, total ash, acid insoluble ash, solubility index, minimum limits of vitamins and mineral contents, bacterial count, coliform count, etc.

Dr. Rajendra Prasad, President of India, Showing Keen Interest in the Infant Milk Food Produced in Conformity with the Indian Standard on His Visit to the Amul Baby Food Plant at Anand last December

Certification Marking

But before a consumer can get reliable standard products in the market, applied research, formulation of relevant standards and industrial exploitation by manufacturers have to be followed by suitable certification which can help consumers to readily choose a standard product from the sub-standard ones. It is for this purpose that ISI has been vested under the ISI Certification Marks Act, 1952, and Rules and Regulations framed thereunder, to grant licences to manufacturers to apply the ISI Certification Marks on their products in token of their conformity to Indian Standards concerned. One such licence has recently been issued to Messrs Kaira District Co-operative Milk Producers' Union Ltd., Anand, a manufacturer of infant milk food.

Each licence issued under the operation of the ISI Certification Marks Act is subject to the condition that the licensee shall follow a scheme of testing and inspection laid down by ISI to ensure continuous production of goods conforming to the relevant Indian Standard. The procedure for the granting of the licence begins with the Institution deputing a technically qualified inspecting officer for inspecting the factory of the applicant. He gathers first-hand information about the manufacturing processes and the controls which are exercised during production, and also determines whether adequate testing facilities are available in the factory for checking the incoming raw materials and the outgoing product, and for carrying out necessary tests at different levels of control during production to ensure compliance with the standard specifications concerned. He draws random samples from production line, which are subsequently sent to approved laboratories for testing. Only after the inspector's report and test reports of samples are found fully satisfactory, does the Institution grant a licence, annexing therewith a scheme of testing and inspection which the licensee has to follow rigidly. The scheme includes a sampling plan which takes into account the importance of various characteristics, the range of variation of characteristics in batches likely to result and the number of tests that should be conducted at various levels of control. The scheme also prescribes maintenance of adequate records about quality control during production in prescribed forms.

In addition to the checks exercised by the licensee himself, ISI carries out periodical inspections of the factory of the licensee and of his production records to ascertain whether the scheme prescribed in the licence is being adhered to or not. Furthermore, ISI draws random samples of the products from the factory. These samples are tested in the factory as well as in independent laboratories. Surprise inspections are carried out by ISI and samples drawn during such inspections are tested. Samples of ISI marked goods are also obtained from the market and from the parties to whom supplies are made by the licensee and these samples are subjected to tests. Thus, ISI maintains a constant watch over the quality of the marked goods. In addition, the Institution rigidly examines each point regarding the performance of a licensee during the preceding operative periods of the licence, before renewing it for a further term.

As for the misuse or abuse of the ISI Mark by the licensee or others, the ISI Certification Marks Act and its Rules and Regulations extend powers to ISI and to the Government of India to take suitable action against offenders. The Act prescribes fines up to Rs 10 000 and forfeiture to Government of all goods for improper use of the ISI Certification Mark. Furthermore, a licence can be suspended or cancelled by the Institution if it is satisfied that the licensee concerned has used the Standard Mark in respect of any article or process which does not conform to the relevant Indian Standard, or the licensee fails to comply with the terms and conditions of the licence.

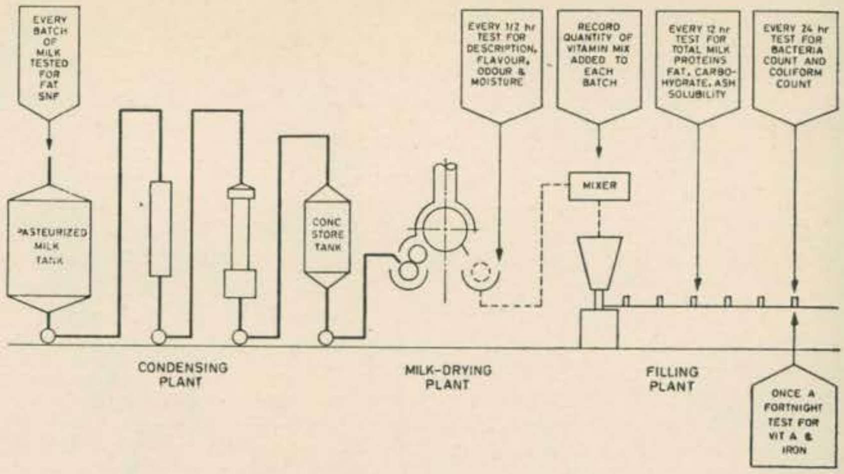


Fig. 1 Milk Flow Diagram for Manufacturing Infant Milk Food Conforming to IS:1547-1960

As a further safeguard for the consumer, ISI has made it obligatory for all licensees that if goods bearing the ISI Mark do not conform to the Indian Standards concerned, the licensees will be required to replace them free of cost.

Because the Certification Mark is allowed to be applied only after proper inspection and ensuring continuous check of quality during the process of production, the Certification Marks Schemes are more economical, for they pay for themselves and more, by eliminating defectives, reducing wastages, bringing uniformity in production, etc. It has also been established that continuous check on production provides a better safeguard against defectives than batch sampling methods. To the buyer in particular, the ISI Mark indicates not only a third-party guarantee for the conformity of the products to the Indian Standards concerned, but also an indication about the goods having been produced under a pre-planned system of control.

Since the ISI Certification Marks Scheme ensures that chances of finished goods failing to conform to the Indian Standard concerned are remote, the buyer can accept certified goods with a greater degree of confidence and without the need for any further inspection. The scheme is also conducive to the building up of consumer confidence in the producer and improvement of buyer-seller relationship.

ISI (CERTIFICATION MARKS) RULES, 1955

Director ISI Authorized to Modify Indian Standards

In exercise of the powers conferred by Section 21 of Indian Standards Institution (Certification Marks) Act, 1952 (XXXVI of 1952) and clause (b) of sub-rule (1) of Rule 3 of the Indian Standards Institution (Certification Marks) Rules, 1955, the Indian Standards Institution, with the previous approval of the Central Government, has made, with immediate effect, the following addition as sub-clause (4) to regulation 3 to the Indian Standards Institution (Certification Marks) Regulation, 1955:

"(4) Director may, however, tentatively modify such of the provisions of an Indian Standard as in his view would help to expedite the use of the standard mark, without in any way affecting the quality of the goods covered by the standard.

Provided that within six months of such actions, concurrence of the Sectional Committee concerned with the preparation of the Standard is duly obtained."

A notification to this effect was published in the Gazette of India Part II, Section 3 — Sub-Section (ii), No. 24, dated 17 June 1961.

Training of Technical Personnel in ISI

DR. A. N. GHOSH
JOINT DIRECTOR, ISI

We reproduce here a paper presented at the Second Middle East Standardization Conference held at Cairo from 30 January to 5 February 1961, the proceedings of which were reported in the last issue of this Bulletin.

A scheme of training new officers has been in operation in ISI since 1957. Under this scheme, about one hundred graduates in science, engineering, etc, have so far been selected as probationers in three batches. Of these, the first batch was confirmed last year* after completing the prescribed two-year period of probationary training. The second batch of 14 candidates has also been recently absorbed in the ISI Cadre of technical officers (*see* next page). The officers of the third batch, recently recruited, have just joined — *Ed.*

*See ISI Bull., Vol 12, No. 4, p. 185 (1960).

IN keeping with the world progress based on science and technology, there is today a world shortage of scientists and technicians. India is no exception to this phenomenon, and today, with the explosive advance that is being planned in the country, the shortage of technicians is really acute. So far as technical personnel in the work of standardization is concerned, the position in India is further aggravated by lack of any training scheme in higher technical schools and universities for bringing up standards engineers. Attempts are, however, being made by ISI to introduce in the various engineering study courses the subject of standardization. Interest is being shown but results are still awaited.

