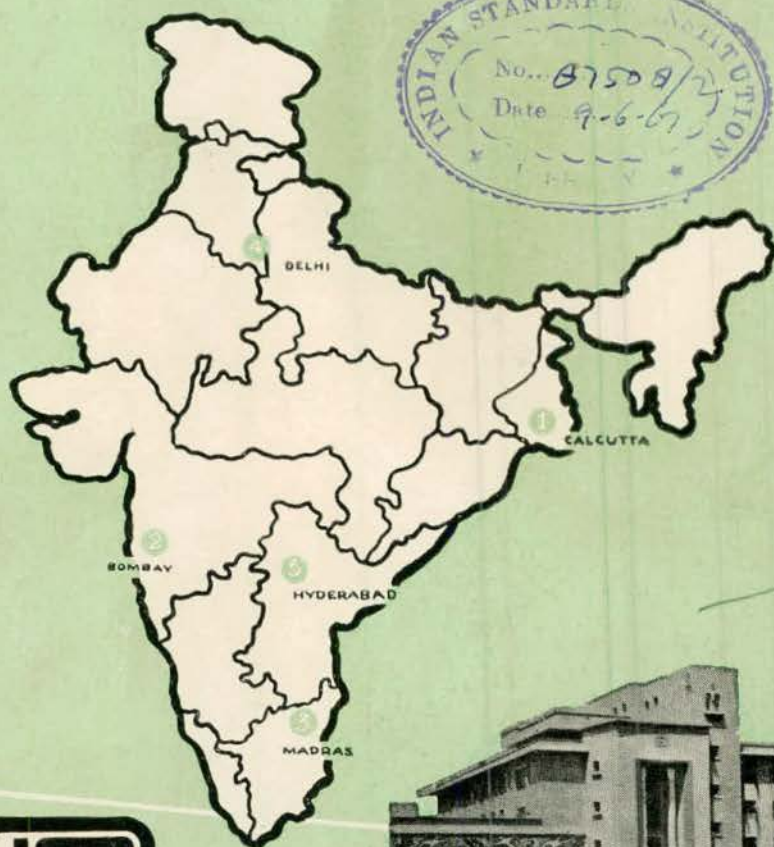


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# Indian Standards Convention 1959 HYDERABAD



INDIAN STANDARDS INSTITUTION. 'MANAK BHAVAN', NEW DELHI.

*“Without standardization, we cannot progress in industry. If we wish to create confidence about an industry and the sale of our goods, then they should be of high standard”. ...*

... ..

*“We talk today about increasing our production; it has become a vital matter. In fact, that is a sign of our growth, that is a sign of our fighting many evils that we suffer from. How can we do this? After all, the whole conception of planning is not to things in an odd spasmodic way, but in a planned way. It is an essential element of planning to have standards” ... ..*

... ..

*“Even though we deal with science and technology of high order minds of some have not quite grasped all these basic facts. Some industrialists may say that their goods are quite good and may argue as to why they should get their goods inspected by this Institution when they can sell them without any inspection. They must understand that standards to them are as essential and vital as examinations are to students. People producing goods make themselves judges when somebody else should be the judge”. ... ..*

... ..

*“It is of great importance that we should maintain proper and accurate standards in the goods that we produce, as in our private and public life”.*

**Jawahar Lal Nehru**



# INDIAN STANDARDS CONVENTION 1959

## SOUVENIR

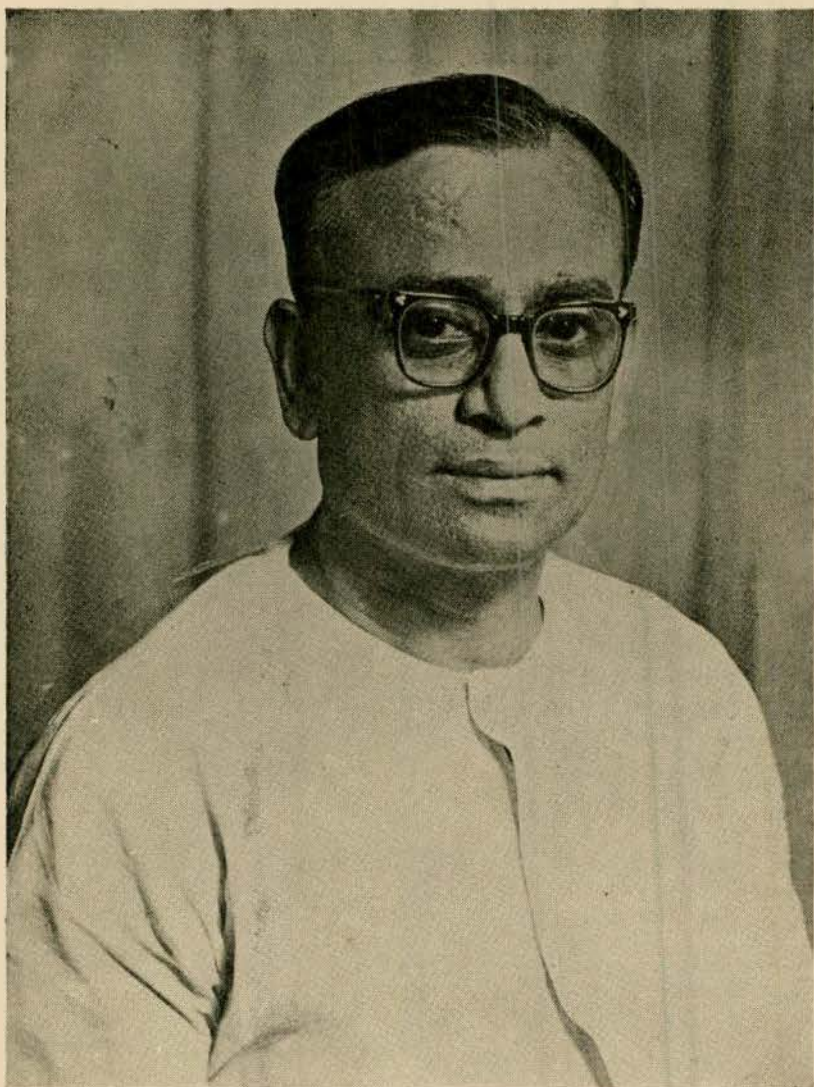
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SHRI NEELAM SANJEEVA REDDY  
*Chief Minister of Andhra Pradesh*

He inaugurates the Convention on Monday, 28 December 1959  
at the Jubilee Hall, Hyderabad.

# Welcome Speech at the Inauguration of the Convention

C. S. TYABJEE,

*Chairman, Reception Committee*

Shri Neelam Sanjiva Reddy, Ladies, Delegates and distinguished Guests :

It gives me great pleasure to welcome you all to this pleasant function and we are happy, indeed, that Shri Neelam Sanjiva Reddy, our popular leader and our Chief Minister, and also the President-elect to the Indian National Congress, has spared his valuable time to inspire us in our deliberations. His presence here indicates his abiding interest in the development of industries in the country as a whole, and in this State in particular.

I take this occasion to congratulate him on your behalf and on my own on his election to a high and responsible position in our country. He fully deserves this honour. For the last three years I have personally known him as the Chief Minister of Andhra Pradesh and I must tell you that he has inspired confidence among the people by his fair dealings, friendly attitude and courtesy towards all who approached him. You know that he has taken a keen interest in the development of Industries in Andhra Pradesh and thereby given a new direction to the Third Five Year Plan. We will miss him

greatly but I am sure that his interest in Andhra Pradesh will continue, so that our State will take its rightful place in the economy of the country. As I have to say much more about him on another occasion, I will reserve myself. A strong personality like him is bound to make an abiding impression on the State and the country.

2. As most of you know, this is the fifth Convention being organised by the Indian Standards Institution. The first four have taken place at Bombay, Calcutta, Madras and New Delhi. Hyderabad now being chosen as a venue for the fifth such convention shows that industrially this city will in time occupy an equally important place in this country.

3. Although there are not many industries in this city, or for the matter of that in Andhra Pradesh, quite a large number of small scale and medium industries are rapidly developing in and around the cities of Hyderabad, Secunderabad, Warangal, Vizag, Vijayawada, Guntur and other places. Further, under the Third Five Year Plan we expect a large number of heavy industries also to be located in our State. While



large scale industries depend for their success considerably on the application and observance of Standards, I am of the opinion that standardization is equally applicable to these small scale and medium scale industries, as it is to large scale industries. In fact, the application of Standards to small and medium scale industries is all the more important, as the maintenance of quality and uniformity in the small scale units is rather difficult. It is gratifying to note that a special session of the Convention has been arranged for looking into the problems of small scale industries vis-a-vis standardization, quality control and certification marking.

4. It is now universally accepted that the economic prosperity of a nation depends upon the full utilization of its available resources, which can only be achieved through standardization. For a country like India, with its limited resources, the demand for maximum output through a systematic elimination of waste and progressive development through standardization in all forms is the key to increased productivity. Higher productivity and more production are the slogans of the day, as these alone can lead the country to prosperity. The trend of productivity can rightly be called the barometer of a country's advancement. Among the many factors leading to increased productivity, standardization is the most important factor, as its introduction in any industry lends itself to successful application of other higher productivity techniques.

5. The standards serve as a guide to the manufacturer in producing a dependable and quality product. The application of standards and quality control also enhances the production. To the trade, the standards provide a com-

mon language, and a medium of communication, which is well understood by all groups concerned, on the basis of which contracts may be readily executed and all unnecessary delays and disputes eliminated. The benefit to the ultimate consumer is that he gets a good quality product at a comparable cost. So it is necessary that the purchasing departments of the Governments, local bodies, industrial units, and all others concerned with purchase of any type of materials should make use of the standards while making their purchases. This is economical both to the purchaser as well as the seller or the manufacturer. To the technologists, the standards provide an instrument to judge quality and performance values and a solution of their recurrent problems.

6. The Indian Standards Institution has laid down over 1250 Indian Standards for different products during its short existence of 12 years. It is very creditable indeed but what has been achieved is only a fraction of the work that lies ahead of it. Standards are needed not in hundreds but in thousands. It is a matter for gratification that the Government of India has adopted most of the Indian Standards and all their ministries and departments are making full use of them. But it has been felt that at the State Government levels and that of the local bodies, the Indian Standards are not so well utilised. By making use of the Indian Standards these organisations would not only simplify their own procedure of purchases but would also encourage the production of quality materials in the country. My opinion is that manufacturers and industrialists should insist on manufacturing their products according to specifications laid down by this National Organization.



7. To make the advantage of Standardisation available to ordinary consumers, Parliament passed, in 1952, the Indian Standards Institution Certification Marks Act, under which the Indian Standards Institution is empowered to issue a licence to the manufacturers to put the ISI seal on the goods conforming to Indian Standards. A number of manufacturers have taken advantage of this scheme, and over 150 licences have been granted for the use of the ISI mark. But that is not enough. I would like to see the day when the products bearing the ISI mark would be found in every shop or retail store. The ISI seal on any product is a guarantee of quality to the consumer and therefore it would instil a sense of confidence in him. More and more industries should come forward and take advantage of this scheme, which will, I am sure, enhance their prestige and sale.

8. Standards are also a necessary instrument for increasing our exports. As you know, we must earn more foreign exchange to keep up our balance of payments for expanding the industrial programme of the country. It is possible to export goods to other countries only if they compare favourably with other foreign products. Indian goods manufactured to well defined specifications as laid down by the Institution are sure to find favour abroad and thereby we can stabilize our export trade. Any complaints about the quality of the exported goods not only hamper our trade but also lower our prestige. If the industry has to build up exports, it can only be by the good will of the foreign customers, and for this it is essential that our products maintain acceptable standards of quality and apply quality control methods during production. The ISI

Certification Mark on a product is an assurance by which we can win the confidence of our foreign buyers. As is well-known, a part of the difficulty in furthering our export trade is based on disputes as to the quality of the goods supplied by us. Often we have complaints that particular consignments have not been upto the standard. If it were made compulsory that only standardized goods which had been subjected to inspection and certification mark, could be exported most of the disputes would be eliminated. That would by itself add to the quantum of our export trade and also to the price paid for exports.

9. The Indian Standards Institution is doing very useful work and the Central Government is making a large contribution in the Third Five Year Plan for its development, so that more and more National Standards could be made available to the Industry. I am sure the Private Sector will not lag behind and the contributions from their side will also be increased in the same proportion, if not more.

10. I express my grateful thanks to all those who have assembled here and given us encouragement. To the delegates and ladies accompanying them I would like to offer a special word of welcome to this historic city of Hyderabad. Within its limitations, the Reception Committee have endeavoured to make your sojourn comfortable and pleasant, though you may not find our arrangements and functions as charming as at previous Convention which were held in much bigger cities. We have arranged a programme of visits to places of historical and technical interest, and for social and cultural functions so that you may spend your spare time usefully.



11. I take this opportunity for thanking the Andhra Pradesh Government who have in a great measure contributed to organise this Convention. We are particularly thankful to Shri M. P. Pai, the Chief Secretary, who has been good enough to render every assistance that we requested. Perhaps, it is not known to many of you that Shri Pai can be said to be one of the original foster parents of the Indian Standards Institution. It was during his tenure of office at Delhi that this Institution was founded and it was he who had to do the spade work. I may also mention here that one of our citizens Nawab Zain Yar

Jung Bahadur was one of the initiators of this Institution. Our thanks are also due to the organisations who have helped us to arrange technical visits to their factories and institutions. The State Transport Department have helped us by providing their buses and our thanks are due to them also. We are obliged to the Press for their wide publicity and co-operation. I am also thankful to the office staff of the Indian Standards Institution and to the Secretary of the Federation of Andhra Pradesh Chambers of Commerce and Industry and his staff who have been working hard day and night to make all arrangements.



**Shri K. Brahmananda Reddi**  
*Minister for Finance & Planning,  
Govt. of Andhra Pradesh.*

He contributes to this Souvenir an article on "Planned Development of Andhra Pradesh"



**Shri A. Bhagavantha Rao**  
*Minister for Endowments and Industries,  
Govt. of Andhra Pradesh.*

He contributes to this Souvenir an article on "Small Scale and Cottage Industries in Andhra Pradesh"



**Shri M. P. Pai, ICS**  
*Chief Secretary,  
Govt. of Andhra Pradesh.*

He contributes to this Souvenir an Article on "Nationalized Road Transport in Andhra Pradesh".



# Planned Development of Andhra Pradesh

K. BRAHMANANDA REDDY, B.A., B.L.,  
*Minister for Finance and Planning,  
Government of Andhra Pradesh.*

It is accepted by all that if we are to go forward with programmes of economic development towards increasing our national income and pushing up our standard of life, a centrally planned economy is the only choice. And so, planned development of the country and its constituent units has come to stay. May be, some critics high-light the ordeals of planning and the freedom that will have to be sacrificed in the process. It may be partly true that economic regimentation, sooner or later, would unfold its consequences which may be repugnant to persons with liberal instincts. We have no choice; either we stay put where we are, with a deplorable standard of living at a level which excites the pity and evokes the charity of many other richer countries or go forward with carefully planned development in democratic frame work. In this article, I would confine myself to certain organisational aspects of planning and the problems involved in the implementation of plans as a quantitative as well as qualitative assessment of achievements of our State under both the Plans, the first and the second, has been the subject matter of a number of other articles which have, in a sort of capsule summary, given a brief record of our progress.

No doubt, the period over which we Plan, the immediate objectives of the Plan, the investment policy etc., are matters concerning the Planning Commission in our country. It comprises not only economic theoreticians and technical experts but also practical politicians and top-class Administrators. In a given set of circumstances they take unbiased decisions and their policies, by and large, are characterised by both judiciousness and practicability. This will be evident from the objectives they set out for the First, Second and the prospective Third Plan. The objectives of the First Plan were to correct the disequilibrium in the Indian economy caused by the war and the partition of the country and initiate a process of all round balanced development which would ensure a rising national income and a steady improvement in living standard over a period, while in the Second Plan the emphasis was on rapid industrialisation with particular emphasis on the development of basic and heavy industries, expansion of employment opportunities and reduction of inequalities in income and wealth and a more even distribution of economic power. The Third Plan will have, as its objectives, doubling of per capita income by the end of the fifth Plan



and reducing the proportion of the population engaged in agriculture to about 60 per cent. In accordance with these objectives, the Planning Commission have been setting out the pattern of development, deciding the outlay, fixing the priorities with the result that it has assumed a powerful role. The States have very little scope to deviate from the main frame-work laid down by the Commission and have to work only within the given ambit. It should be so if the policies and programmes decided upon by the Planning Commission are to be implemented all over the country. Of course, the States have most willingly taken up this task in the larger interests of the country and with a view to achieving results for the good of the people. I have indicated this fact only to stress that the State's development should be viewed against national development though adequate attention is being paid to regional development also. At times, a State here and a State there may feel frustrated because their immediate needs are not fully met. Take for instance our own State. We are a predominantly agricultural State. But with the rapidly growing population, unless we industrialise our State agriculture cannot sustain such a heavy pressure on land any longer. So we have been pressing for correcting the industrial disequilibrium and achieving a balanced development. A striking instance is our need for a fertiliser factory. Our farmers are progressive and want to produce more by utilising adequate quantities of chemical fertilisers while developing their own green manure and compost. Our efforts to get the Centre and the Planning Commission agree to the location in our State of a fertiliser factory in the Central Sector have not fructified and so we are going ahead ourselves with their help. Such

things happen and are implicit in central economic Planning.

Now, coming to the problems of actual implementation which is the major responsibility of the State Government, they are many and varied. First and foremost is the administrative machinery. It is true, we inherited from the British administration, a code of discipline and a high sense of duty. Our Civil Servants are a class by themselves and are second to none even when compared to the highly advanced Countries of the world. But the fact remains that these were largely trained for a law and order Administration and needed lot of orientation before they could switch over to the needs of a welfare administration. Though they did this admirably, and I am glad about it, yet they cannot be said to have achieved a cent per cent success in it. These things come by a process of evolution and there is nothing that can be done about it excepting hastening up of this transformation, through discussions, refresher courses, orientation training, seminars, conferences and the like. One thing that can help to quicken this process of change of outlook and attitude among the Civil Servants is the public opinion. All said and done, one should acknowledge the ready response, on the part of Civil Servants, to the call of the nation. They are to-day in a better position to serve.

The Second problem that confronts the State is the lack of awareness on the part of people. It may have to be admitted that the Community Development Programme which is in operation for the past about seven years has contributed significantly in bringing about the desired change in outlook but still there is a large leeway to be



made. The problems of an underdeveloped State are so many that the State with its own resources can do precious little unless the people themselves undertake the responsibility of improving their lot. To quicken this process of change in outlook, the decentralisation of administrative machinery has been suggested and this has been accepted. In our State, we constituted 20 ad hoc Panchayat Samithis in Blocks in July 1958 and from 1st November 1959, 235 Panchayat Samithis have come into existence. The Zilla Parishads for all the 20 districts have been established on 1st December 1959. Our State and Rajasthan are the 2 States where these bodies have come into existence already. The three tier administrative machinery, viz. the Panchayats at the village level, Samithis at the Block level and Parishads at the District level would go a long way in harnessing people's support for the various development activities in future. I have every hope that these democratic bodies would prove to be the best agencies for planned development of the State. They are organically linked to each other in such a way that the development process in this State will be a continuous and integrated one.

The third problem is our ability to finance a programme of a given dimension. On one side the taxable capacity in a predominantly agricultural State is rather limited and we have more or less reached our optimum limits. On the other side, the assistance from the Centre is also circumscribed by various factors and has definite limitations. And so, the Plan of this State, as indeed of all States, is very much dependant on our ability to mobilise our own resources. It is here the peoples' assistance is largely needed. They

should serve as much as possible and invest for future prosperity. For every sacrifice in the present there is bound to be a reward in the future. The propensity to save and invest should definitely rise if we are to step up our investments on which our prosperity so much depends. Apart from this, there are certain directions in which by a dynamic leadership at the lower levels much could be added to the national wealth. We have any amount of manpower. If that is utilised properly we could, to a large extent, develop our economy. To quote one instance, construction of field channels; if the people have sufficient initiative and undertake the construction of these, through their Panchayats, a lot more of additional area could be brought under irrigation expeditiously and the waters that are impounded at huge cost could be put to the maximum use possible.

There is, of course, the problem of lack of some of the scarce materials like iron and steel, imported equipment etc. These have hindered our progress considerably and these are factors on which we have no control. Added to this is the paucity of trained personnel in certain categories to implement the programmes expeditiously and efficiently.

In spite of all these bottlenecks, we have made considerable progress during the Second Plan. The achievements during the first three years of the Plan are indicated in brief, in the following lines. Against the programmed outlay of Rs. 175.74 crores, the State has already utilised Rs. 92.36 crores during the first 3 years i.e. 1956-1959, and is going ahead with a Plan of Rs. 42.03 crores during the current year 1959-60. If, as the Planning



Commission wants, our expenditure in the current year is limited to Rs. 40 crores there would be a balance of Rs. 43.38 crores to be spent during the last year of the Second Plan and having regard to the administrative arrangements already made and the Plan-mindedness created among the various implementing agencies, it is hoped that this State would completely spend the amount allotted for the Second Plan.

In physical terms our main achievements during the first three years of the Plan are these : The target of 16.43 lakh tons of additional food production set for ourselves is expected to be achieved by the close of the Second Plan period. During the first three years an additional production of 7.36 lakh tons has been achieved and another 3.58 lakh tons and 5.49 lakh tons will be additionally produced in the fourth and fifth years of the Plan respectively. The work on the gigantic Nagarjunasagar Project is keeping ahead of the Schedule. Under other major and medium irrigation schemes, an area of 72,000 acres was already brought under irrigation. Under Power the installed capacity has risen by 108000 k.w. ; 1065 towns and villages were electrified. Towards the progressive development of co-operative activity, 480 large sized co-operative societies were formed all over the State. The total number of societies increased to 1880, the percentage of villages covered to 71.8 and the loans granted to Rs. 13.78 crores. Road development also received prio-

riety and 1272 miles of road, were either newly formed or repaired to a satisfactory condition and upgraded. Equally satisfactory progress was recorded in the enlargement of social services. The enrolment of children between the age groups of 6 to 17 years was increased by over 2.27 lakhs. The bed strength of the various hospitals in the State was increased by 1,880 besides introduction of specialists in the General Hospitals, provincialisation of Local Fund dispensaries and the establishment of Primary Health Centres. On the preventive side, the various All India Programmes like Malaria eradication, Filaria Control, leprosy control B.C.G. Campaign, etc., were successfully implemented. Under the housing programme, through subsidised industrial housing, Co-operative Housing, Low Income Housing, etc. over 5000 houses were built.

The Community Development Programme continued to be implemented successfully and viewed against the All-India achievements, this State's performance was quite creditable. To-day we have 259 Blocks in the State covering 64.1 per cent of the villages, 55.8 percent of the area and 68.5 percent of the rural population.

The goals set out in the Plan are well within our capacity though they call for a marked intensification of our efforts in mobilising our resources, men and material. We are a determined people and we are set to fulfilling our task with "faith in ourselves, malice towards none and friendship for all".





**Shri C. S. Tyabjee**  
*President of the Federation of  
Andhra Pradesh  
Chambers of Commerce and Industry  
and Chairman, Reception Committee  
for the Convention*

He contributes to this Souvenir an  
article on "Industrial Policy for  
Andhra Pradesh"



**Dr. Lal C. Verman**  
*Director, Indian Standards Institution*

He contributes to this Souvenir an  
article on "Standardization in the  
Production and Use of Steel in India "



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Committee for the Convention*

He contributes to this Souvenir an  
article on "Taxation Policy as Incen-  
tive to Industrial Expansion".

# Industrial Policy for Andhra Pradesh

C. S. TYABJEE,

*President, Federation of Andhra Pradesh Chambers of  
Commerce and Industry.*

Recently many leaders have expressed new opinions on the scope of the private Sector. It is also known that the Planning Commission is drafting Third Five Year Plan, in which the share of the Private Sector is proposed to be about 40 percent of the total expenditure of Rs. 10,000 crores. In the Planning Seminar, organized by the Federation of Indian Chambers of Commerce and Industry at Delhi, a demand was made that the share of the Private Sector should be substantially increased, and that even those industries that may have been originally placed in the Public Sector in the policy statement of the Government should now be allowed to the Private Sector, provided they are run economically. We, therefore, feel that the industrialists of Andhra Pradesh should, at this stage, express their opinions as to the policy that may be followed by the Government in regard to the Private Sector in Andhra Pradesh.

2. While the industrialisation of the country is an urgent necessity to raise the standard of living of the people, we would urge that a realistic approach should be made to any Plan for this purpose. We accept generally that the outlay for the third five year Plan should be Rs. 10,000 crores, as in-

dicated by the Government and the Federation. We, however, feel that it would be difficult to double the national income by the year 1975, having in view various factors which require to be recognized.

3. At the outset, we desire that food production should be given as much importance as industrial production, as also the production of raw-materials for industries. While we are for more intensive industrialisation of the country, we would also suggest that agricultural production should be given its appropriate place.

4. While it is necessary to have a high rate of savings, we would point out that this would be possible only if there were to be proportionately increased rate of production compared to remuneration. While wages are ever being enhanced, it is often forgotten that production should increase much higher, so that unit costs of production are continuously reduced. For this purpose we would require a definite labour policy from the Government so that any increase in wages has an effective relationship to more and more production. It is only when the unit cost of production goes down that the prices could be lowered, thereby allowing larger savings.



5. We would also point out that taxation has to be so adjusted so as to enable more savings for the purpose of capital formation. We feel that the level of direct taxation is too high and should be lowered. If more funds are required by Government, they should be obtained by a reduction in public expenditure. A reduction in the rate of taxation would increase savings and capital formation, so that the resultant development of industry would ultimately yield a larger quantum of taxation even though at lower rates.

6. Coming to the resources available for the Plan of Andhra Pradesh we are of the opinion that the local surplus available for expenditure in the Third Five Year Plan in the Government Sector would be as follows :

	Crores of Rupees
a) Loans from the Public	50
b) Small savings from the Public	25
c) Increased yield from taxes and other sources without increasing rates of taxation.	25
	—
Total ...	100
	—

7. We would suggest that the Government's expenditure in the Third Plan may be in the neighbourhood of Rs. 300 crores, on the assumption that the Central Government will advance Rs 200 crores for the Plan as against Rs 100 crores raised by the State Govt. This figure of Rs 300 crores, however, would not be sufficient to raise the industrial development of this State to that of the all India level. If based on

the population of the State, the Five Year Plan should provide for the expenditure of about Rs 900 crores in this State. As the State itself can spend about Rs 300 crores, and the private sector may also spend about Rs 150 to 200 crores, the **Central Govt.** may locate a substantial portion of the public sector industries in the State, particularly those industries connected with Defence, Steel, Heavy Engineering, Fertilizer, and similar other industries, besides the development of Roads, railways and ports.

8. Provided there is encouragement from the Government, and a climate is created to provide incentives, for industrial development, we would suggest that the Private Sector would and should invest in the State an amount of capital equal to about half the expenditure which would be incurred by the State Government. This outlay by the Private Sector we would estimate Rs 150 and 200 crores. In Bombay, Calcutta and Madras, a large amount of private capital is forthcoming; the number of new concerns is increasing, while the existing units are being vastly extended. We could expect similar investment in the State though on a slightly smaller scale. We also expect that capital so far invested in land may, to some extent, find its way into new industries in this State.

9. We would suggest to the Government that in addition to the social development expenditure which they will incur, they should particularly devote their attention to the following public servicing activities :

- (a) Supply of power at cheap rates from hydro and thermal stations, and also supply of coal at economic prices ;



- (b) Development of water works so that plenty of water is available to industries ;
- (c) Development of raw materials, such as staple cotton ;
- (d) Development of forest produce on long-term basis to ensure raw-materials to industries ;
- (e) Development of communications such as Railways, roads, telegraphs and ports ;
- (f) Encouragement of technical education in all its aspects.

10. We would also urge that Government should allow the participation of such private capital as is forthcoming in such state-sector industries as fertilizers, collieries, textiles and sugar. The Government should invite contribution by the general public or offer the shares which they hold or additional capital to the public.