Much has been written and said about the qualifications and the basic make-up of a standards engineer. Broadly speaking, qualities that make a good standards man are:

a) Good technical understanding of the subject on which standards are to be prepared;
b) Understanding and grasp of fundamental principles of standardization;
c) Good personality;
d) Power of persuasion;
e) A good deal of patience;
f) Organizing ability; and
g) Ability to get the best out of committee members who may occupy different status and position in life and technical hierarchy.

PECULIAR NEED OF INDIA

India needs for her national standards body a much larger number of standards engineers due to circumstances which differ from other more industrialized countries like USA, UK and Germany, where standardization at the company level is much more developed than in our country where standards consciousness is hardly developed. Therefore, ISI has to work in a manner somewhat different to that of the countries where company standardization is better developed. The Institution has to depend a great deal more on its own staff members for development of standards in the country. Therefore, in the present stage of development of education and standardization in India, ISI has to bear the main burnt of: (a) training of standards engineers for ISI, and (b) propagation of standards-consciousness among engineers and technologists in the industry.

RECRUITMENT IN ISI

With the object of training its own personnel, ISI has, for the last four years, been recruiting young science graduates in different fields of technology like engineering — mechanical, electrical, structural and civil; metallurgy; chemistry, agriculture, statistics; textiles; and so on. The selection is made on the basis of their performance in the universities, keeping an eye on these persons who can best develop as standards men.

The responsibility of the technical staff of ISI Directorate is mostly that of a secretary of a technical committee. On his shoulders falls the responsibility of acting as a central pivot for keeping the committee on the right track, and utilizing the specialized knowledge of the technical members of the committee and fusing this into the building of the right type of standards. This would require not only a sound background of the technical subject but also a grasp of the problem in its different facets — technical, economic and others. He has also to be pre-eminently a public relations man, as his job is to keep people of varied interests working as a well-knit unit. It has been said by one of the pioneers in standardization that when he started in this line, he thought standardization meant 50 percent technology and 50 percent public relations. With the experience of several decades, he thinks that standardization is 90 percent human factor and 10 percent technology.

With these objects in view, the young graduate, after his selection, is grounded in the basic principles of industrial standardization by passing through a course of lectures and training in ISI. He is also made to develop good human relations and exceptional patience. It is seen that his imagination, initiative and foresight are developed and, in turn, he becomes conscious of the responsibility that he has to shoulder and learns to work independently.

A two-year training programme has been worked out in ISI, under a top executive, who co-ordinates and directs their activities as also organizes lecture courses and various other assignments. The heads of technical divisions and sections supervise the work of individual probationers and guide them gradually to assume the responsibility of handling technical committees and other work which may in future be allotted to them. The responsibility of handling technical committees is passed on to the trainees under the general supervision of their senior officers as soon as they appear to be ready for it.

TRAINING PROGRAMME

The training programme consists of the following phases:

a) **Acclimatization Phase** — In the course of their rotation through the various divisions of the Institution, probationers get some insight of the work of their own divisions as also of ISI, in general. Particular attention is drawn to such phases of their work as may be peculiar to their own division or as may have presented or may be presenting special problems for solution.

b) **Study Phase** — This phase includes several courses of lectures on principles and methodology of standardization. Relevant literature is supplied for a thorough understanding of the fundamental concepts and their application in day-to-day problems of standardization. This may involve, on the part of a trainee, the need to deliver lectures at times; lead discussion; work out solutions of problems; set quizes; go over, in detail, certain exercises previously assigned so as to develop the faculty of independent thinking and self-reliance.

The main topics covered under this course of study are: techniques useful in standardization, information on certification marking and informative labelling and public relations. The course also includes study of the structure, functions and other distinctive features of the various national standards bodies, ISO and other international organizations, and standardization work at company and association level. A probationer is also told about his responsibilities, and is continually trained and re-trained in problems of human relations. He is never allowed to forget that it is on his ability to co-ordinate and co-operate with the diversified opinions of various committee members that the success of his career depends.

Special courses are held to teach the system of measurements and inter-conversion of values from metric to inch and vice-versa. Statistical principle in standardization comprises an important item in the study phase. Besides, engineering drawings, editing, proofreading and style manual are some of the subjects covered under this course.

c) **Practical Phase** — The probationer, after the completion of the study phase, or sometimes during the training phase, depending on each individual case, is sent out to gain some insight into industrial operations in certain units, factories, testing laboratories and research institutions, with

NEW OFFICERS OF ISI

Banerji, L. G., M.Sc.; Joint Director's Section

Bhat, Y. K., M.A.; Statistics Section

Garg, A. K., B.Sc (Eng.); Engineering Division

Harbhajan Singh, B. Tech. (Hons); Engineering Division

Kapur, B. C., M.A.; Metric Cell

Lakshmikanthan, S., B.E. (Mech); Marks Section

Midha, R. I., B.A., B.Sc. (Tex.); Implementation Section

Prithivi Raj, A., B.E. (Civil); Building Division

Rajaraman, T., B.E.; Electrotechnical Division

Raman, G., B.E., A.M. ASCE; Building Division

Sharma, K. C., B.Sc. (Tex.); Publication Section

Sodhi, H. S., B.A., B. Tech. (Hons) EE; Electrotechnical Division

Subramanian, T. S., B.E.; Structural & Metals Division

Sundar, E. N., B.Sc. (Hons), M.S. (Iowa); Agricultural & Food Products Division particular emphasis on visits to industrial units of ISI licensees for certification marking. The units to be visited by each trainee are so chosen as to fit in with the future work which he will handle as the secretary of a technical committee. The practical training programme is chalked out by the division in which the probationer will be working, in consultation with the top executive who is in-charge of the entire training programme. The programme is, by nature, very flexible and depends on the aptitude of the trainee as well as his future line of work.

After these training periods, the probationer has to get through certain written and other forms of examinations, in which his aptitude for conducting meetings and solving the problems is properly tested. On the successful termination of his training, the probationer becomes a part of the cadre of officers which includes the Director and the entire technical staff of ISI.

CONCLUSION

As already indicated, technical institutions in India are now being persuaded by ISI for including the subject of standardization in their curricula for training of technologists and engineers. This will enable not only the Institution in future to draw for the manning of its own staff but also enable the companies to draw from this source engineers for their company standardization activity.

The Institution has also to shoulder certain responsibilities towards promoting company standardization in India. Under the Third Five Year Plan, ISI is undertaking responsibility for training in ISI of engineers from private and public sectors of industries for the purpose of establishing Company Standards Departments in these units.

STANDARDIZATION OF DESIGNS AND FORMULATIONS — *Continued from p. 169*

Sectional Committee	*Examples of Mechanical Designs*	*Examples of Chemical Formulations*
CDC 31 Brushware	Constructional details and design aspects of brushes need not be rigidly specified. Such details as bevelling of working edges, manner of setting the bristles in the cement, etc, which are essential for the service, life and performance aspects of the brushes for painting may, however, be specified.	Specifying the composition of the type of the cement used or the composition of the metal used for the ferrule need not be attempted.
CEDC 1 Lubricants	—	In some of the published Indian Standards on greases and lubricants, the names of ingredients to be used have been specified for guidance, but the exact formulations of the appropriate grease or lubricant have not been prescribed. It is felt that in the absence of suitable performance tests such details are necessary for ensuring proper performance and, therefore, such requirements may remain. *Examples:* 1) IS: 506-1953 " **3.2 Detail** — The material shall be prepared from the following ingredients in such proportions as to comply with the requirements prescribed in Table I: a) *Mineral Lubricating Oil* — complying with the viscosity (at 140°F) and flash point requirements specified for the medium heavy grade of machinery oils in IS: 493-1958 Specification for Machinery and Spindle Oils (*Amended*), and b) Calcium soap or aluminium soap or a mixture of the two." 2) IS: 1118-1957 " **4.1.1** The lubricant shall consist of a refined petroleum product with suitable additive agents."
CETDC 3 Treated Fabrics	Method of stitching tarpaulins to guard against failure in service and preferred sizes of cut sheets of tracing cloth may be given. But, colour, pattern and finish of the finished materials where these do not control serviceability need to be avoided.	Exact formulations of coating materials need not be attempted.

Conference on Quality Control in Handicrafts

THE working of quality marking schemes in different States and problems faced in introducing and implementing such schemes were discussed at a conference on Quality Control in Handicrafts held at Vigyan Bhavan last March. The Conference also dealt with the question of adopting specifications of handicraft items worked out by the All-India Handicrafts Board's Technical Committee on Quality Control from time to time. It considered the recommendations for implementation of the programme of quality control and paid attention to policy considerations regarding purchase of quality marked handicrafts.

The Conference, which was organized by the All-India Handicrafts Board, was inaugurated by Dr. Lal C. Verman, Director ISI, and presided over by Shri N. Ranganathan, Chairman of the AIHB's Technical Committee on Quality Control. The Conference was attended by about 150 delegates including representatives of the Ministry of Works, Housing and Supply; Planning Commission; Export Promotion Directorate; ISI; Consumers' Association of India; Directorate General of Supplies & Disposals, etc. Leading exporters, technicians, representatives of testing laboratories, and other persons engaged in quality marking schemes of various States had also been invited.

Inaugural Address

While inaugurating the Conference, Dr. Verman underlined the importance of handicrafts as a national heritage. He said: ' Apart from all the material gains, the export promotion and the foreign exchange earnings involved, I would like you to consider the handicrafts as an heritage we all value and cherish — an heritage we would like to develop and hand down to future generations in a condition much better than we received.'

Dr. Verman then pointed out that a large export potential of handicrafts remained unexplored. In this connection, he cited the instance of brasswares the export of which in the past two or three years had increased by 50 percent from something like Rs 96 lakhs in 1957 to Rs 1·5 crores in 1959. From this it could safely be presumed that there is considerable room for export promotion of handicrafts, which at present is of the order of only Rs 14 to 15 crores per annum, provided the requirements of our customers abroad are met and satisfied. Also, he referred to the need of exploring new designs and new ideas in the field and drew attention towards organized production, organized collection and organized marketing of handicrafts.

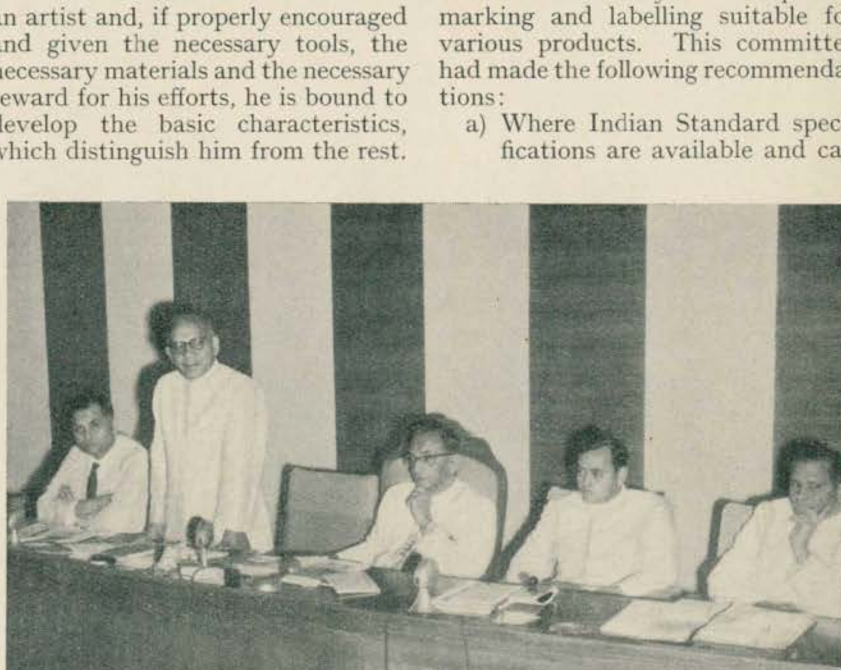
Speaking about standardization in the field of handicrafts, Dr. Verman said: ' It is not enough to merely satisfy the minimum requirements laid down in any specification or customer's own specification. What we need in India today is to develop that conscientious attitude, which grows from within towards producing the best, at the right price.' He, then, referred to old craftsmen who refused to do shabby work because they took pride in their work and added: ' The craftsman after all is an artist and, if properly encouraged and given the necessary tools, the necessary materials and the necessary reward for his efforts, he is bound to develop the basic characteristics, which distinguish him from the rest. We must, therefore, in all our efforts in emphasizing quality, remember that the quality which comes from within — the artist's own mind, is the thing, which ultimately counts.'

In conclusion Dr. Verman welcomed the efforts made by AIHB and other organizations who had begun to think in terms of laying down standards and specifications in their own field of work, and depending on ISI only to the extent where generalized standards were required so that co-ordination might take place.

Technical Committee on Quality Control

Earlier, Shri L. C. Jain, Member-Secretary, AIHB, had said that a Technical Committee on Quality Control had been set up by AIHB to work out technical details in respect of quality of raw materials, specifications and grades of products, standardization of dimensions and weights, quality of finish, fastness of colours and the system of quality marking and labelling suitable for various products. This committee had made the following recommendations:

a) Where Indian Standard specifications are available and can



Dr. Lal C. Verman Inaugurating the Conference held at Vigyan Bhavan on 21 and 22 March 1961. Seated from *l* to *r* are: Shri S. N. Dandona, Chief Executive Officer, AIHB; Shri N. Ranganathan, Chairman of the Technical Committee on Quality Control; Shri L. C. Jain, Member-Secretary, AIHS; and Shri D. N. Saraf, Director of Handicrafts be adopted in *toto*, they should be adhered to strictly, and that the ISI Certification Mark be applied on these commodities in conjunction with the quality marking scheme.

b) Where such standards cannot be rigidly followed, ISI may be apprised of the difficulties in the adoption of standards and requested to cater for the handicrafts industry by providing such additional alternatives in the standards as the situation may demand in the light of the discussions of the Technical Committee on Quality Control and availability of raw materials. Nevertheless, efforts should be made to resolve the difficulties so as to come up to the situation as in (a) above.

c) Where Indian Standards have not been fixed, the Technical Committee on Quality Control may formulate standards in consultation with the Indian Standards Institution, producers and others interested in the industry.

The inaugural session came to a close with a vote of thanks by Shri D. N. Saraf, Director of Handicrafts.

Conclusions

Among the conclusions reached, decisions taken, resolutions passed and recommendations made at the Conference, the following are noteworthy:

a) The introduction of quality marking schemes is absolutely necessary both to protect the home consumers and to expand demand for Indian handicrafts in foreign countries on a long-term basis.

b) The quality marking schemes should be extended to crafts and areas not covered by them so far.

c) Early adoption by State Governments of specifications in respect of various crafts as worked out by the Technical Committee on Quality Control was stressed to ensure uniformity of standards.

d) The Directorate General Supplies and Disposals of the Union Government and the State Stores Departments were urged to give preference to quality marked goods in their purchases.

e) It was agreed that whereas quality marking schemes may, by and large, proceed on voluntary basis, the AIHB might consider if compulsory control should be necessary in case of some important items of export.

f) It was proposed that the Central Government might set up 10 to 15 inspection depots where exporters could present their goods for inspection in respect of genuineness of the materials used and compliance with certain minimum standards.

g) Quality seals could be entrusted to associations of manufacturers or exporters.

h) There was need for publicity among craftsmen and education of consumers within the country, and also for publicity in foreign countries regarding quality marking schemes.

j) A training course should be started by AIHB for personnel already working or to be engaged in quality marking schemes.