11. We suggest that the Electricity Board should so function as to embrace all activities connected with the generation and distribution of electricity and follow a long term policy, so that they may take an active interest in the development of industries. We feel that the rates of electricity are higher in this State than what they are in other States, and the rates now charged should be substantially decreased, particularly where large amounts of power are required. We hold the view that it can be supplied at a lower rate by following a flexible price policy. There should be special encouragement in rates to such consumers as small-scale industries.

12. We would suggest that the fol-

lowing industries may be set aside for the Private Sector :

- (a) Development and modernization of industries as are already in the Private Sector, particularly cotton textiles, rayon, sugar, vegetable oils, tobacco, paper, cement, ore mining, engineering and other industries — excepting such industries as the Private Sector cannot take up on their own.
- (b) The proposed news-print factory should be in the Private Sector, engineering workshops and small scale steel mills should also be in the Private Sector.
- (c) As regards the Fertilizer Factory, the one to be erected by the State, and for which Plans have been advanced sufficiently, should have substantial private contribution.
- (d) We feel, however, that a second fertilizer factory should be established in the State, and that this should be allotted to the Private Sector.
- (e) Provision should also be made to allow the Private Sector to establish industries to produce for capital goods.

13. Industrial development has to be so planned that provision has to be made for quick returns. We would suggest that not less than 30 percent of the total investment should be in industries which could be termed as 'medium term investment industries' these being mostly small scale industries or consumer industries.



# Small Scale & Cottage Industries in Andhra Pradesh

A. BHAGAVANTHA RAO,

*Minister for Endowments and Industries,  
Govt. of Andhra Pradesh.*

The term 'small industries' covers handloom weaving, silk, coir, handicrafts, khadi and village industries and the small scale industries. A small scale industry is defined as a unit employing less than 50 workers per shift when not using power with a capital investment of less than Rs. 5 lakhs.

A sum of Rs. 200 crores was originally provided in the Plan for the development of village and small scale industries, of which Rs. 11.52 crores has been allotted to Andhra Pradesh. The following is the allocation for various cottage and small scale industries in the State Plan :

	Rupees in lakh.
1. Small scale industries	313.45
2. Industrial Estates	97.34
3. Village industries	193.48
4. Handlooms	456.22
5. Sericulture	21.38
6. Handicrafts	35.05
7. Coir industry	4.00
8. Other schemes	31.31
	<hr/>
Total ...	1,152.23
	<hr/>

This sector is a composite one covered by the programme of the State Governments, the State Khadi & Village Industries Board and the schemes of the Centre implemented by or on the advice of the six All India Boards ... (1) All India Handloom Board ; (2) the Coir Board ; (3) the Silk Board ; (4) the Handicrafts Board ; (5) the Small Scale Industries Board and (6) the Khadi & Village Industries Commission.

All these six boards help in focussing attention on the problems of industries and formulate policies and programmes and provide continued guidance towards their progress. It is emphasized that the development of these industries is mainly the responsibility of the State Governments. But there is a tendency to take planning and policy-making for the development of these industries out of the orbit of the State Governments.

The main problems of these village and small scale industries are: (1) technical know-how; (2) research; (3) finance; and (4) marketing. The program-



mes of village and small scale industries have been really started at the beginning of the Second Plan, and it may be now said that they have just settled down. If there is time to grow they may help in providing employment, promoting production and stabilizing the rural economy.

### **Small Scale Industries**

There is a great scope for the development of the following small scale industries in Andhra Pradesh :

(1) based on agriculture; (2) mineral based ones; (3) chemical industries; (4) based on forest wealth; and (5) based on animal wealth. Attempts are being made to assess the potentialities of developing these industries. Thirtyseven continuation schemes comprising 48 centres and 31 co-operative work centres are included in the current year's programme. Six new schemes comprising 9 centres, viz. Locks Centre at Tadukupet, Toolroom Shop at Visakhapatnam, Raw material depots at Visakhapatnam and Sanathnagar and General Engineering Servicing Centre at Nandyal, Samalkot and Warangal, a Ceramic Service Centre and mechanized Wood Workshop at Hyderabad are being taken up. An amount of Rs. 66.4 lakhs has been spent under the small scale industries programme during the last year and an amount of Rs. 82.3 lakhs was provided for the current year. It is estimated that by the end of this year, the annual out-turn would be worth Rs. 54 lakhs and provide employment for about 3,300 persons.

Schemes under implementation include training-cum-production centres in carpentry, training-cum-production centres in black-smithy, a centre for

the manufacture of crayons and other plaster products, a training centre in the manufacture of scientific glass apparatus, a training cum-production centre for moulders, a brush-manufacturing unit at Kakinada, a training centre in the operation of power driven machines, a utility leather goods centre, twenty co-operative work centres, a co-operative work centre for brassware, a model leather goods manufacturing unit, a production-cum-training centre in carpentry and a cutlery centre at Poddur.

In addition, schemes including two centres for the manufacture of stoneware and earthen-ware products, a mobile blacksmithy demonstration unit, a training-cum-production centre for enamel ware, a research centre for graphite crucible industry, two model tanneries, ten co-operative work centres, a production-cum-training centre for ceramic ware, a bicycle parts factory, a builders hardware unit, a footwear centre and model tannery, a tile training-cum-production centre, a saw mill-cum-timber seasoning plant, two model carpentry workshops, manufacturing units of small gauge insulated copper wires, fractional H.P. Motors and radio components, a stoneware pipes factory, two general purpose engineering workshops, a splint and veneer factory, have been taken up and work is going on apace. It is decided to establish a small scale and cottage industries research institute in the Industrial Estate at Vijayawada.

### **Industrial Estates**

An expenditure of Rs. 38.14 lakhs has been incurred during 1958-59 on the 6 Industrial Estates at Sanatnagar, Visakhapatnam, Vijayawada, Samalkot, Warangal and Nandyal. Seventeen



units under the first phase of construction were completed and let out to private industrialists in the Sanatnagar Estate last year itself. During the current year it is proposed to incur an expenditure of Rs. 54.5 lakhs on the Industrial Estates and accommodation for 25 additional units in Sanatnagar, 29 units in Visakhapatnam, 18 units in Vijayawada, 24 units in Samalkot 16 units in Warangal and 10 units in Nandyal will be provided to intending entrepreneurs before the close of the year.

### **Handloom Industry**

The handloom industry in the State commands about 4.4 lakhs of handlooms but so far 4.01 lakhs looms have been registered. The progress of organising the industry on co-operative basis is being vigorously pursued. So far 2.80 lakhs of looms have been brought under 865 weavers' co-operatives. Their annual production is about Rs. 573.35 lakhs.

The industry is sought to be developed on sound lines with the help of the cess fund schemes.

Andhra Pradesh has 17,000 wollen looms; the number of wool weavers co-operative societies is 63, the membership of which is 11,905. The scheme of assistance to this industry also includes provision for improved appliances, like frame looms, wrapping machines, etc.

Twenty-six silk weavers co-operative societies have been formed with a membership of 12,000. The handloom silk industry is localized in Dharmavararam in Anantapur District, Peddapuram, Raparthi, Samalkot and Irripaka in East Godavari District, Siddipet in

Medak District, Armour in Nizamabad and Rayadurg in Kurnool Districts.

### **Coir Industry**

As Andhra Pradesh has an area of 92,200 acres under coconut cultivation, the coir industry too is being developed by starting training-cum-production centres for the manufacture of coir and coir-products. An amount of Rs. 73,000 was spent during the last year and an amount of Rs. 1,50,000 is provided for this year. It is proposed to continue five schemes and take up new schemes this year. This industry can be developed in Srikakulam, East Godavari, West Godavari and Nellore Districts.

### **Handicrafts in Andhra Pradesh**

Andhra Pradesh is perhaps the leading State in respect of handicrafts in India. There are about 40 well-established crafts in Andhra Pradesh, besides many other minor crafts like light metal casting, wood carving, engraving, stencil work, packing boxes making, gold leaf making, miniature painting, needle craft, artistic leather crafts, decorative potteries, bamboo work and cane work, lacquer toys, grill work, special painting, lamp-shade making, light stone carving, paper machine work, paper toys, etc. which have yet to find their proper place in the planning programme.

So far 25 schemes have been implemented and 18 new schemes are being sanctioned. Thus there will be about 43 schemes under implementation during 1959-60 which include 17 handicrafts industrial co-operative societies, 10 common facility centres, 6 marketing emporia and five training centres besides other schemes.



The annual production of handicrafts articles in the co-operative and public sector is estimated at Rs. 12.5 to 15 lakhs per annum, out of which goods worth Rs. 8.5 lakhs are marketed through State Emporia and goods worth Rs. 8.5 lakhs are marketed by the Nirmal industry. In the second Five Year Plan, so far 1379 craftsmen have received regular employment and the earning capacity has increased from Rs. 30 to 40 per month to Rs. 35 to 60 per month on average one hundred and twentyfive craftsmen boys have received training in the various centres and they have been made members of Handicrafts Co-operatives as a follow-up measure.

### **Sericulture**

There is a vast scope for the development of sericulture and tassar-culture in Andhra Pradesh. Sericulture industry in Andhra Pradesh is in its early stages of development as compared with Mysore. Sericulture is an ideal cottag industry closely associated with agricultural activities. Over 300 acres are under mulberry cultivation in our State. The industry is widespread in Anantapur, Chittoor districts and scattered in Visakhapatnam, Nizamabad, West Godavari and Karimnagar Districts.

During the Second Year Plan, attention was focused on increasing the acreage under mulberry and to organise the mulberry silk industry by providing basic necessities like :

- (i) formation of nurseries for preparation and distribution of high yielding varieties of cocoons,
- (ii) basic need cocoon production centres at Hindupur and Chin-tapalli,

(iii) establishment of Govt. Grainage at Hindupur for preparation and supply of commercial silkworm seeds to the sericulturist,

(iv) facilities for marketing the cocoons produced by sericultures under spot payment system,

(v) establishment of reeling units for reeling silk yarn.

During 1958-59, a sum of Rs. 20,000 was spent for this industry. During this year 1959-60, an equal amount is proposed to be spent.

### **Tassar Silk Industry**

In the forests of Adilabad, Karimnagar, Warangal and East Godavari, there are large number of Nallamaddi trees on which Tassar worms are reared. The total production of tassar silk in Andhra Pradesh is to the tune of nearly a lakh of rupees per year.

Two experimental sericulture farms at Shadnagar in Mahabubnagar District and Peopali in Kurnool District have been opened.

### **Khadi and Village Industries**

The term 'village industries' is of course identified with traditional forms and social patterns of our rural economy. Between village industries and small scale industries in our concept of Planning and rural reconstruction there has been the idea of growth, of continuity and of development.

Work for the Khadi and Village industries is being carried out by the Statutory board in Andhra Pradesh. The industrial co-operatives as on 31st May 1959 coming exclusively under the pur-



view of the Khadi and Village Industries Board are 605, of which 27 industrial co-operatives are intended for Khadi. Besides the cooperative societies, assistance is also extended to the registered institutions and private trusts in accordance with the pattern of the assistance by the All India

Khadi and Village Industries Commission. The potentialities of development under (i) handlooms, (ii) leather, (iii) palm-products, (iv) fishing, (v) wool-weaving, and (vi) Khadi are immense. The policy of the Government aims at organizing these industries mainly in the co-operative sector.



*“Without standardization, we cannot progress in industry. If we wish to create confidence about an industry and the sale of our goods, then they should be of high standard”.*

*“We talk today about increasing our production; it has become a vital matter. In fact, that is a sign of our growth, that is a sign of our fighting many evils that we suffer from. How can we do this? After all, the whole conception of planning is not to think in an odd spasmodic way, but in a planned way. It is an essential element of planning to have standards”.*

*“Even though we deal with science and technology of high order, minds of some have not quite grasped all these basic facts. Some industrialists may say that their goods are quite good and may argue as to why they should get their goods inspected by this Institution when they can sell them without any inspection. They must understand that standards to them are as essential and vital as examinations are to students. People producing goods make themselves judges when somebody else should be the judge”.*

*“It is of great importance that we should maintain proper and accurate standards in the goods that we produce, as in our private and public life”.*

JAWAHAR LAL NEHRU.

# Taxation Policy as an Incentive to Industrial Expansion

P. L. BHANDARI, B.A. (Hons.), B.Com., LL.B., D.P.A. (Lon.),  
*Senior Vice-President, Federation of Andhra Pradesh  
Chambers of Commerce & Industry*

For a long time now the business community has been advocating the adoption of a taxation policy in the country which should induce production of more wealth through a vigorous and rapid industrial development, which, in its turn, would provide wider and more enduring base for raising the revenue. Both the Government and the business desire rapid economic progress, but, in the approach, there is a difference. The rise in the average index of industrial production was only 3.5 percent in 1957, with a further fall in 1958, as compared with 8.6% in 1956 and 8.1% in 1955. There is a slight pick-up in 1959. But all the same it is evident that the pace of industrial production bears a definite relationship with rise in the taxes. In 1958-59, out of the total revenue budgets of the Central and State Governments to the tune of Rs. 1,352 crores, the tax revenue (direct and indirect) came to Rs. 1,050 crores (nearly 78 percent), the industrial sector contributing Rs. 837 crores. The position in 1959 is almost similar. It is advised, therefore, that if the Industrial sector gets a set-back, the chances of States realising more money from this tax source will diminish. If the Government were to go on increa-

sing the rates and the range of taxes so as to fill up the deficiency, there would ultimately be a 'vicious circle', which would eat into the vitals of the economic body of the country.

A steady decline in capital formation, as well as in entrepreneur incentives, has been brought about by the present steep levels of direct taxation, which have not only rendered it difficult to mobilise resources for projects earmarked for the private sector but have also depleted existing industrial undertakings of the resources that would have been normally available for being ploughed back for inducing expansion of existing installed capacity. The percentage of dependence of borrowings compared to equity capital in recent years can be easily traced to the burden on corporate taxes on the Companies finances.

The psychological damage caused by several of the taxes, such as the wealth Tax, the Expenditure Tax, and Capital Gains Tax, far outweigh the advantage of revenues accruing therefrom. By retarding industrial company promotion and generally weakening commercial incentives, the present taxation policy has prevented the rapid spread of



wealth-producing and tax-yielding spheres of economic activity. We are fast reaching domestically a resource deadlock.

Now the time has arrived for the Central Government to undertake a comprehensive review of the incidence and the short and long range effects of existing taxation levels, with a view expeditiously to restore industrial incentives on the one hand and capital formation on the other, as otherwise allocations of industries to the Private Sector under the Third Plan will be difficult of fulfilment.

Taxation policy should be governed by principles of stimulating the economic progress of the country, so that it could help in producing more and more wealth, yield more and more revenue to the State and help in achieving the overall prosperity of the country. But in India we have now a tax structure grown haphazard and containing elements which retard the progress in the economic sphere. The number of direct taxes levied by the Central Government in India exceeds that in any democratic country, in the world. Out of 19 kinds of direct taxes levied in 13 democratic countries, 16 are levied in India as against 4 to 10 in others, including economically advanced countries. It is not only the number and range of taxes that matters in India, but their incidence. The tax incidence in India has grown to be the highest in the world, if all the economic aspects are compared.

Take for instance, the direct tax on personal income. The incometax and surcharge in the highest slab goes upto 77 percent. After paying such a heavy tax, if the payer saves something, he has to pay Wealth Tax. If he chooses

to spend it, then in the process of doing so, he has to pay excise duty, sales tax, etc., and at the end of the year he has to pay the Expenditure Tax if his income exceeds certain amount. If he elects to give away the savings to somebody, he has to pay gift tax and if still something is left, and he leaves for the other world, the savings he has is subject to Estate duty. Then there is Capital Gains tax also. In short, under the present tax structure in India, there is an inhibiting tax on hard work, initiative and responsibility.

If you examine the tax structure in relation to the Joint Stock Companies, there are nine taxes in all, though the budget proposals last year reduced the number of taxes, but increased the incidence on the taxpayer. The investors in a Joint Stock Company in India are mostly middle-class people. They provide Equity capital and shoulder the risk. Many a time they do not get any return for years. Now to tax the dividends, after such an initial period, if they exceed 6 percent, is really unfair and inequitable, when Government borrowings are at 4 per cent. To tax dividends beyond 6 percent is disincentive. Then there is the tax on what we call 23-A Companies which presents a paradox. There is an excess dividend tax to restrain the Corporation from distributing profits to the shareholders. But there is also a tax on 23-A Companies at a heavy rate, if they do not distribute almost the entire profits. Then there is a penal tax on issue of bonus shares, which is against all ideas of equity, as the reserve from which bonus shares are issued are already subjected to tax. To tax the reserves again in this way is double taxation.

The cumulative effect of the present tax structure is that it discourages do-

mestic capital formation so necessary for industrial advancement. The country's economic development cannot mostly depend on foreign aid. There have to be matching domestic resources and therefore it is necessary that the taxation policy should be turned in a manner that would advance multiplication of domestic resources.

The remedy is that the Government should re-examine the entire taxation policy to recast it on the basis of stimulating economic progress by encouraging initiative. This method

would provide more and more domestic capital, which can be joined with a part of foreign capital, to gear up the economic progress of the country. More production means more new jobs, more individual incomes, higher consumption, higher standard of living and formation of still more domestic capital. This line of tax policy will achieve the economic development of the country in a few years and make the country rich and prosperous and also strong to protect its freedom and borders unaided. This is what every patriotic Indian wants to see.



# Civic Administration in the City of Hyderabad

M. ROSHAN ALI KHAN,  
*Mayor of Hyderabad.*

It gives us indeed great pleasure to hear from the visitors not only from outside the State but from abroad stating that Hyderabad is one of the cleanest and healthiest cities which they ever came across although it is not possible to compare our city with any big metropolis of international fame. But with all certainty Hyderabad can be classed as one among the best administered cities with good and healthy environment, enjoying the facilities of modern amenities. The regular growth in population and expansion in its limits makes a heavy demand for the increased amenities. The Corporation faced with stringent finances is nevertheless boldly trying to meet the situation by diverting all the available finances to provide civic amenities to the possible extent. It may be mentioned here that till April 1951 the Corporation was functioning as one of the administrative units of the Government with few nominated members giving advice to the Government official known as Vice-President who used to be in charge of the Municipal Administration. After Police Action in accordance with the Hyderabad Municipal Corporation Act 1950, the Corporation was constituted with elected members who were returned on the basis of adult franchise. Unlike other Corporations Hyderabad has recently started functioning on democratic lines. Admirably enough the administration

attuned itself to the popular requirements. In spite of its recent democratisation the new representatives infused fresh and healthy spirit in the working of the Corporation and the requirements of the public are being given all the attention with sincerity and devotion. The past eight years present a meritorious record of public activity. Before the democratic advent, during 1941-51 only a sum of Rs. 10,67,955 could be spent on civic amenities. But a period of eight years from 1951 to 1959, more than a crore has been spent in improving the City by providing Under Ground drains; Morrum, Asphalt and Cement Roads; Urinals, Latrines and Baths; Parks and Playgrounds; Radios; Water Coolers; Fountains; Markets and Street Lights, etc. The programme of slum clearance, Low Income Group Housing Schemes and Laying of under ground sewers have also been given adequate attention. Already 200 single room tenements under Low Income Group Housing Scheme have been completed and out of 75 Double Room tenements 67 are completed and 8 are under completion. The Government has also been generous in continuing its annual grant-in-aid of Rs. 10,28,500 in addition to other aids for Leper Home and Drainage works, etc. to enable the Corporation to continue its developmental activities unabated. The present Corporation is the second Civic Body after the enact-



ment of H.M.C. Act 1950 which was subsequently amended in 1955. The first Corporation started functioning from 16th April 1951 and continued upto 9th July 1956. The present body succeeded on 9th July 1956 with 66 elected members from 58 constituencies out of which eight are Double Member Constituencies which returned eight reserved scheduled castes members. It is very gratifying to express that the income of the Corporation has risen to Rs. 1,15,78,344 (estimated income of 1959-'60). Whereas in 1951 before the entry of popular representatives it was Rs. 41.76 lakhs only. Similarly the expenditure also increased with major portion being diverted for civic amenities. During 1959-'60 it is proposed to spend Rs. 40,84,223 on amenities as detailed below :

	Rs.
1. Construction of Roads, Drains, Latrines, Urinals, Playgrounds, Parks, and Street Lights	22,81,000/-
2. Works to be taken up on 50% contribution basis	50,000/-
3. Capital works under Drainage Division	3,00,000/-
4. Special repairs & maintenance works	6,07,000/-
5. Slum clearance scheme (H.M.C's scheme) of expansion	2,00,000/-
6. Construction of Markets, Mulgies & other Income Yielding Works	6,46,223/-

In this way every huge sums are spent for the improvement of the City. In addition to these normal undertakings the Corporation has sanctioned

this year an ambitious scheme to be executed under Third Five Year Plan costing Rs. 14 crores as detailed below :

	Rs. in Crores
1. Slum Clearance	500
2. Low Income Group Houses	2.91
3. Two National Parks	0.05
4. Five Swimming Pools	0.10
5. (15) Welfare Centres	0.09
6. Maternity Houses	0.30
7. Family Planning Centres	0.05
8. Libraries	0.10
9. Dust Proof Road	0.40
10. Municipal Office and Town Hall	0.20
11. Extension of drainage mains and House connections	2.00
12. Improvement of Disposal Works	0.14
13. River Improvement Scheme	0.70
14. Canalisation of different nalas passing through the City	0.20
15. Mechanization of transport for removal of refuse	0.05
16. Remodelling & centralization of Slaughter Houses	0.05
17. Establishment of Dairy	0.25
18. Construction of Markets	0.05



	Rs. in Crores
19. Construction of Traveller's Bungalow	0.01
20. Staff Quarters, for Municipal Employees	0.10
	<hr/>
TOTAL ...	12.85
ESTABLISHMENT 10%	1.15
	<hr/>
GRAND TOTAL ...	14.00
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In addition to the above schemes a Master Plan for the City is also under preparation. After the completion of the Master Plan it is expected that the slums will be cleared and planned development will be regulated making the City still more attractive with cleaner and healthier atmosphere.

## WHAT IS A STANDARD ?

### A Standard is

a verbal or written formulation, or a physical representation in the form of a graph or sample or model, which serves to define, or designate, or specify certain features (or basis of measurement) of

a unit, an object, an action, a process, a method, a practice, a capacity, a function, a performance, a measure, a quantity, an arrangement, a condition, a duty, a right, a responsibility, a behaviour, an attitude, a conception, or a combination of any of these,

with the object of promoting economy and efficiency in production, disposal and/or utilization of goods and services by providing a common ground of understanding among producers, dealers, consumers and technologists.

(From ISI Bulletin Vol. 3, 1951 p.34)

# Nationalized Road Transport in Andhra Pradesh

M. P. PAI, ICS.,

*Chairman, Andhra Pradesh Road Transport Corporation.*

Road Transport is one of the basic industries of any country and it would be no exaggeration to say that no other industry plays so vital a role in the economic growth of an agricultural country as Road Transport. Because of this, very great attention is being paid in India to the development of roads, to open up the rural areas and to connect them with the main commodity markets and the Towns. Its importance is also obvious in a country like ours where there is rapid growth of industrialization taking place at the moment. It is true that railways and waterways play a major part in the field of transport; but apart from the fact that heavy capital out-lay involved, these cannot fully meet the needs of the country and particularly of the small agriculturist. Road transport has to fill this gap, which is by no means small. This has been recognized in the two Five Year Plans, where emphasis has been laid on improvement of road communications.

Road Transport can broadly be divided into :

- (1) Passenger Transport; and
- (2) Goods Transport.

The Government's activity is confined for the present, to Passenger Transport only.

To provide an efficient, adequate and economical Passenger Transport Service, the Andhra Pradesh State Road Transport Corporation will extend its activities in the erstwhile Andhra area by stages. The Corporation's policy is :

- (a) To give to the community a Transport Service which is safe, adequate, reliable and comfortable and at a reasonable cost.
- (b) to give the staff reasonably good wages, security of service and satisfactory working conditions and
- (c) To divert its profit to the Government for road development.

There can be no two opinions that the objectives mentioned above cannot be provided by the private sector. Nationalisation of Road Transport is based on the realization of the above objective.

To achieve these objectives and to fulfil its statutory obligations, the Cor-



poration endeavours to provide :

- (a) A utility service of high efficiency;
- (b) A keen and loyal team of employees who will render efficient service;
- (c) Equipment of modern design calculated to give reliable and speedy transport service on a wide scale;
- (d) An Organization for the management of man-power and equipment so as to achieve the maximum benefits; and
- (e) A commercial policy which by virtue of its flexibility and character will offer transport services to the travellers to their best advantage.

The management of Road Transport in Andhra Pradesh was transferred from Government control to the Andhra Pradesh State Road Transport Corporation which is an autonomous body with effect from 11-1-1958. The activities of the Corporation are controlled and managed by a Board comprising a Chairman and 8 Members, including two representatives of the Central Government.

The assets at the time of the formation of the Corporation amounted to nearly Rs. 198.70 lakhs. When the Corporation was formed, the operation of Nationalised Services was confined to the twin Cities of Hyderabad and Secunderabad and the nine Telangana Districts of the State of Andhra Pradesh. Since the formation of the Corporation, Passenger Services in the Krishna District have been completely

nationalised and some services to other Districts. Plans have been prepared to complete the Nationalisation of Passenger Services in the entire State on a phased programme within the next 6 to 7 years. At the present moment 860 buses (including 300 new buses for new routes are in operation covering a route mileage of 4,342 and operating a daily mileage of 78,890. The Corporation has a staff of 5,602 on its rolls.

The Corporation is financed by the Andhra Pradesh State Government and the Central Government (Railways) in shares of three and one. The Corporation pays 5 percent interest on the investments of the State and Central Governments and this interest is the first charge on its net earnings. When it is realized that the rail and road mileage in the State of Andhra Pradesh is in the ratio of 1 : 11 the importance of Nationalised Passenger Road Transport Services and the part they play in the development of the economy of the State can be appreciated. In addition to providing the travelling public with an efficient, adequate and economical passenger transport services, the Nationalised Undertaking contributes large amounts to the State Exchequer by way of different taxes. It is necessary here to clear an erroneous impression that the Andhra Pradesh State Road Transport Corporation, because of its nationalized character, does not pay taxes to the Government. On the contrary, every tax, which the private sector is subject to is also levied on Corporation, which works as a fully commercial venture with no discriminatory advantages.

The Nationalized Passenger Transport Services provide a good avenue of employment to educated, skilled and unskilled men. 6.5 men are employed



per bus. The Corporation has 5,602 employees at present and expects to employ over 20,000 when Nationalisation of Passenger Transport is completed in the State in 1966.

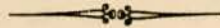
The Corporation extends to its staff various benefits, such as, medical facilities, Housing accommodation, educational benefits, Provident Fund and a retirement Gratuity for good and efficient service..

The Corporation always has in view the modernization of its fleet to meet the changing needs of the travelling public. In addition to augmentation of services as and when necessary, additional facilities are provided to the travelling public by operating long distance Express and Deluxe service.

In order to provide amenities to the

travelling public as well as to ameliorate the conditions of the staff, the Corporation maintains a Betterment Fund. This Fund is used to provide amenities such as Way-side Shelters, Refreshment Rooms, Cloak Rooms, Drinking Water facilities and comfortable Bus Stations.

Nationalized Road Transport Services in Andhra Pradesh endeavour to co-ordinate road service with the railway. Thus Passenger Road Transport Services operate on all roads connecting Railway Stations and serve as feeders to the Railway. The Andhra Pradesh State Road Transport thus helps to promote a balanced development of the economy of the State and the Country by serving as an auxiliary unit to the main transport system, viz: the Railways, which are also a National Asset.



**SIMPLIFICATION :** The process of reducing the number of types and varieties of products made.

**STANDARDIZATION:** The process of organizing agreement on

- (i) a standard for a particular product, range of products or procedure, and
- (ii) the application of the standard.

A standard is a definition with reference to performance, quality, composition, dimensions or method of manufacture or testing

**SPECIFICATION :** The devoting of particular productive resources exclusively to the manufacture of a narrow range or products.