LETTER TO THE EDITOR

Consumers' Association of India

With the object of safeguarding the interests of consumers at large and promoting the cause of producing quality goods in the country, an organization under the name of CONSUMERS' ASSOCIATION OF INDIA (CAI) has been set up under the Societies Registration Act of 1860 under the presidentship of Smt. Raksha Saran, ex-President of All India Women's Conference with headquarters at New Delhi.

Everybody in the society, irrespective of his station in life, being essentially a consumer, would like to get his money's worth in terms of goods and services purchased by him in the open market. India has launched upon the development of her economy through planned efforts; and the economy being competitive in nature, the quality of goods and services produced in the country will, in ultimate analysis, depend upon the forces of demand and supply. For the purpose, therefore, of campaigning against sub-standard, spurious and adulterated goods and getting the consumer his money's worth, it is essential, in the democratic set up, to mobilize strong public opinion and enlighten the public about the quality of different goods available in the market.

These objectives can be achieved only through collective efforts under the auspices of an independent organization which is free from the influence of vested interests. Such organizations pursuing the interests of the consumers have met with tremendous success in industrially advanced countries like the United States of America and the United Kingdom.

The only source of income of the CONSUMERS' ASSOCIATION OF INDIA (CAI) is the subscription collected from its members. The Association aims at undertaking, aiding and promoting the study and evaluation of consumer products and services; co-ordinating the efforts of consumers and producers in devising ways and means for the improvement of goods and services; undertaking consumer's research to determine needs of consumers; and promoting and popularizing the use of goods according to the national and recognized standards. The Association will gradually build up a fund of information on the quality of various consumer products based on various laboratory tests and consumers' own reaction. The information thus collected through various sources will be made available to the public through the medium of its publications.

Recently, the Executive Committee of the Association has also decided to entertain genuine complaints from its members about the spurious and unsatisfactory products, which it would take up with manufacturers with a view to improving the quality of the products concerned and getting redress, in so far as possible.

The Association requires the valuable patronage of all consumers with a view to safeguarding their interests. They should, therefore, not only themselves become members but try to enrol more members from their circle of influence in appropriate categories of membership. Forms and other details about the Association are available from the Association's Office at 37 Regal Building, New Delhi-1.

Baldev Singh Goindi
Joint Secretary
CONSUMERS'
ASSOCIATION OF INDIA

Amendment to the ISI Certification Marks Act

SHRI Manubhai Shah, Union Minister for Industry, introduced a bill in the Rajya Sabha on 1 May 1961 for amending the Indian Standards Institution (Certification Marks) Act*, 1952. One of the amendments relates to the recognition of standards other than those framed by ISI for the purpose of ISI Certification Marks Act; another amendment relates to the recognition of ISI inspectors as public servants within the meaning of the Indian Penal Code; and the third amendment is about the extension of the jurisdiction of the Act to the State of Jammu and Kashmir.

Amendment No. 1

The existing definition of Indian Standard as given in Section 2(c) of the Act is as follows:

> 'Indian Standard means the standard (including any tentative or provisional standard) established and published by the Indian Standards Institution, in relation to any article or process, indicative of the quality and specification of such article or process.'

This definition of the Indian Standard means only those standards which are established and published by ISI and not others. As it stands, ISI cannot cover under its Certification Marks Scheme any product for which it has not published an Indian Standard. The Institution has received many enquiries whether the ISI Certification Mark can be used for products for which Indian Standards have not been framed although there may be well recognized standards of other organizations for those products. The fact, however, cannot be denied that there are many goods which are manufactured according to certain recognized standards and it may take quite a long time for ISI to formulate Indian Standards for such products. Also, it may not be possible for ISI to formulate Indian Standards in a very short time for a huge variety of products for which the manufacturers may like to be licensed for the use of ISI Certification Mark.

Furthermore, the question of recognition of standards framed by other national standards bodies has been discussed twice at the level of the Commonwealth Standards Conference in 1957 and in 1959. At these Commonwealth Standards Conferences, it was recommended that:

> 'Legislation should provide for the use of standards marks only to indicate compliance with a national standard that has already been published in the country or a standard that has been endorsed or recognized by the national standards organization.'

In view of the above, it has been suggested in the amendment bill that the existing definition of Indian Standard, as given in Section 2(c) of the Act, may be amended by adding the following words after the word 'process':

> 'and includes any standard recognized by the Institution under clause (a) of Section 3.'

The relevant portion of Section 3 is as under:

> '**3. Powers and duties of the Institution** — The Institution may exercise such powers and perform such duties as may be assigned to it by or under this Act, and, in particular, such powers include power to
>
> (a) establish and publish, in such manner as may be prescribed, the Indian Standard in relation to any article or process.'

Amendment No. 2

In the ISI Certification Marks Act, 1952, no provision has been made for declaring the inspectors as public servants under the Indian Penal Code. Such a provision exists in the Drugs Act, 1940, the Prevention of Food Adulteration Act, 1954, etc.

Without the ISI inspectors being declared as public servants under the Indian Penal Code, they do not have legal protection in the discharge of their duties as laid down under the Rules and Regulations made under the Indian Standards Institution Certification Marks Act. The inspectors have to carry out surprise inspections of factories, draw samples, check records, demand information, etc, as a part of their duties.

It has, therefore, been proposed that the following sub-section may be added as Section 8(4) to the Act:

> '(4) Every inspector shall be deemed to be a public servant within the meaning of Section 21 of the Indian Penal Code.'

Amendment No. 3

According to Section 1 of the ISI Certification Marks Act, the jurisdiction of the Act has been defined as follows:

> 'It extends to the whole of India except the State of Jammu and Kashmir.'

Many manufacturing concerns located in the State of Jammu and Kashmir have expressed their keenness to obtain the advantages of the ISI Certification Marks Scheme, because their contemporaries in the country are already enjoying such privileges, which the former cannot avail because the Act does not extend to their State. The Ministry of Home Affairs and the State of Jammu and Kashmir have no objection if the Act is extended to that State.

It has, therefore, been proposed that Section 1(2) may be amended as follows:

> '(2) It extends to the whole of India.'

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*See ISI Bull., Vol 4, p. 39 (1952).

STANDARDS NEWS

Conference on Development of Indigenous Supplies Through Standardization, Simplification and Value Analysis

The Purchasing and Inventory Control Group of the Delhi Management Association Organized a Conference on 'Development of Indigenous Supplies Through Standardization, Simplification, and Value Analysis' at Manak Bhavan on 3 April 1961. The Conference was inaugurated by Shri K. C. Reddy, Union Minister for Commerce & Industry, who was then Minister of Works, Housing & Supply. The minister emphasized that considerable savings could be achieved by standardizing and simplifying the designs, and by analytically examining what went into the cost of unit. He said that such detailed examination would encourage research and development, and help in evolving substitutes for imported raw materials and components. Shri Reddy, therefore, urged that in the interest of national economy, adequate attention should be paid by all concerned towards: (a) eliminating production of non-standard stores, (b) encouraging production of goods conforming to standard specifications, and (c) promoting research with a view to improving specifications in the light of technological advances.

Six papers, presented at the Conference, related to roles of ISI and the Central Purchasing Organization, works done by the public and private sectors, progress in the chemical industries in India, and organization for value analysis, in the context of the subject of the Conference. The Conference afforded a good opportunity to the purchasing officers in India to get together to exchange their views and discuss common problems.

Rationalization of Steel

The multiplicity of characteristics of steel developed by a judicious control of chemical composition and heat treatment was described by Mr. S. Barraclough, Colombo Plan Expert to ISI in a lecture at ISI Headquarters last April. He explained how far these compositions could be rationalized for the Indian industry with due care in using strategic elements like nickel, molybdenum and tungsten.

Starting with the dead soft metal having as low a percentage of carbon as 0·08 with a tensile strength of 30 kg/mm^2, he described the effects of addition of carbon and other elements, namely, manganese, sulphur and phosphorus, lead, and copper, on the physical properties of the steel. Specific mention was made of the heat treatment processes to improve mechanical properties, and of improvement in strength and finish by cold working.