# Standards are Necessary for Progress of the Nation \*

C. SUBRAMANIAM,

*Finance Minister, Government of Madras.*

More than anything else for the development of a country it is necessary for its people to maintain standards in all walks of life. If I can persuade the ISI, perhaps, I would ask them to have a branch — a political branch — attached to it so that we may have standards prescribed for politicians or political behaviour. For, today it is the politicians guided by political parties and therefore ultimately the political parties, which seem to wield power and unless we have standards of behaviour for political parties and individual politicians we may not be able to make sufficient progress. After all, as even Mr. Kothari pointed out, the progress of a nation mainly depended upon the progress of standardization in the country. Therefore, there ought to be standards for behaviour of individuals in our country and to the extent we are able to say that we maintain high standards of behaviour, whatever other progress we might make, either in the industrial field or in the scientific field or in the cultural field, perhaps, we won't be able to say that

we have achieved a high level of civilization and a high level of living. I hope and trust that our leaders and the people are improving day by day and year by year. That will be the real index of the progress of the country.

Today, we want the Indian Standards Institution. This is no reflection on the integrity or honesty of the individuals in the country, because even though the individuals may have a high sense of integrity and honesty, but still the industrialization has brought in its wake so many problems with regard to the production of goods, that no one in spite of his high moral standard is able to say that the goods produced in his factory or industry conform to certain standards unless those standards are properly examined and used and the goods tested according to the standards. It becomes necessary particularly when industrialization reaches a particular stage, to have Institutions like the ISI, so that the goods produced in the various factories could be properly standardized, tested, graded and made known to the public that such and such

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\* Extracts from the speech delivered on 26 July 1959 while inaugurating the Zonal Conference of ISI Members in Southern Region.



goods are according to such and such standards and anybody who goes and purchases such a product could depend upon it. Therefore, when you have to launch upon industrialization programme it becomes necessary for us to have the Standards Institution. I had the opportunity of perusing the progress which this Institution has made and I can very well congratulate this Institution on the coverage it has made in the short period after its inception. I hope and trust that within a short time it would be possible for us to say that all our products are completely standardized and anybody could be quite content and feel satisfied that the products he requires are being made according to Indian Standard Specifications.

Probably, many of you attended the Zonal Conference of the Chambers of Commerce during which Dr. Ramaswamy Iyer referred to a regrettable state in our foreign trade. Because of our failure to maintain standards in our exportable commodities we have lost our markets. Today, we have to export some of our articles whether we like or not, because for our industrial progress and for our development projects we have to import machinery and other special articles from other countries also. It cannot be one way traffic. When we import, we have to export to that extent, the greater the imports, the greater the exports have got to be. Therefore, when in the present context we have to import large quantities of machinery and the various other specialized articles which are not available here, then to that extent, we have to export our goods. Our foreign markets should be stabilized and the people in those countries should be able to say that when they go in for products made in India there is no question of being cheated or any under-

hand dealing. So, you see, not only with reference to our industrial growth here, but also for the expansion of our external markets the ISI has to play a very vital part and therefore I welcome its growth and expansion. Particularly, today when the advertisements are beginning to play a greater and greater part in helping the consumers in framing purchase programmes. I think the ISI will also have to play a greater role because we do not maintain any standard in our advertisements. No advertisement for any product should be considered complete, without mentioning that the particular product or article comes under the ISI Certification Marking Scheme and that it has been tested and found upto the Indian Standard. In America, I am told, the advertisement has become a profession by itself. Various methods are adopted for the purpose of attracting the customers. Even though luring advertisements are being used for attracting the customers, ultimately the success depends upon the satisfaction which that particular article will give to the buyer. You may deceive a person once or even twice, but you cannot go on deceiving him for ever. Therefore, it becomes more and more necessary that you should be able to create confidence in the people that what is offered for sale is a commodity which the consumer wanted and which the consumer intended for his consumption and that could happen only when the purchaser or the consumer could be sure of the quality of the article he has purchased. I am glad that the Indian Standards Institution has not only come into the existence, but is also progressing from year to year and perhaps the progress of this Institution will also be the index of the progress of the country with reference to the various industrial activities.



# Role of ISI in Industrial Development \*

D. C. KOTHARI

The concept of standardization is not new. Only it has been adopted for and applied to the industry in the last one century or so. In fact, standardization has been a part of human activities right from the pre-historic times to the modern age. The progress of civilization to a large degree depends on successful standardization in various fields. The golden periods in history were those when the standardization excelled in many fields of human activity. Strong interests in industrial standards, however, suddenly sprang up in the final decades of the 19th Century and the early years of the present Century due to advancing technology and expanding industry in many Western Countries. To meet the rising demands for standards the specialized organizations both at the national and international level included in their scopes the development of standards in the respective fields. Later with the advancement of industry there came into existence organizations exclusively devoted to the development of standards, like the British Standards Institution, to assist in the organized development of national industries.

The establishment of the Indian Standards Institution in 1947 was, therefore, a natural outcome of the trend for industrial expansion in the country. The main functions of the Institution are to promote standardization and quality control in the industry and trade and thereby to co-ordinate the efforts of producers and users for the improvement of the quality of materials, products, appliances, processes and methods. The growth and development of such an Institution can rightly be taken as a barometer for industrial progress of the country as a whole.

India is on the threshold of industrial revolution. A large number of small, minimum and large industries are being established both in the public and the private sectors. Comprehensive projects and schemes for their development in the Third Five Year Plan are being drawn up. Standardization at this stage in all fields will be particularly helpful in the proper utilization of the available resources and the speedy and planned development of the economy of the country. It is imperative, therefore that there should

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\* Extracts from the Welcome Speech delivered on 26 July 1959 at the Zonal Conference of ISI Members in the Southern Region.



be commensurate expansion in the activities of the Institution. To meet the growing demand for standardization from various sectors its resources will have to be multiplied and I am sure within another decade we will see the branch offices of the ISI in almost every state of the country.

For the last few years, the ISI has been organizing Standards Conventions in various parts of the country. We had the privilege of organizing the Third Standards Convention in Madras in December 1957 and we would be once again having the honour of holding the Fifth Standards Convention in Hyderabad in December this year. These Conferences provide a common platform to the members of ISI and also to industrialists, scientists, technologists, purchasers, traders and others for the sharing of their knowledge and experience in the relevant fields of their activities.

As you perhaps know, the objective of opening the Branch Office in Madras was to make the ISI activities better known to local industries and trade, to establish closer contacts with them and to interest them in standardization and quality control. From the number of enquiries being made daily from this Branch Office, which has now been housed in the business centre of Madras, one can judge that the objective has been partially achieved, if not wholly. The demand for its services has been increasing as time passes. This office has a well-equipped technical library where Indian Standard Specifications, Standard Specifications of the British Standards Institution, American Standards Association, American Society for Testing Materials, International Organization for Standardization, International Electrotechnical Commission, Railways, D.G.S. & D, and

other technical reference books are available for reference and consultation. I invite you to visit the Branch Office as often as you can and interest your friends in the activities of the Institution. I would also welcome you to give the benefit of your opinion as to what industry and trade expect from the Branch Office.

In keeping with the all round growth in industrialization in the country, the demand for standards is bound to rise. The activities of ISI, therefore, necessarily have increased both in volume and complexity. Standards have to be prepared covering all possible fields for which the expenses of the Institution are also rising. In addition, the general rise of expenditure in the country is also contributing its quota towards the increased cost of production of standards. The Government contribution to the expenses of ISI has increased. In keeping with this the industry has also to play its part. It has, therefore, been decided by the authorities of the Institution that the membership subscription shall be increased from 1 January 1960. The minimum subscription now fixed for the Sustaining Members and Sustaining Members (Associates) will be Rs. 350 and Rs. 150 in place of the previous rates of Rs. 250 and Rs. 100, respectively. I am sure, that on your behalf I can assure Dr. Ghosh that there will be no difficulty in agreeing to contribute our quota to the funds of ISI.

You are all fully aware of the commendable work this Institution is doing. It has already formulated in its short existence of about 12 years well over 1200 standards covering engineering, building, chemical, textile, electrical, metals, structural, food and agricultural industries, which have no



doubt helped the growth and development of indigenous industry. It is a matter of gratification to know that various government purchasing departments like the Directorate General of Supplies & Disposals, Railways, Public Works Departments, Directorate of Ordnance Factories, Posts & Telegraphs, etc., have recognized the value of these standards and adopted a large number of them for making their purchases. The advantages of purchasing to well defined standards are many, notably all round improvement in quality, serviceability, cheaper cost, quicker supplies, lower cost of storage and replacement and correct and impartial inspection. In short a substantial saving in expenditure accrues to purchasers and tax-payers. I would therefore

appeal to the representatives of local bodies to derive full benefit from these technical little documents, I mean standards, which are evolved with active and co-operative efforts of all concerned interests. It is self evident that the adoption and implementation of national standards in the purchase programme of local bodies will also do away with a lot of complexity and variety in preparing tenders. The manufacturers, on the other hand, will also be happy as they will be relieved from the irritating variations between the unreconciling requirements of different purchasing agencies, which will ultimately lead to stepping up the quality and performance of the indigenous goods.

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### STANDARDS DO NOT REMAIN STATIC

Not only are standard specifications advantageous because of the co-ordination and simplification of production processes but because they also bring to bear on the formulation of the provisions of specifications — as a basis for production — a consensus of opinion based upon the widest area of knowledge and experience. Standard specifications have thus been described as a precise statement of the best known practice, or method of performing a function, at the time they are formulated. They do not remain static; in other words, standardization is not crystallization. Standards incorporate advances in practice gained from later research and experience. They achieve economy by ensuring the production of

commodities to dimensions and of materials, properties, and characteristics in the proportions or magnitudes that are requisite to securing and maintaining uniformly high standards of quality, efficiency, and performance.

Standardization in industry and technology is much more important in relation to economic and social progress than is generally realized. No country can make full technological and industrial progress without the widest development and adoption of standard specifications. Upon this the sound maintenance and expansion of our manufacturing industries, and the consequent opportunity for full and useful employment, substantially depends.



# Standardization in the Production and Use of Steel in India

DR. LAL C. VERMAN,  
*Director, Indian Standards Institution.*

## Introduction

Steel being raw material of basic importance for industrialization had received considerable attention from the Planning Commission of the Government of India from the very early stages of the First Five Year Plan. Increase in the production capacity in the country was envisaged but of even greater importance was the adoption of urgent measures for the conservation of available resources.

India produces at present about 1.5 million ingot of steel. According to the present plans, this production is to be stepped up to 6 million ingot tons by 1960 and about 15 million ingot tons by the end of the Third Five Year Plan period.

In 1950 the Planning Commission set up a committee of experts to examine and recommend ways and means of saving steel. After a detailed examination of the existing methods of production and use of steel in this country, the Committee came to the conclusion that a saving of upto 25 percent could be effected in the course of a few years provided efficient procedures were adopted in the production and utilization of steel.

The Committee recommended to the Government of India that the Indian Standards Institution should take up a Steel Economy Project and prepare a series of Indian Standard Specifications and Codes of Practice to guide steel production and its utilization. Accordingly, this Project was initiated by the Indian Standards Institution during 1954.

Another project of importance undertaken by the ISI pertains to rationalization and standardization of carbon and alloy steels specifications. This work was started in 1956 and the services of an expert were also obtained from UK under the Colombo Plan for assistance in this work.

## Steel Economy Programme of ISI

The comprehensive character of the Steel Economy Project may be gauged by the brief statement of its scope :

- (a) Formulation of standards for hot-rolled sections, such as I-beams, angles, channels, etc;
- (b) Formulation of standards for cold-formed light gauge sections, made from sheet steel or the so-called steel strip ;



- (c) Formulation of codes of practice for the design of steel structures, including the question of liberalising factor of safety ;
- (d) Preparation of standard specifications, codes of practice and other aids for popularising welding, as a medium of fabrication of steel structures ;
- (e) Sponsoring experimental and other investigations necessary for the formulation of higher efficiency standards, relating to production and use of structural steel ; and
- (f) Preparation of typical designs, and other aids to the implementation of the higher efficiency standards.

### Hot-Rolled Sections :

During the past 40 years, engineers have come to realise that the capacity of any structural member to take and transfer loads and forces depends upon the arrangement of the metal in the member and that this capacity could be raised by judicious distribution of the material in the cross-section of the member, thus increasing the efficiency of the metal used. This realization has led to the development of the so-called science of shape of engineering now commonly accepted and widely applied in most branches of engineering. Mathematical analysis of theories coupled with experimental verification, which constitute this science, has resulted in many improvements, such as triangular roof trusses replacing horizontal beams, columns built up of thin members replacing the solid sections, open web girders replacing solid web

members for heavy loads, and so forth.

In spite of this development of shape engineering, hot-rolled steel sections standardized over 40 years ago are still being rolled and used in this country. The only attempt at improvement was the example of Tata Iron & Steel Co. who had placed on the market just before the Second World War certain light weight beams which were upto 25 percent lighter than conventional sections.

A study of the work being done in other countries of the world with regard to standardization of hot-rolled sections indicated that improvements in standards were carried out mainly through rationalization in the number and grading of sections and through redesign of certain sections. Rationalization in numbers and improvement to graduation of sections have been attempted in practically all steel producing countries. But, improvements effected through scientific analysis of efficiency properties were particularly noticeable in countries where there was severe competition among the rolling mills in the home market and in the export market, or where the steel industry had to face severe competition from re-inforced and prestressed concrete. Whatever the motives, these developments in overseas countries furnished an excellent starting point for the ISI project whose objective was to achieve national economy.

Four years of intensive study by the specialist staff and committee members involving prolonged interchange of views during discussions at a number of sittings of the ISI Expert Committee and its subcommittees has resulted in the formulation of Indian Stand-





ards on the improved & rationalized series of beams, channels, angles, tee bars and bulk angles. For obvious reasons, all these standards have been based on metric system of measurements. In formulating the high efficiency standards, note has been taken of many factors, such as the present production standards in India; limitations and capabilities of the existing mills and of the new mills being installed; the national standards and the competitive company standards introduced in other countries; the unsuccessful attempts made in other countries towards improvement of standards for steel sections; the importance aspect of efficiency in the utilisation of sections in structures; the analysis of the factors which affect the efficiency and the extent to which it is possible to achieve efficiency in practice under Indian working conditions.

These Indian Standards which are now available when fully implemented will lead to a very definite saving of steel material as compared to sections based on existing standards. The extent of saving will, of course, vary in individual cases, but it is estimated that it will be no less than 5 percent or even over in some cases. An average saving of 10 percent would be considered quite significant figure from national point of view.

### **Cold-Formed Light-Gauge Sections**

Another application of shape engineering is in cold-formed light-gauge steel sections, which are manufactured by cold-forming light-gauge steel sheet sections, which are manufactured by cold-forming light-gauge steel sheet or strip of suitable widths and thickness from 1.2 mm to 4.5 mm in a press brake or a rolling mill. Commonly

used shapes are angles, channels, zees (Z) and certain irregular shapes desired to meet requirements of a particular design. Combinations of sections are made by connecting elements of two or more simpler sections by seam welds, bolts, screws, or some other suitable fastening device.

Cold-formed light-gauge sections are increasingly used in building construction, aircraft, automobile and various other mobile or stationary constructions where light weight and strength are specially desired. They have become popular in the USA, the UK and certain other European countries. In India also, they have been used but to a very limited extent in some of the industries like coach-building, wagon-building and in building construction. Apart from lightness and strength, cold-formed light-gauge sections have an additional advantage from fabrication and transportation points of view. It is anticipated that the use of these sections will result in economy of steel to the extent of about 40 percent.

Although it is appreciated that the inherent advantage of using light-gauge sections is best exploited by designing individual members to suit the requirements of a given job, yet it is felt that further advantages could be gained, if a set of standardized sections were made available which could meet effectively the normal day-to-day requirements of designer and erector. With this end in view, work is now in progress to formulate an Indian Standard for cold-formed light-gauge structural steel sections. So far as known, no other country had attempted national standardization of such sections, but Indian engineers consider that, in the absence of competition among



fabricators of such sections and in view of India's peculiar needs, ISI could tackle this job to useful advantage.

Hot-rolled strip of 12½ in. width is already available from the Tata Iron & Steel Co. Steel strip of larger widths and specially suited for cold-forming is expected to become available by about 1960 from the steel mill at Rourkela. So, in the very near future, ground will be ready for new enterprise to enter this useful field.

### Standards For Tubular Sections

Study of shape engineering forcefully brings out the superior structural characteristics of tubes or pipes. Weight for weight tubular sections could carry much more load than ordinary rolled sections and they are easier to maintain. Their load bearing advantages become particularly significant where axial compressive and torsional stresses are involved. With the development of new fabrication techniques suited to tubular construction, their use in overseas countries has made rapid strides during the past decade or two. They are also becoming increasingly popular for common types of structures in India. Two of the existing mills in this are expected to provide tubes of qualities suitable for structural purposes. It has been estimated that the use of tubes in certain types of structures could lead to a saving in steel to the extent of about 15 to 20 percent.

A draft Indian Standard has been prepared for tubes suitable for use in general building construction, which will soon be available.

### Standard Design Codes

In the beginning of the present century it was the practice to allow large factors of safety, as designers had no adequate and reliable data relating to external loads to which structures might be subjected. There was very little experimental research data on prototype structures. The analysis of structures was rather elementary and in a number of cases was based on empirical and semi-empirical formulae with very little theoretical support. Great strides have since been made in analysing the stresses developed under loads in structures, and in more precise determination of loads to be allowed in the design of structures. Actual behaviour of structures under complex loads is also better known today than in the past.

The ISI Committee made an intensive study of national and industrial codes for the use of steel, currently prevalent in India and various countries of the world. Considerable data were also collected in this country from different regions with regard to wind pressures, temperature variations, working loads, earthquakes effects, etc. As a result of this intensive study, the basic code for the design of steel structures was formulated, and this has now been published. Some of the design formulae incorporated in the Indian Standard Code represent a definite improvement over those current in a number of other countries. Further, the permissible stresses have been liberalised. This code also covers the use of high tensile steel for structural purposes. The correct application of this code in the design of structures is expected to result in considerable savings in steel.



Other basic codes for design of structures prepared include one for the use of tubular sections in structures and another for the use of cold-formed light-gauge sections in general building construction. Work is also in progress on other codes of practice, such as design of cranes, transmission towers, etc.

### **Welding**

The technique of welding came into vogue in America and Europe during the First World War. India took to it slowly sometime during 1935. Although there is a growing appreciation of the advantages of welding, the progress so far made cannot be regarded as satisfactory or adequate. After a detailed study of the present position, the ISI Committee was of the view that development of welding on current lines in this country could take place only if suitable welding materials and equipment were made readily available, satisfactory design procedures were followed and on acceptable basis were established for the training and periodical testing of welders and for inspection of welds at site. With this point in view a number of Indian Standards of basic importance pertaining to welding have already been published, which include a code of practice for use of metal arc welding for general construction in mild steel, code of practice for training and testing of metal arc welders, qualifying tests for metal arc welders, general recommendations for the radiographic examination of fusion welded joints, code of practice for safety and health requirements in welding, and specifications for electrodes, filler rods and equipment for eye-and face-protection during welding.

It is estimated that the use of weld-

ing in place of riveting would result in saving of steel from 10 to 30 per cent, depending upon the type of structure.

### **Handbooks**

It was realised that merely the formulation and publication of standard specifications and codes of practice would not be sufficient to ensure that these would be correctly interpreted and applied in practice to the maximum advantage. Although the basic training imparted in our engineering colleges is more or less on the same line as in other countries, our engineering graduates do not have the same opportunity to gain experience in well established design offices under the guidance of experienced engineers. Large majority of young engineers who enter the field of design are left to their own resources in gaining experience. Therefore, the designs prepared by them cannot always be the most economical. Thus, in order to assist young designers and also fabricators, work has been undertaken to prepare a number of handbooks giving worked out designs examples of several typical structures, designed to the best advantage as regards economy in material and labour. These handbooks, in addition to providing explanations to the Indian Standard Codes and Specifications, would also give charts, tables and graphs, thus making the task of the designer easy and less time consuming. The first in this series, the Handbook for Structural Engineers giving properties of steel sections, is already published.

### **Structural Research**

The ISI Sectional Committee found during its work on the Steel Economy



Project that on many subjects the available Indian data were inadequate, and that the data available from outside sources not directly usable due to the widely different conditions under which they were collected. On certain other problems, practical experience and experimental data were either not altogether available or when available, were incomplete. After a close scrutiny of these problems and with the collaboration of the Council of Scientific and Industrial Research, various institutions in India were approached to undertake a co-ordinated programme of experimental investigations. Progress made so far has not been very substantial due to many difficulties, such as in the supply of raw materials and equipment and shortage of technical personnel. These difficulties are now being gradually overcome and wherever possible the required equipment is being indigenously fabricated at research centres. The results of investigations wherever already available have been incorporated in the published Indian Standards; those to follow will help improve the existing standards. Work is now in progress with regard to investigations relating to corrosion protection of steel structures with particular reference to light-gauge steel. This programme covers classification of areas in India on the basis of corrosion potential of the prevailing atmosphere, development of suitable protective coatings, accelerated methods of tests to assess the corrosiveness of various environments, and evolution of corrosion protection schemes. Other investigations which are in progress deal with cold-forming of strip steel into structural shapes through cold rolling and cold pressing; methods of fastening cold-formed light-gauge steel sections, effect of cold straightening, bending and punching upon the physical properties of

steel; and establishing standard welding procedures and improved methods of testing weld test specimens.

### **Carbon and Alloy Steels**

Alloy and special steels are the backbone of all industries. At the moment, India does not have an established alloy and special steels industry although plans for setting up an alloy steel plant of 40,000 tons capacity are being formulated by the Government of India. It is evident that in order to encourage the establishment of such an industry on a sound footing, it would be necessary, as a first step, to rationalise the number of such steels used by the various industries to enable their manufacturer in economical volume of production.

Furthermore, as a result of large scale industrialization undertaken in this country after independence, technical assistance has been obtained from a number of foreign countries. In almost all cases the equipment, manufacturing schedules and specifications for raw materials have been based on the practices followed in the country from where such assistance was obtained. As may be expected this state of affairs has led to a multiplicity of specifications which are being used in the country. This situation was further aggravated by the absence of a comprehensive Indian Standard for all types of carbon and alloy steels for general engineering purposes.

Taking these factors into consideration and on the basis of reference received from the Ministry of Railways, Ministry of Defence, Development Wing of Ministry of Commerce and Industry, etc., the Structural and Metals Division Council of ISI set up a Sectional Com-



mittee in October 1956 for undertaking work on rationalization and co-ordination of carbon and alloy steels. As a first step in its work, this Committee collected all available data in the country with regard to the present and future requirements of various types of steels in terms of tonnage, specifications and where possible, forms, shapes and sizes. A detailed investigation of the information which had been collected, indicated that instead of restricting the scope of work of the Committee to the rationalization of alloy and special steels, it would be advantageous to include in its programme of rationalisation all types of steels which are referred to in Indian Standards or are likely to be referred to in future. Accordingly, the subject of rationalization of carbon and alloy steels are covered under the following broad headings:

- (i) Steels used on the basis of mechanical properties without specifying detailed chemical composition,
- (ii) Steels used on the basis of chemical composition; these were further sub-divided into:
  - (a) Carbon steels including tool steels,
  - (b) free-cutting steels,
  - (c) alloy steels other than stainless and tool steels,
  - (d) high alloy steels other than tool steels, and
  - (e) alloy tool steels.

After giving due consideration to the need for international co-ordination with standards being followed in different countries of the world, five draft

schedules (except that for alloy tool steels) have now been prepared on the basis indicated above.

A schedule for alloy tool steels is under preparation.

While preparing these schedules, consideration was also given to the fact India does not possess resources for some of the most important alloying elements for steels, such as nickel and molybdenum, and, therefore, due regard had to be given for their conservation and as far as possible to the development of steels using indigenously available alloying elements.

It is expected the steel included in these schedules would form the basis of future production of engineering in India.

#### **Implementation of Indian Standards**

Attempts are now being made to implement the specifications and codes of practice already formulated by the Indian Standards Institution. As pointed out earlier, a programme for the production of the new Indian Standard sections has already been worked out. Government Departments and Design Engineers have started using the Indian Standard Specification and Codes.

The Directorate General of Supplies & Disposals, and the Railways have already adopted the Indian Standards for hot-rolled sections. It is further understood that the Ministry of Railways have also adopted the Indian Standard Code of Practice for use of structural steel in general building construction.

The manufacturers of welding electrodes claim to manufacture electrodes



conforming to Indian Standard specifications. Although there is at present a scarcity of suitable welding equipment, it is expected that manufacture of many of the equipment items will be started soon in this country. Work is now underway for formulation of suitable specifications for welding equipment to suit Indian conditions.

There is also a proposal that universities and the technical institutions in India should adopt these Indian Standard specifications and codes of practice as a part of their teaching curricula.

### **Inspection and Certification**

Under the existing procedure, Director General of Supplies & Disposals has stationed inspectors at the factories of the Tata Iron and Steel Co. and the Indian Iron and Steel Co. to inspect the structural steel required by the Government Departments. These inspectors also inspect and certify the steel for open market put up to them by firms. The materials which conform to the required properties are certified for sale under the category 'tested steel'. Nevertheless, an appreciable tonnage of steel meant for structural purposes is at present sold as 'untested steel'. Since the strength properties of this steel are not guaranteed or certified or even known, it is not possible to use it efficiently by allowing stresses and loads to the maximum safe limits. In order to make the best use of this category of steel, it has been suggested that a separate standard for commercial quality steel be drawn up by the ISI, which even though not upto the requirements of the normal tested quality is nevertheless usable, provided its physical and chemical properties were determined and certified or guaranteed by the manufacturer.

A suggestion has also been made that, whereas steel for Government purchases is to be inspected by the Director General of Supplies & Disposals, the material to be sold in the may be brought under the ISI Certification Marks Scheme. If this proposal is accepted, ISI would formulate the necessary scheme for inspection, testing and Certification of steel in collaboration of the Director General.

### **Use of Alternative Materials**

One of the important methods to conserve steel is to encourage the use of alternative materials in place of steel as far as possible. Such materials include stones, bricks, timber, cement concrete (plain and reinforced), aluminium and other alloys. A number of Indian Standards have been formulated for the use of building stones and bricks. Codes of practice for plain and reinforced concrete for general building construction, dams and other massive structures, have also been formulated. Work is now in progress for the formulation of a code of practice for the use of pre-stressed concrete in structures.

Although timber is a good substitute material, there is an acute shortage of structural timber of the requisite quality. Timber of secondary species could be used for structural purposes, provided it was suitably treated. Further, the structural properties of Indian timber and methods of joining are not so well known to engineers in this country. In order to make available, to engineers data with regard to the types of timber available, the purpose for which they could be used and method of treating them, Indian Standards have been formulated for the classification of commercial timber and their zonal distri-



bution; code of practice for preservation of timber; and code of practice for use of structural timber in building (material, grading and design).

Work is also in progress for the formulation of specifications for aluminium sections for use in structures.

### **Steel Economy Project Continues**

Work on basic codes and standards for production and use of steel has been practically completed. Work now in progress includes formulation of standards for cold-formed light-gauge sections, piling sections, special channels and aluminium structural sections. Handbooks for structural engineers now under preparation would cover the design of steel beams and plate girders, columns and starts roof structures, single storey industrial and mill type buildings, multi-storey framed structures for offices and residences, transmission towers, cranes and hoists, large span shed-type buildings, tabular structures using light gauge sections, rigid frame structures, and application of plastic theory in the design of steel structures.

In the field of welding, the work in progress includes a handbook for welders, covered electrodes for metal arc welding of medium and high tensile structural steel, code of practice for training of oxy-acetylene welders, code of procedure for electric arc welding, qualifying tests for welders engaged in welding pipelines, and assessment of welds by radiographic examination.

Another important programme of work initiated by the Indian Standards Institution includes rationalization and

standardization of alloy steels and special steels. Practically all our major industries are dependent on alloy and special steels. At present literally hundreds of varieties of alloy and special steels are used in this country, which are required to conform to a multiplicity of specifications of the countries from where they are imported. Apart from the foreign exchange position emphasizing the need to produce the required steels within the country at the earliest possible date, the situation demands immediate rationalisation and standardisation of a limited number of types to meet all Indian needs. And, this is what ISI is attempting.