Mr. Barraclough also discussed the addition of alloying elements, such as nickel, chromium, molybdenum, vanadium, tungsten, etc, for special applications, and described creep-resisting and heat-resisting stainless steel compositions.

While covering tool steels, he explained that though for ordinary purpose tools, like screw drivers, open hearth steel is quite suitable, special compositions are desirable for exacting service conditions, high hardness and cutting properties at elevated temperatures and dimensional stability.

The subject of Mr. Barraclough's lecture which was held under the auspices of the Delhi Chapter of the Indian Institute of Metals was 'Types of Steel and Their Rationalization'. Dr. D. N. Wadia, former Director, Geological Survey of India was in the chair.

Mr. Barraclough recently completed his third term of assignment with ISI extending over the period 7 January to 13 April 1961 under the Colombo Plan Council for Technical Co-operation in South and South-East Asia. An appreciation of his contribution during the previous two terms was published in this Bulletin* last year.

Standard Metric Paper Sizes

A Conference to explore ways and means which would lead to the general adoption of the standard metric sizes of paper by the printers in the country was held at Udyog Bhavan last January. The Conference, which met under the chairmanship of Shri K. V. Venkatachalam, Joint Secretary, Ministry of Commerce & Industry, was attended by the Chief Controller of Printing and Stationery, Controllers of Printing in States, ISI, Ministry of Commerce & Industry, and representatives of Railway Board.

A plea was made at the Conference for the implementation of the Indian Standard Specification for Paper Sizes (IS: 1064-1957) which gives metric sizes for trimmed paper, and a reference was made to the draft Indian Standard for Untrimmed Paper which was then under wide circulation for comments. In both the documents, ISI has prescribed International A-series of paper sizes recommended by the International Organization for Standardization.

**See* ISI Bull., Vol 12, No. 2, p. 89 (1960).

Shri K. C. Reddy Delivering the Inaugural Address at the Conference Organized by the Delhi Management Association

The following recommendations were made by the Conference to the Governments:

a) *Stationery* — Metric sizes (A-series) of paper for stationery, which has already been adopted by the Chief Controller of Printing and Stationery for a number of important stationery items, should be used.
b) *Printing* — Printing should be switched over to the A-sizes of paper within a period of five years.
c) *Standard Forms* — The forms printed by the Departments of Printing and Stationery of State Governments and the Railways should be examined for rationalization and reduction in their number. The design of new forms should be completed by January 1962.
d) *Indents for Paper* — A beginning should be made immediately to indent for A-series of paper to the extent possible.
e) *Progress Reports* — The Controllers of Printing and Stationery should send quarterly reports on the progress in carrying out these recommendations to the Chief Controller of Printing and Stationery with copies to the Secretary, Standing Metric Committee.

Madras Library Association Adopts Indian Standard Concerning Library Buildings

The Madras Library Association took note of the recent work of ISI on library buildings at its thirty-third annual meeting held in Madras on 10 April 1961 and adopted the following resolution:

' That the Government and the Library Authorities in our State be requested that the proposed library buildings be made to conform to the standards recently established by the Indian Standards Institution for the Basic Elements for the Design of Library Buildings, Fittings and Furniture*.'

The attention of the Association towards the impending large building programme for public, college and school libraries during the Third Plan period and the need to have functional designs to prevent the buildings from obstructing the development of the use of the libraries was drawn by Dr. S. R. Ranganathan who was in the chair in his capacity as the President of the Madras Library Association.

*IS: 1553-1960 Code of Practice Relating to Primary Elements in the Design of Library Buildings.

The thirty-third Annual report of the Association which was presented and adopted at the meeting revealed that the Madras Library Association has 14 district systems functioning through 540 branch libraries and 500 service stations with the State Central Library at the apex and with a stock of 5 million volumes which served 12 million visitors within the library premises and let out books to 50 000 members.

Monkeys and Standards

Monkeys made news at the sixth meeting of the Agricultural & Food Products Division Council, AFDC (*see also* p. 190) when the Transport of Live Animals Sectional Committee, AFDC 24, comprising the following was set up:

a) Livestock Development Adviser to the Government of India;
b) Animal Husbandry Commissioner to the Government of India;
c) Air India International, Bombay;
d) Zoological Gardens, New Delhi and Bombay;
e) Haffkine Institute, Bombay;
f) Chief Controller of Imports and Exports;
g) All-India Society for the Prevention of Cruelty to Animals, Calcutta;
h) Indian Council of Medical Research;
j) Indian Veterinary Research Institute, Izatnagar;
k) School of Tropical Medicine, Calcutta;
m) Central Food Technological Research Institute, Mysore; and
n) Messrs Vita Private Ltd., Delhi, and Messrs B. N. Elias, Calcutta.

Its first task is to formulate an Indian Standard Code of Practice for Transportation of Monkeys. The importance of the subject lies in the fact that monkeys are being exported and the Government of India is anxious to ensure that they are treated and fed properly during transport. Further, the subject acquires a special significance from the point of medical research — the present mode of transport being far from adequate since it adversely affects the pursuit of research.

The export of monkeys is controlled under the Imports and Exports (Control) Act, 1947. Requirements with regard to transport of monkeys from place to place, loading of monkeys in the aircraft, etc, are also laid down in B.S. 3149: Part 1: 1959 Recommendation for Carriage of Live Animals by Air: Monkeys for Laboratory Use (Up to 10 lb), published by the British Standards Institution.

The conditions governing transport of monkeys were discussed between the Ministry of Health and Dr. Lane Petter, Director of the Laboratory Animal Centre at the Medical Research Council, UK, when he visited India last year. It was felt that the requirements laid down in the British Standard would not hold good for Indian conditions. ISI was, therefore, requested through the Ministry of Commerce & Industry to take up a detailed study of the subject and to lay down a corresponding national standard on the subject.

Symposium at the Regional Research Laboratory, Hyderabad

A symposium on ' Low-Temperature Carbonization of Non-Caking Coals and Briquetting of Coal Fines ' is being organized at the Regional Research Laboratory, Hyderabad, from 20 to 22 November 1961.

The principal aim of the symposium is to focus attention on the rational utilization of low grade coals to solve the problem of domestic fuel and to bring together the diverse interests connected with research, scientific, technical and social aspects of low-temperature carbonization of coal and briquetting of coal fines. Invitations have been extended to scientists from Australia, China, Czechoslovakia, France, Germany, Japan, New Zealand, Pakistan, UK, USA, USSR, Yugoslavia and other countries where work in these fields is in progress. It is hoped that these deliberations will result in a proper assessment of the position regarding research and utilization aspect of low-temperature carbonization and briquetting of coal fines.

One of the four groups of technical papers to be presented at the Symposium relates to economics, standards, statistics, etc. The three subjects under this group on which papers have been invited for discussions are:

a) Economics of low-temperature carbonization and briquetting,
b) Standards for the various products of low temperature carbonization, and
c) Analysis and testing of various products.

Pakistan Standards Bulletin

Quarterly. Pakistan Standards Institution, Karachi. February 1961 Pp. 98, Price Rs 1·50

The Pakistan Standards Institution has brought out the first issue of its official organ, the Pakistan Standards Bulletin. The publication of this quarterly journal has been undertaken, in the words of the Director PSI, 'to disseminate the idea of standardization and diffuse the information on standards which is of abiding interest to traders, industrialists, buyers and others'.

We welcome the addition of this Bulletin to the world's standards literature and wish it a bright and successful future.

The issue contains a message from the President of Pakistan. We are glad that the Government of Pakistan attaches great importance to standardization and considers it necessary 'that countries, which aim at industrial development, must accord a very high place to the process of standardization'.

There are a number of articles on standardization in this first issue, and the recommendation for the adoption of Metric System in Pakistan made in the article on Rationalization of Weights and Measures by the Director PSI, will, we hope, be widely welcomed.

ASTM Bulletin Takes a New Name

ASTM Bulletin, a leading standards journal of the world has become a monthly under the new impressive name of '*Materials Research and Standards*' with effect from January 1961 onward.

The history of *ASTM Bulletin* goes back to April 1921 when it was first brought out as a four-page publication to be issued at approximately quarterly intervals. In 1927, the Bulletin became a bi-monthly; in 1934, technical papers started appearing in it and by 1940, it had grown to 64 pages. In July 1949, the periodicity of the Bulletin was increased from 6 times per year to 8 times per year.

The editors have interconnected in an interesting manner the growth of the Bulletin with the development and advancement in the scientific and technical fields in their comments published in the first issue*. They say the publication 'first saw the light of day in the same year that Albert Einstein received the Noble Prize in Physics for his explanation of the photoelectric effect. This was also the first full year of operation for the nation's first commercial radio broadcasting station, Westinghouse's KDKA, in Pittsburgh'. The comments end with the interesting proposition as follows:

'So much for the past 40 years. What about the next 40? One is tempted to set up the proportion: first radio broadcast is to Echo satellite as Echo satellite is to X. But who among us would have the audacity to solve for X?'

Dr. Harold S. Osborne

Standards Engineers all the world over would be glad to know that the American Institute of Electrical Engineers (AIEE) has presented the Edison Medal for 1960 — its highest honour — to Dr. H. S. Osborne who was its president in 1942-43, and has also been a member and chairman of a number of its committees.

Dr. Osborne is a leading figure in the field of international standardization. He served the International Electrotechnical Commission (IEC) as its president from 1952 to 1955.

Dr. Osborne spent his entire career with the American Telephone and Telegraph Company, from 1910 until his retirement in 1952. He had been chief engineer since 1943.

We recall with pleasure our association with him at the IEC meetings held in New Delhi last year and extend our felicitations on this occasion to him.

*See *Materials Research and Standards*. Vol 1, No. 1, p. 32 (1961).

Dr. H. S. Osborne

International Symposium on Standardization of Surface Treatments of Metallic Materials

The Italian Commission on the Technique of Standardization in Precision Mechanics, Optics, Photography, and Allied Industries (UNIPREA) is sponsoring an international symposium on standardization of surface treatment of metallic materials. The symposium will be held at Turin, Italy in October this year and will coincide with the celebrations commemorating the first centenary of Italian unity. The symposium will give special attention to standardization of testing methods, production methods, working schedules, and thickness of coatings.

The Italian national standards body, UNI, believes that the symposium may lead to the organization of a technical committee concerned with surface treatments of metallic materials by the International Organization for Standardization. Those interested to participate in the Turin conference may contact ISI.

HINDI PRAVEEN EXAMINATION, JUNE 1960

ISI Officer Stands First

It gives us great pleasure to announce that Shri Prabhu Das Rawate, Extra Assistant Director, ISI, has been awarded a cash prize of Rs 300·00 for topping the list of successful candidates who appeared at the 1960 Hindi Praveen Examination conducted by the Board of Higher Secondary Education, Delhi, under the Union Government Scheme of Teaching Hindi to Central Government employees.

Implementation of Indian Standards

During the period 16 January to 31 March 1961 the following Government purchasing and consuming departments communicated to ISI that they had added to the list of Indian Standards, on the basis of which their purchases are made, the standards given below under each. On 31 March 1961, 1 617 Indian Standards were in force, of which 1 389 had thus been adopted by various government departments.

Directorate General of Supplies & Disposals

- IS: 933-1960 Portable Chemical Fire Extinguishers, Foam Type
- IS: 934-1960 Portable Chemical Fire Extinguishers, Soda Acid Type
- IS: 1051-1957 Pyrethrum Extracts
- IS: 1391-1960 Room Air-Conditioners
- IS: 1408-1959 Recommended Procedure for Inspection of Copper-Base Alloy Sand Castings
- IS: 1419-1959 Anti-Fouling Paint, Brushing, for Ship's Bottoms and Hulls, Red, Chocolate or Black, as Required
- IS: 1433-1960 Beam Scales
- IS: 1471-1960 Ferro Phosphorus
- IS: 1472-1959 Methods of Sampling Ferro Alloys
- IS: 1479 (Part I)-1960 Methods of Test for Dairy Industry
- IS: 1490-1959 Recommendations for Minimum Performance Requirements of Mains-Operated Public Address Amplifiers
- IS: 1500-1959 Method for Brinell Hardness Test for Steel
- IS: 1534 (Part I)-1960 Ballasts for Fluorescent Lamps, for Switch Start Circuits
- IS: 1546-1960 Method for Determination of Arsenic in Iron and Steel
- IS: 1547-1960 Infant Milk Foods
- IS: 1549-1960 Steel Drums and Kegs (Galvanized and Ungalvanized)
- IS: 1572-1960 Cadmium Plating
- IS: 1574-1960 Glass Weighing Bottles
- IS: 1575-1960 Separating Funnels
- IS: 1579-1960 Handloom Cotton Twills, Bleached or Dyed
- IS: 1586-1960 Method for Rockwell Hardness Test (B and C Scales) for Steel
- IS: 1591-1960 Glossary of Terms for Electrical Cables and Conductors
- IS: 1594-1960 Metric Sizes of Copper Wires and Conductors for Electrical Purposes
- IS: 1600-1960 Code for Type Testing of Constant Speed Internal Combustion Engines for General Purposes
- IS: 1602-1960 Code for Type Testing of Variable Speed Internal Combustion Engines for Automotive Purposes
- IS: 1605-1960 Tapioca Starch for Use in the Cotton Textile Industry
- IS: 1606-1960 Schedule for Automobile Lamps
- IS: 1613-1960 Milk Bottle Crates
- IS: 1623-1960 Method for Testing Jute Fabrics for Resistance to Attack by Micro-Organisms
- IS: 1629-1960 Rules for Grading of Cut Sizes of Timber
- IS: 1633-1960 Methods for Testing Jute Cordages for Resistance to Attack by Micro-Organisms
- IS: 1634-1960 Code of Practice for Design and Construction of Wood Stairs
- IS: 1636-1960 Chrome Waxed Sole Leather
- IS: 1637-1960 Cycle Saddle Leather
- IS: 1638-1960 Sizes and Fittings of Footwear
- IS: 1660-1960 Wrought Aluminium Utensils
- IS: 1670-1960 Method for Determination of Breaking Load (Strength), Elongation At Break and Tenacity of Single Strand of Cotton Yarn (By Constant - Rate - of - Traverse Machine)
- IS: 1671-1960 Method for Determination of Skein Breaking Load (Strength), Tenacity and Yarn Strength Index of Cotton Yarn (By Constant-Rate-of-Traverse Machine)
- IS: 1681-1960 Blanket, Woollen, Dyed
- IS: 1686-1960 Handloom Silk Bush Shirt Cloth, Loomstate
- IS: 1688-1960 Procedure for Determination of Fastness of Dyestuffs
- IS: 1689-1960 Method for Determination of Barium Activity Number of Cotton Textile Materials
- IS: 1690-1960 Method for Determination of Colour Fastness of Textile Materials to Nitrogen Oxides

Controller General of Defence Production

- IS: 324-1959 Ordinary Denatured Spirit
- IS: 934-1960 Portable Chemical Fire Extinguishers, Soda Acid Type
- IS: 935-1959 Portable Chemical Fire Extinguishers, Carbon Tetrachloride Type
- IS: 1409-1959 Methods of Chemical Analysis of Antifriction Bearing Alloys
- IS: 1423-1959 Cotton Gaberdine, Bleached
- IS: 1441-1960 Insulator Stalks for Telegraph and Telephone Lines
- IS: 1442-1959 Covered Electrodes for the Metal Arc Welding of High Tensile Structural Steel
- IS: 1450-1959 Handloom Cotton Floor Durries
- IS: 1467-1960 Ferro Tungsten
- IS: 1468-1960 Ferro Titanium
- IS: 1469-1960 Ferro Molybdenum
- IS: 1490-1959 Recommendations for Minimum Performance Requirements of Mains-Operated Public Address Amplifiers
- IS: 1493-1959 Methods of Chemical Analysis of Iron Ores
- IS: 1511-1959 Chaff Cutter Blades
- IS: 1541-1959 Glass Filter Funnels
- IS: 1544-1960 Cotton Calico, Bleached or Dyed
- IS: 1545-1960 Solid Drawn Copper Alloy Tubes
- IS: 1546-1960 Method for Determination of Arsenic in Iron and Steel
- IS: 1550-1960 Copper Sheet and Strip for the Manufacture of