### **Conclusion**

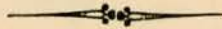
The work so far done by the Indian Standards Institution relating to the production and utilisation of steel indicates that the nation as a whole, and producers and consumers in particular, have large benefits to derive. The overall economy in steel possible through the implementation of these standards is expected to be at least 25 percent. This would mean conservation of available resources, both material and manpower, and a considerable saving in foreign exchange. In other words, where 100 tons steel was required the basis of existing standards and practices, only 75 tons will be needed to serve the same purpose, resulting in proportionate economy in material, fabrication and erection costs.

There has been wide scale appreciation abroad of the work done in India with regard to steel economy. The United Nations Economic Commission for Latin America has decided to institute a similar programme of work. The Subcommittee on Iron and Steel of the UN Commission for Asia and the Far



East has suggested that a Steel Economy Programme similar to the one initiated by the Indian Standards Institution should be established in each country of the ECAFE region, with the collaboration, if need be, of bodies like the Indian Standards Institution. The Commonwealth countries, which met in New Delhi in 1957 in a Standards Conference, expressly welcome the lead given by India.

The Technical Committee on Steel of the International Organization for Standardisation has accepted India's proposal to take up work on the re-design of hot-rolled structural steel section for international standardisation. When this work is completed and international standards for new sections are generally accepted by all countries, the world as a whole will stand to benefit.





# New Weights & Measures \*

G. D. F. FITZGERALD.

*The Avery Co. of India Private Limited,  
Calcutta.*

Everyone talks of the Metric System. But does everyone know what it means? I am not certain that I can tell you, though I shall try.

This is not a technical talk intended for the scientific or for those deeply and so long engrossed in the change-over to the Metric System of weight and measurement. Simply then, and non-technically, the Metric System may be based on the metre. Measurement of weight or length or volume is built up by calculation in units of ten.

Reduced further for say the housewife or her daughter, it means that whereas we bought in yards and seers or any other unit which might differ between areas, now we shall buy in litres or metres or for weight by the gramme or kilogramme.

And why ... you might say ... should we be bothered with such a system as this? For years, even centuries, our mothers and grandmothers and their mothers and fathers confidently used the seer and the guj and what is good

enough for them is surely good enough for us. Indeed that may be true, but we all strive for something better and India today is not a country living in the past. It is developing dynamically and at a pace which astonishes the world. But a Nation cannot develop except through its people and if we are to be progressive surely this progress must be shared by all. And if when speaking of the people we leave out the family unit or the housewife, then who are the people.

But did you really buy a seer? Do you know that throughout India there are more than 140 distinct weights for a seer and several maunds and other so called standards by which traders buy and sell. Imagine the confusion and indeed hardship of buying from one party by the maund of 82-lbs. and selling to another by the maund of 80-lbs.

The Metric System avoids all that confusion and brings us all, not only in the house, but in our work, at our factories, on our railways and in indus-

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\* Courtesy AIR, Calcutta.



try and communications, into line with the system which is at once national and international.

So progress comes to the home and instead of thinking as we did in the past of buying by the guj and the seer, now we shall buy by the metre and the kilogramme and thus take our part in the task so courageously tackled by our Leaders and their advisors, scientists and industrialists throughout the country, when they decided that we in India would change to a system of weight and measurement which is known and accepted through most of the civilized world as the most progressive and useful one yet devised by man.

The Metric System is by no means new. It has been used in other countries, particularly in Europe and America, for many years past.

Why ?

Chiefly because of its simplicity. If you order some atta or fish or ghee in a shop and want say the equivalent of  $\frac{1}{2}$  seer you may order 500 grammes and if you want twice as much you order a kilogramme. If you are ordering for a week you may want ten times as much so you order 5 kilogrammes. It is as simple as that. The Metric System is built upon a single unit of weight or length or volume and each greater capacity is a multiple of the first.

You might wonder — how shall I know what I am given in a shop ? That you can easily tell. All weights will be clearly and indelibly marked and what is more, they will be correct for they will be tested and stamped by the Government Weights and Measures Enforcement Department.

There is one important aspect of using the Metric System for all your requirements. The kilogramme is slightly lighter than the seer. Almost all important commodities will be packed, bought or sold in metric quantities and ... with that ease of manipulation which our decimalized currency now offers ... priced down accordingly. Thus you will be paying less naye paisa for the product and your cook, for those who employ one, should be giving you back some neye paisa instead of asking for more.

And you will be able to buy exactly one kilogramme of goods anywhere all over the country. The same will apply to linear measures. Your metre length or half a metre will be similarly measured with a length that will bear the Government stamp certified regularly as being no more or no less than the metre. Defective weights and measures will be rejected and only correct ones will be allowed in use.

Fortunately, we in India find that the seer to which we have been accustomed is almost the same as the kilogramme and  $\frac{1}{2}$  seer or  $\frac{1}{2}$  kilogramme is not greatly different. In fact, there are only 67 grames difference between the seer and the kilogramme and this is relatively a small amount for the sale and purchase of everyday commodities.

For the shopper then this change to the Metric System is a comparatively simple scheme. Why not buy a kilogramme of rice and pour it out on the table and compare it with the seer you bought some time ago. Then you will soon come to know how much to expect.

Soon all over India Weights and Measures Officers will be moving



about their task of making certain that all the purveyors of commodities, down to the simple seller of herbs, will be selling on a scale with a weight which is certified by the Department as weighing correctly in the Metric System ... be it 10 grammes, 100 grammes of ten times as much which is 1 kilogramme.

simplicity itself.

Not so for your trade and more particularly your industries or railways, bridge builders, architects, civil engineers, ship builders, Port Authorities, Customs, etc., where the change to the Metric System involves an immense amount of thought, calculation, drawing and reproduction. But this matter may be the subject of a separate talk.

Buying in the Metric System will be

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# Indian Standards Institution

## Aims & Objects

The Indian Standards Institution was set up in 1947, in pursuance of a decision of the Government of India, for the purpose of preparing and promoting standards for Indian Industry. The objects of the Institution include the preparation, promotion and general adoption, at the national and international levels, of standards relating to materials, commodities, structures, practices and operations. Indian Standards Institution aims at assisting in the rationalization of industry by co-ordinating the efforts of producers and consumers for the improvement of appliances, processes, raw materials and products. It promotes quality control methods, and provides for the registration of Standard Marks applicable to materials, commodities, etc., conforming to standards issued by it.

## Organization and Work

The overall control of the Institution rests with the General Council, on which are represented industry, Central and State Governments, scientific organizations, subscribing members and the Division Councils of the ISI. The Executive Committee, appointed by General Council, is responsible for the actual management of the affairs of the Institution. The income of the Institution is derived from Government grants from the Centre, subscriptions from members, including State Govern-

ments, sale of standards, and Certification Marking fees, etc.

In the preparation of standards, the ISI functions through a large number of Sectional Committees, Sub-committees and Panels, consisting of scientists, technologists and representatives drawn from industrial and Government organizations. These committees are appointed by the Executive Committee or the seven Division Councils of the Institution, namely, Engineering, Building, Textile, Chemicals, Agricultural & Food Products, Structural & Metals and Electrotechnical Division Councils.

Proposals for formulating Indian Standards are normally entertained from the members of the Indian Standards Institution. Every proposal is scrutinized, first by the appropriate Division Council, and then by the Executive Committee. If the proposal is approved, the Division Council assigns the work to the Sectional Committee concerned with the subject, if one exists, or sets up a new committee.

A Sectional Committee is representative of the various interests concerned, but has to be weighted in favour of the consumers' interests. The sectional committees form sub-committees and panels, when required, and instruct them to prepare a working document or a draft on the subject after study of the data and literature available on the subject. Where necessary, tests are carried out in collaborating laborato-



ries. After the draft is approved by the Sectional Committee, it is issued in circulation, for the purpose of eliciting comments, to interested parties in India and abroad. This draft is reconsidered in the light of comments received and, when finalized, becomes a recommendation of the Sectional Committee. It is, then submitted for approval of the Chairman of the Division Council concerned and to the Chairman of the Executive Committee to whom power has been delegated to authorize its publication as an Indian Standard.

The bulk of the technical work towards the preparation of standards is done by the ISI Committees. The staff in the ISI Directorate co-ordinates the work of these committees, undertakes the necessary secretarial duties, collects and supplies background data, organizes investigations and enquiries, ensures that delays are avoided and standards are appropriately examined at each stage of formulation. Finally, the standards are edited and published by the Directorate. The published standards are brought to the notice of the various indenting and purchase departments of the different Governments, Central and States, to ensure their early adoption.

#### **Implementation and Certification**

The Indian Standards Institution believes that the acceptance of Indian Standards by industry or Government can best be promoted through the intrinsic merit of the standards themselves. The fact that Indian Standards are formulated in collaboration with the largest number of interests concerned should, it is believed, ensure their widespread acceptance. An important step taken by the ISI to aid industrialists to produce quality goods and for the consumers to recognize them, is the establishment of the

Indian Standards Institute Certification Marks Division which issues licences to manufacturers to stamp their goods with a Standard Mark certifying that the goods conform to the relevant Indian Standard. The presence of this mark on any article is a guarantee to the consumer in regard to the quality of the article he is purchasing. The extensive use of the facilities which the Indian Standard Institution provides through this scheme should benefit the industrialists, and the consumers in the country, and also strengthen and promote India's export trade.

Indian Standards are voluntary, and the membership of the Institution involves no compulsion on the part of members to follow them either in manufacture or in making purchases. All the same, a very large number of Indian Standards has already been adopted by Government departments for the purpose of making their own purchases. In addition, representatives of various departments of the Central Government have agreed, as decided at an inter-departmental meeting called by the Ministry of Commerce & Industry in September 1953, to place all orders on the basis of specifications contained in the Indian Standards wherever such standards exist. As a result of this policy decision and the Government directive that each department should let the Institution know within a reasonable time why a particular standard may not be acceptable, is going a long way in diverting Indian production to standardized channels. It is but natural that when any industry begins to produce items in response to official tenders, in accordance with standard specifications, the benefits of the improved quality become available to all consumers of such products.



## International Sphere

The Indian Standards Institution also works at international level and collaborates closely with International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), the two important bodies engaged in international standardization. In addition, close liaison has been established with National Standards Bodies of the Commonwealth. The Indian standards Institution is also active at the executive levels of ISO and IEO. It is an elected member of the governing Council of the former and the Committee of Action of the latter.

## Membership

Membership of ISI is open to all organizations and persons interested in its objectives. There are three categories of membership, namely :

- (i) Sustaining Members and Sustaining Members (Associates),
- (ii) Ordinary Members, and
- (iii) Committee Members.

Sustaining membership is generally open to all organizations, companies, firms, Government departments and neighbouring countries ; but the Associate membership is limited to firms with an annual business of less than Rs 2,50,000 and professional, scientific, technological and educational institutions. Individuals interested in the work of ISI can join as Ordinary Members or in any other category. Persons serving on ISI Councils and Committees are classed as Committee Members. Depending upon the class of

membership, members have the right to apply for information on standardization both in India and abroad, to give evidence at appropriate technical levels and continuously to receive information concerning the development of standards on subjects in which they are interested.

## Publications

Besides the Indian Standards issued from time to time, ISI issues an ISI Handbook of Publications giving general information about organizational set-up of ISI and a comprehensive list of Indian Standards with a brief description of each. ISI also issues free to its members in all categories a useful and informative Bulletin every two months ; its annual subscription for non-members is ten rupees. The ISI Bulletin contains articles, research papers and other information relating to standardization activities in India and abroad.

## Branch Offices

To overcome the distances of hundreds of miles separating the main industrial centres of the country from the Headquarters of the ISI and to make the Standards readily available to industries in different parts of the country, the ISI has established branch offices in Bombay, Calcutta and Madras. The chief aim of these branch offices is to establish contacts with local industries and to make them conscious of the benefits that they can derive from National Standards and standardization of their products and production methods. These branch offices also serve as clearing houses in their respective regions for information on standardization in India and abroad.



# Indian Building Codes

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## Introduction :

Suppose a law in ones town stated that one could construct only massive mediaeval structures of the type built ten centuries ago, or that all buildings had to adopt only antiquated slow moving methods of building construction used a century ago, or, it happens that a building in the neighbouring town could have a facility in design or construction which is denied in one's own town, one would object strongly to such municipal backwardness. Yet, we find all over the country, many have been passively submitting to such abuses ... and paying lavishly for it too. Such a situation directly affects the national economy and considerably hampers the national progress. A study of the developments in the building activities since the time of the Romans shows that the building industry had a chequered history compared to certain other industries and this story is continuing still.

India has been following various codes, sometimes departmental and

sometimes foreign prior to the independence era. In recent times, however, the country is awakening fast to the need for unifying the codes, manuals and practices followed by the various agencies in the various parts of the country and for establishing uniform standards which are progressively improved to keep abreast with the advances in science and technology.

The turning point in the history of this country has been the inception of the Indian Standards Institution in 1947. Ever since its inception a number of national codes relating to building activities have been published and are being used by the various agencies and many more codes are in advanced stages of preparation. The necessity for evolving national codes unifying the varieties of practices in the country has become more significant in view of the urgency in effecting economy in the use of materials ensuring at the same time the safety and functional fulfilment of the structures; insurance of the general health of the community as a whole and provision of the requi-

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\* Deputy Director (Building), ISI.

\*\* Asst. Director (Building), ISI.



red comfort to the user have also a major influence on the approach to the unification of practices.

Keeping these in view, the codes prepared or under preparation in the Indian Standards Institution deal with the various aspects of the building industry, such as, codes for the use of building materials, codes for design and construction, codes for ancillary services, codes for finishing, codes for safety, codes for building regulations etc. A brief indication of the position of these codes is given in the following paragraphs and a list of codes published and under advanced stages of preparation is given at the end. . . .