Utensils and for the General Purposes
IS: 1556-1960 Handloom Cotton Poplin, Bleached or Dyed
IS: 1557-1960 Handloom Cotton Bed Durries
IS: 1558-1960 Vaporizing Oil

Research, Designs & Standards Organization

IS: 214-1956 Coal Tar Solvent Naptha, Heavy
IS: 288-1960 Copper Rods for Boiler Stays
IS: 860-1956 Handloom Cotton Sponge Cloth, Grey, Striped and Checked
IS: 863-1956 Handloom Cotton Bandage Cloth, Bleached
IS: 1017-1957 Chamois Leather
IS: 1032-1957 General Requirements and Tests for Pressure Unit Operated Horn Loudspeaker Systems
IS: 1096-1957 Handloom Cotton Holland Cloth, Unscoured
IS: 1458-1959 Railway Bronze Ingots and Castings
IS: 1464-1959 Ridge and Ceiling Tiles

Posts & Telegraphs Department

IS: 2-1949 Rules for Rounding Off Numerical Values
IS: 5-1955 Colours for Ready-Mixed Paints
IS: 62-1950 Graphite for Paints
IS: 63-1950 Whiting for Paints
IS: 73-1950 Asphaltic Bitumen and Fluxed Native Asphalt for Road-Making Purposes
IS: 75-1950 Linseed Oil, Raw, for Paints
IS: 76-1950 Linseed Oil, Refined, for Paints
IS: 77-1950 Linseed Oil, Boiled, for Paints
IS: 78-1950 Linseed Oil, Pale Boiled, for Paints
IS: 84-1950 White Spirit for Paints
IS: 93-1950 Oil Paste for Paints to Indian Standard Colours
IS: 196-1950 Atmospheric Conditions for Testing
IS: 209-1956 Zinc
IS: 210-1950 Grey Iron Castings
IS: 224-1958 Pig Iron (Coke)
IS: 225-1956 Pig Iron (Charcoal)
IS: 264-1950 Nitric Acid
IS: 265-1950 Hydrochloric Acid
IS: 267-1958 Leclanché Type Inert Cells
IS: 268-1951 Leclanché Type Sack Cells
IS: 279-1951 Galvanized Iron and Steel Wire for Telegraph and Telephone Purposes
IS: 285-1951 Laundry Soap
IS: 319-1951 Free Cutting Brass Rods and Bars for Use in Screw Machines
IS: 325-1959 Three-phase Induction Motors
IS: 370-1954 Reversible Type Two-Pin Plugs and Socket-Outlets Without Earthing Connections
IS: 371-1954 Two- and Three-Terminal Ceiling Roses
IS: 374-1951 Electric Ceiling Fans
IS: 405-1952 Lead Sheets for General Purposes
IS: 407-1953 Brass Tubes for General Purposes
IS: 410-1959 Rolled Brass Plate, Sheet, Strip and Foil
IS: 412-1954 Expanded Metal (Steel) for General Purposes
IS: 418-1957 Tungsten Filament General Service Electric Lamps
IS: 429-1954 Methods for Testing Weight and Uniformity of Coating on Galvanized Iron and Steel Wires and Steel Sheets
IS: 434-1953 Rubber-Insulated Cables and Flexible Cords for Electric Power and Lighting (for Working Voltages Up to and Including 11 kV)
IS: 450-1953 Cotton Covered High-Conductivity Annealed Round Copper Wire
IS: 496-1955 Internal Combustion Engine Lubricating Oils
IS: 507-1955 Grease, L No. 3
IS: 531-1959 Leaded Brass Strip for Use in the Manufacture of Parts for Instruments
IS: 541-1954 Stationary Accumulators, Lead-Acid Type
IS: 542-1954 Coconut Oil
IS: 553-1955 Rosin (Gum Rosin)
IS: 555-1951 Table-Type Electric Fans
IS: 556-1960 Leclanché Type Radio Batteries
IS: 586-1959 Leclanché Type Dry Batteries for Telecommunication Signalling and General Purposes
IS: 613-1954 Copper Bars and Rods for Electrical Purposes
IS: 634-1957 Ethylene Dichloride Carbon Tetrachloride Mixture
IS: 692-1957 Paper-Insulated Lead-Sheathed Cables for Electricity Supply
IS: 694-1955 PVC Cables and Cords for Electric Power and Lighting for Working Voltages Up to and Including 650 Volts to Earth
IS: 718-1955 Carbon Tetrachloride, Technical
IS: 722 (Part III)-1958 AC Electricity Meters
IS: 727-1955 Hard Drawn Steel Wire for Springs
IS: 728-1956 Methods for Determination of Weight, Thickness and Uniformity of Coating on Galvanized Articles other Than Wires and Sheets
IS: 732-1958 Code of Practice for Electrical Wiring and Fittings in Buildings
IS: 771-1958 White Glazed Earthenware Sanitary Appliances
IS: 781-1958 Sand Cast Brass Screw-Down Bib-Taps and Stop Cocks for Water Services
IS: 787-1956 Guide for Inter-Conversion of Values from One System of Units to Another
IS: 800-1956 Code of Practice for Use of Structural Steel in General Building Construction
IS: 852-1957 Animal Glue
IS: 908-1958 Fire Hydrant, Stand Post Type
IS: 919-1959 Recommendations for Limits and Fits for Engineering
IS: 928-1958 Fire Bell
IS: 936-1959 Underground Hydrant, Double Valve Type
IS: 941-1958 Blower and Exhauster for Fire Fighting
IS: 963-1958 Chrome-Molybdenum Steel Bars and Rods for Aircraft Purposes
IS: 965-1958 Equivalent Metric Units for Scales, Dimensions and Quantities in General Construction Work
IS: 985-1958 Lead-Acid Storage Batteries (Heavy Duty) for Motor Vehicles
IS: 996-1959 Small AC and Universal Electrical Motors with Class A Insulation
IS: 999-1959 Methods of Chemical Analysis of Brazing Solder
IS: 1063-1957 14 mm Sparking Plugs
IS: 1067-1958 Commercial Silver Plating
IS: 1068-1958 Copper, Nickel and Chromium Electroplated Coatings
IS: 1069-1957 Water for Storage Batteries
IS: 1070-1957 Distilled Water
IS: 1084-1957 Hawser-Laid Manila Rope
IS: 1087-1957 Single Pole 5-Ampere Tumbler Switches for AC/DC
IS: 1105-1957 Method for Precise Conversion of Inch and

Metric Dimensions to Ensure Interchangeability
IS: 1108-1957 Tincture Glass Bottles
IS: 1111-1957 Spiegeleisen
IS: 1113-1957 Ammonium Chloride, Pure
IS: 1114-1957 Ammonium Chloride, Technical
IS: 1119-1957 Reversible Protected Type Two-Pin Plugs and Sockets with Earthing Connections
IS: 1139-1959 Mild Steel and High Tensile Steel Deformed Bars for Concrete Reinforcement
IS: 1160-1957 Metric Dispensing Measures
IS: 1174-1957 Definitions of Mica Terms
IS: 1180-1958 Outdoor Type Three-Phase Distribution Transformers Up to and Including 100 kVA 11 kV
IS: 1201-1958 to IS: 1220-1958 Methods for Testing Tar and Bitumen
IS: 1231-1958 Dimensions of Three-Phase Induction Motors
IS: 1239-1958 Mild Steel Tubes and Tubulars
IS: 1248-1958 Electrical Indicating Instruments
IS: 1255-1958 Code of Practice for Installation and Maintenance of Paper Insulated Power Cables (Up to and Including 33 kV)
IS: 1258-1958 Bayonet Lampholders
IS: 1270-1959 Metric Steel Tape Measures (Winding Type)
IS: 1271-1958 Classification of Insulating Materials for Electrical Machinery and Apparatus in Relation to Their Thermal Stability in Service
IS: 1275-1958 Rules for Marking Alphabetical Indexes
IS: 1276-1958 Grease, S. No. 2
IS: 1277-1959 Gear Lubricant, Regular
IS: 1284-1958 Wrought Aluminium Alloys, Bolt and Screw Stock (for General Engineering Purposes)
IS: 1301-1958 Code of Safety Requirements for Electric Mains-Operated Audio Amplifiers
IS: 1302-1958 Methods of Measurements on Audio Amplifiers
IS: 1305-1958 Graphite for Use as Foundry Facing Material
IS: 1308-1958 Aldrin Dusting Powders
IS: 1322-1959 Bitumen Felts for Water Proofing and Damp Proofing
IS: 1327-1959 Methods of Testing Tin Coating on Tin Plate
IS: 1335-1959 Methods for the Direct Determination of Alumina in Refractory Materials
IS: 1336-1959 Recommendations for the Colour of Push-Buttons
IS: 1337-1959 Hard Chromium Plating on Steel
IS: 1359-1959 Electro-Tin Plating
IS: 1372-1958 Cable-Laid Sisal Rope
IS: 1379-1959 Ink, Stencil, Oil Base, for Marking Non-Porous Surfaces, Colour as Required
IS: 1380-1959 Ink, Finger Printing, Black
IS: 1384-1959 Oil Pressure Lanterns
IS: 1385-1959 Phosphor Bronze Rods and Bars, Sheet and Strip, and Wire
IS: 1387-1959 General Requirements for the Supply of Metals and Metal Products
IS: 1389-1959 Methods for Testing Cotton Fabrics for Resistance to Attack by Micro-Organism
IS: 1412-1959 Cable-Laid Coir Rope
IS: 1421-1959 Cellulose Nitrate Coated Fabrics
IS: 1423-1959 Cotton Gaberdine, Bleached
IS: 1424-1959 Cotton Canvas, Scoured, Dyed or Waterproofed
IS: 1439-1959 Steelyards
IS: 1465-1959 Methods of Test for Plastic Buttons (Thermosetting)
IS: 1491-1959 Metric Scales for Architectural Purposes
IS: 1535-1960 Cotton Lining Cloth, Dyed

RECOMMENDATIONS FOR IMPLEMENTATION

Indian Standards relating to the following items have been recommended for implementation:

Building Materials

About 200 Indian Standards have been published by ISI on building materials. The chief engineers of public works departments, secretaries of housing boards and registrars of co-operative societies of all the States have been requested to adopt these Indian Standards and to give preference to ISI certified goods in their purchases. The following have responded favourably and issued instructions to all concerned subordinate offices accordingly:

a) Assistant Secretary to Government of Madras, Department of Industries, Labour and Co-operation, Madras;
b) Chief Engineer, Irrigation and Public Health, Government of Mysore, Bangalore;
c) Anu Sachiv to Government of UP, Lucknow;
d) Chief Engineer, PWD (General), Chepauk, Madras;
e) Registrar, Co-operative Societies, HP, Simla; and
f) Chief Engineer, CPWD, New Delhi.

Others are expected to take similar action in the near future.

Pictorial Markings for Handling Instructions for Dangerous Goods (IS : 1286-1958), and Code of Symbols for Labelling of Dangerous Goods (IS : 1260-1958)

The Ministry of Commerce and Industry has recommended to the Ministries of Railways; Finance; Transport and Communications; Labour and Employment; Defence; Steel, Mines and Fuel; Works, Housing and Supply; and the industries in the public sector to formally adopt the symbols recommended in these standards and also instruct the authorities under their control to exercise necessary care in handling packages containing these symbols.

INDIAN STANDARD WITHDRAWN

The Indian Standards Institution has withdrawn IS : 3-1949 Inch-Millimeter Conversion for Industrial Use. The subject of this standard has been covered by IS : 786-1956 Conversion Factors and Conversion Tables, and IS : 787-1956 Guide for Inter-Conversion of Values from One System of Units to Another.

ISI Certification Marks

New and Renewed Licences, and Marking Fees

During the period from 16 January 1961 to 31 March 1961, ISI specified standard marks and prescribed marking fees in respect of 11 products, granted 31 new licences and renewed another 48 for the use of standard marks; particulars of all of these are given below:

STANDARD MARKS AND MARKING FEES

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard	Unit	Marking Fee per Unit
Blue-Black Superior Fluid Ink for Writing	IS:222 ISI	IS : 222-1950 Specification for Blue-Black Superior Fluid Ink for Writing	One Litre	2 nP
Steel Tubes for Bicycle Frames	IS:623 ISI TUBES	IS : 623-1955 Specification for Bicycle Frames (*Tentative*)	One Tonne	Rs 3·00 per unit with a minimum of Rs 1 000·00 for production during a calendar year
Steel Tubes for Bicycle Seat Pillars	IS:626 ISI TUBES	IS : 626-1955 Specification for Bicycle Seat Pillars (*Tentative*)	One Tonne	Rs 3·00 per unit with a minimum of Rs 1 000·00 for production during a calendar year
Steel Tubes for Bicycle Pedal Assembly	IS:628 ISI TUBES	IS : 628-1955 Specification for Bicycle Pedal Assembly (*Tentative*)	One Tonne	Rs 3·00 per unit with a minimum of Rs 1 000·00 for production during a calendar year
Foam Type Fire Extinguishers	IS:933 ISI	IS : 933-1959 Specification for Portable Chemical Fire Extinguisher, Foam Type	One Extinguisher	50 nP per unit with a minimum of Rs 1 500·00 for production during a calendar year
Maida	IS:1009 ISI 1	IS : 1009-1957 Specification for Maida	One Metric Tonne	40 nP per unit for the first 3 000 units
	IS:1009 ISI 2			25 nP per unit for the 3 001st unit and above

(*Continued on next page*)

STANDARD MARKS AND MARKING FEES — *Contd*

Product/Class of Product	Design of Standard Mark	Number and Title of Relevant Indian Standard	Unit	Marking Fee per Unit
Covering Chocolates	IS: 1163	IS : 1163-1958 Specification for Covering Chocolates	One kg	2 nP
Cocoa-Powder	IS:1164 DC	IS : 1164-1958 Specification for Cocoa-Powder	One kg	2 nP
	IS:1164 LF			
Macaroni, Spaghetti and Vermicelli	IS:1485	IS : 1485-1959 Specification for Macaroni, Spaghetti and Vermicelli	One kg	4 nP per unit with a minimum of Rs 500·00 for production during a calendar year
Steel Drums and Kegs	IS:1549 DRUM ONLY	*IS : 1549-1960 Specification for Steel Drums and Kegs (Galvanized & Ungalvanized)	One Drum	1 nP per unit for the first 500 000 units with a minimum of Rs 5 000·00 for production during a calendar year
	IS:1549 KEG ONLY			½ nP per unit for production beyond 500 000 units
Synthetic Enamelled Wire	IS:1595	IS : 1595-1960 Specification for Enamelled High Conductivity Annealed Round Copper Wire (Synthetic Enamel)	One Metric Tonne	Rs 10·00 per unit with a minimum of Rs 2 500·00 for production during a calendar year

*Only Standard Mark prescribed; Marking Fee prescribed earlier remains unchanged.