#### **Codes for the Use of Building Materials**

A number of specifications have been laid down for materials for use in building construction. These include, among other things, cement, lime floor and roof coverings, timber and wood products, appurtenances for water supply and sanitation, etc. It is immediately appreciated that it is not enough to specify only the properties and performance requirements of the materials ; it is equally important to specify how to use these materials in the building industry. Codes of practice dealing with the method of using the materials in actual building construction have also, therefore, been laid down. For example, the codes prepared on the method of laying floors using rubber tiles, mastic asphalt composition, magnesium oxy-chloride, lineleum, concrete tiles, etc., have clearly given an indication to both the building authorities and the contractor certain standard procedures to be followed to give floors which would be durable, economical, and presentable. Similarly specifications for doors and windows have

been laid down and it is found essential to lay down appropriate codes of practice for fixing and glazing of doors and windows with a view to minimising wastage in cutting and trimming. In passing, it may be mentioned that in rationalization of both materials and codes for use an effort has been made to derive benefits from the principle of 'modular co-ordination' of dimensions of elements of a building ; dimensions of bricks, door and windows, tiles, etc., have been specified in terms of the 10 cm module.

#### **Codes for Design and Construction.**

From the point of view of design of structures it is of paramount importance to lay down the minimum and maximum loads which are likely to occur on the various components of a building and also on the building as a whole. It would be appreciated that any of latitude given in the actual design of building, whether of steel, concrete or timber would be of no avail if the loading standards are not properly drafted to reflect the actual conditions of service. Recognizing this important feature, an attempt has been made to lay down the dead, live seismic and wind loads for which a building has to be designed. Similar attempts are being made to lay down design requirements for the various components of a building such as foundations, frames, walls, floors, roofs, etc.

For construction purposes it is common to use either concrete, steel or timber in a building. To ensure proper usage of these materials and also to keep abreast of modern trends in structural engineering design, codes have been prepared for the use of plain and reinforced concrete in general building construction, for dams and other mas-



sive structures and also for the use of prestressed concrete for buildings. A code of practice has been prepared for the use of structural steel in buildings to ensure economic utilization of this material. In timber engineering, an attempt has been made to lay down design requirements for the use of structural timber in building and work is under way regarding the construction, erection and finishing aspects of the same. Codes also have been prepared for the use of new types of materials, such as tubes and cold formed light gauge sections.

Codes have also been prepared for the ancilliary structures related to the building. Attempts have been made to lay down the various design requirements item by item in the use of steel to derive maximum advantage of current structural engineering practices. These codes have recognised some of the latest developments; for example, the steel code permits design by the load factor method, the concrete code accepts strength requirement as the main criterion and thus allows the use of controlled concrete, etc.

Another important code that has been drafted is the use of steel in bridge construction. This has features incorporated to include current practices in both the highways and the railways and it also takes into account work carried out abroad in drafting similar codes.

It is estimated that with the present versions of the codes as enumerated, it is possible to achieve atleast 5 to 10 percent saving in the material used in actual construction assuring at the same time safety and satisfactory performance of the structure.

Codes of practice are also underway regarding the constructional aspects of the various components of a building.

### **Codes for Ancilliary Services**

Ancilliary services form a necessary part of a building and attempts at preparing codes for these ancilliary services have also been made. Considerable progress has been made in laying down the basic requirements regarding water supply and drainage, and codes are underway for plumbing, building drainage, etc. Codes of practices have also been prepared for electrical wiring and fittings in buildings, and electrical passenger and goods lifts. A code of practice is also under preparation for the installation and operation of cold storages in buildings.

### **Codes for Finishing**

A number of codes are underway to bring out the methods of finishing steel, concrete and timber works, so as to ensure longevity as well as appearance. As allied with finishing the aspects of water-proofing and weather-proofing various elements of a building have already been covered in relevant codes.

### **Safety Codes.**

Recognising the need for safety of a building a series of codes of practice for safety with regard to electric installation and fire hazards have been prepared. Regarding fire safety, a number of safety codes have been prepared to include general principles of fire hazards, materials and details of construction for fire safety in connection with, chimney, flues, pipes and hearths, fire-proof doors, etc. Standards have also been laid down for fire fighting equip-



ment and their maintenance including construction. For electrical hazards, safety codes have been prepared for air conditioning, mechanical refrigeration, electrical installation, etc.

### **Codes for Building Regulation**

In view of the rapid advances in industrialization the need for and trend of urbanisation has been recognized and specific building requirements are being laid down to ensure health, comfort and safety of the community as a whole. A series of codes are under preparation to specify the functional requirements of buildings regarding day-lighting, ventilation, acoustics, etc.

The existence of a number of bye-laws and requirements for building activities under the various local authorities was noted and it was felt that a comprehensive code to unify the differing regulations was necessary with a view to ensuring safety, health and comfort in living for the individual as well as the community as a whole. An attempt in this direction has resulted in the code of Building Bye-laws. This code has already been accepted by some authorities and the recent conference of the heads of local self governments has recommended the adoption of this code in all the States with any modifications necessary to suit the local circumstances

### **Codes and the Metric System**

A concerted attempt is being made to implement the decision of the Government of India to introduce metric system in industry in general. As a result a conference was held recently at the instance of Ministry of Works, Housing Supply and a phased programme has been drawn up to effect a

complete change-over to the metric system in buildings, architecture and town planning at the latest by 1966. The programme highlighted the importance of material specifications in the metric system and considerable progress has already been achieved in this direction through metric specifications for bricks, tiles, doors and windows, etc. Emphasis has also been laid on the preparation of codes of practice in the metric system as a sequel to metricization of material specifications. To assist the change over in actual practice a number of codes and specifications have been drafted both in the metric and inch systems keeping in view that the inch system would eventually be dropped.

### **Conclusion**

It is hoped that efforts involved in the preparation of the various codes relating to the building industry would bear fruit through the adoption and use of these codes by all concerned with building industry.

### **LIST OF CODES OF PRACTICE ON BUILDINGS**

#### **(1) Cement and Concrete**

Code of Practice for Laying of Concrete Pipe (under preparation);

#### **(2) Floor & Roof Coverings**

IS : 658-1956 Code of Practice for Magnesium Oxychloride Composition Floors.

IS : 1196-1958 Code of Practice for Laying Mastic Asphalt Flooring.



IS : 1197-1958 Code of Practice for Laying of Rubber Floors.

Code of Practice for Waterproofing of Roofs with Bitumen Felts (under preparation).

Code of Practice for Damp-proofing and Waterproofing Using Bitumen Felts (under preparation).

Code of Practice for Laying & Finishing of Cement Concrete Flooring Tiles (under preparation).

### (3) Timber & Wood Products

IS : 401-1954 Code of Practice for Preservation of Timber.

IS : 883-1957 Code of Practice for Use of Structural Timber in Building (Material, Grading & Design).

IS : 141-1958 Code of Practice for Seasoning of Timber (**Tentative**).

### (4) Doors, Windows & Building Furniture

Codes of Practice for Fixing & Glazing of Steel Doors & Windows (under preparation).

Code of Practice for Design and Construction of Wood Stairs (under preparation).

### (5) Lime.

Code of Practice for Field Slaking of Lime (under preparation).

### (6) Plaster, and Finishing

Code of Practice for Cement Plaster & Cement Lime Plaster Applied Wall & Ceiling Finishes (under preparation).

Code of Practice for Finishing of Iron and Steel in Building: Painting and Allied Finishes

### (7) Building Design

IS : 456-1957 Code of Practice for Plain & Reinforced Concrete General Building Construction (**Revised**).

IS : 457-1957 Code of Practice for General Construction of Plain & Reinforced Concrete for Dams and other Massive Structures.

IS : 800-1956 Code of Practice for Use of Structural Steel in General Building Construction.

IS : 801-1958 Code of Practice for Use of Cold Formed Light Gauge Steel Structural Members in General Building Construction.

IS : 802- Code of Practice for Design of Vertical Mild Steel Cylindrical Welded Oil Storage Tanks.



- IS : 803- Code of Practice for Design of Vertical Mild Steel Cylindrical Welded Oil Storage Tanks.
- IS : 804-1958 Rectangular Pressed Steel Tanks.
- IS : 805- Code of Practice for Use of Steel in Gravity Water Tanks.
- IS : 806-1957 Code of Practice for Use of Steel Tubes in General Building Construction.
- IS : 807- Code of Practice for Design of Cranes and Hoists.
- IS : 816-1956 Code of Practice for Use of Metal Arc Welding for General Construction in Mild Steel.
- IS : 818-1957 Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations.
- IS : 819-1957 Code of Practice for Resistance Spot Welding for Light Assemblies in Mild Steel.
- IS : 875-1957 Code of Practice for Structural Safety of Buildings — Loading Standards.
- Code of Practice for Prestressed Concrete (under preparation).
- Code of Practice for Structural Safety of Buildings: Foundations & Sub-structures (under preparation).
- Code of Practice for Structural Safety of Buildings: Superstructures (under preparation)
- (9) **Building Regulations**
- IS : 1256-1958 Code of Building Bye-laws.
- (9) **Water Supply & Drainage**
- IS : 1172-1957 Code of Basic Requirements for Water Supply, Drainage & Sanitation.
- Code of Practice for Water Supply & Plumbing (under preparation).
- Code of Practice for Building Drainage.
- (10) **General Civil Engineering**
- Code of Practice for Steel Bridges (under preparation).
- (11) **Electrical Installation & Illumination, Refrigeration and Air-conditioning**
- IS : 659-1955 Safety Code for Air-conditioning.
- IS : 660-1956 Safety Code for Mechanical Refrigeration.
- IS : 661-1955 Code of Practice for Insulation and Safe Operation of Cold Storages.



IS : 732-1958 Code of Practice  
for Electrical Wir-  
ing and Fittings  
in Buildings.

Code of Practice for Electrical  
Passenger a n d  
Goods Lifts (un-  
der preparation).

Code of Practice for Street-  
Lighting (under preparation).

**(12) Fire Safety of Buildings**

Codes of Practice for Fire Safety  
of Buildings : (General).. . .

General Principles &  
Fire Grading.

Personal Hazard.  
Exposure Hazard.

Materials & Details of  
Construction.

Chimney, Flues, Flue  
Pipes & Hearths.

Electrical Instalation.

Fire Fighting Equip-  
ment and its Mainten-  
ance Including Cons-  
truction & Installation  
of Fire Proof Doors.

Artificial Lighting, Other  
than by Electricity  
and including Oil and  
/or Gas Heaters and  
and Burners of Small  
Capacity (under pre-  
paration).

Code of Practice for Fire Safety  
of Non-industrial Buildings  
(under preparation).



# Documentation & Communication

DR. S. R. RANGANATHAN,  
*Chairman, ISI Documentation Sectional Committee.*

Communication goes with thinking. The very process of thinking calls for self-communication. Thought created by any one has to be communicated to others. This is needed even at the level of the vegetative existence of each individual. It is particularly needed to maintain organized group-life... from family, through a nation, on to the world-community...in an efficient state. Oral communication has a very limited sphere; communication on a large scale has to be through writing. Indeed, it has to be through printed material. Large thought-masses have to be communicated in the form of a book at one extreme, and of an article in a periodical at the other. Making communication effective through such printed media involves many difficult problems. If left to an author's flair, or to the printer's whim, or to the publisher's improvisation, communication involves wastage on the part of those picking up the communication.. This wastage becomes colossal when the number of persons obliged to pick up communication increases on the one hand, and the quantity of printed material grows on the other. Today, there is a plethora of reading materials of all sizes on thought of every kind. We in India did not feel the pressure of these, and of the wastage of thought-potential involved, during the last few

centuries when we were in a state of cultural exhaustion. Ever since Mahatma Gandhi succeeded in getting us political freedom, we are beginning to feel the pressure. Mahatmaji's success was after all a concomitant to the sudden awakening of the people of our country and the release of considerable creative energy.

Countries of the West, which recovered into full life a few centuries earlier, were able to meet the difficulties in the problem of communication by the casual method of trial and error. The population pressure in those countries and in the world in those days allowed such drifting. But today, when we enter the field of creative thought problem of our own country has reached a saturation point and the world population also has increased enormously. As a result of this social pressure, we are obliged to conserve our research potential and our information potential to eliminate wastage of every kind. One form of wastage to be eliminated is dissipation of energy involved in communication of thought through printed materials. The Documentation Sectional Committee of the Indian Standards Institution has this region assigned to its care. This is a very important region for every other region—particularly the industrial re-



gion which usually comes uppermost in one's mind when the term 'documentation' is mentioned, has itself to depend on efficiency of communication. It was, therefore, in the fitness of things that the Documentation Sectional Committee was amongst the first of such committees to be appointed by ISI. This Committee has been active during all these ten years. It has already established a dozen standards; some of these are under revision, and standards for new subjects are under preparation.

In the Madras Convention of 1957, the Documentation Committee held two sessions. At that time, it made a complete search of documentation from book production to book service—from the production of books, periodicals and other documents to documentation service — and marked out the regions already standardized, those awaiting to be standardized, and the residue which should be left alone without any attempt at standardization. The Hyderabad Convention of this year is concentrating its attention on a few of the arrears that require standardization. Its work centres round 13 papers. Three of the papers are on standards to be adopted in the production of a book or a periodical. Indexing and bibliographical citation form the highlights in this area. Classification and cataloguing which form the very foundation of efficient communication in the presence of millions of printed matter are also taken care of.

India is just now venturing into the field of national bibliography. India is a polyglot; it has also many scripts. It would, therefore, be fatal if the Indian national bibliography imitates the standards adopted by the national bibliography of unilingual countries. This is not a sphere in which we can afford to drift, for the cost involved in

production is great. Therefore, some papers make a critical study of the production of our national bibliography with a view to arriving at helpful standards. With the rapid industrialization of the country and the great increase in research activities in our Universities and National laboratories, the nascent thought being created from day to day in the different parts of the world in the different specific subjects has to be ploughed back into the brains of the thinkers expeditiously, exhaustively and pin-pointedly. This is not an easy piece of work. This work, which is called 'documentation work and service', is as new to other countries as to India, but India has already developed several techniques to make documentation efficient. Indeed, its documentation techniques are now being closely studied and adopted in several countries. All the same, documentation technique is just in the formative stage. Here again it is not wise or economical to blunder through it for some years and then think of standardization. It is imperative that standardization is taken up immediately, though actual documentation work has not yet gone in volume in our country. The experience of other countries is very vast. That gives us enough material to work out a suitable standard.

It is hoped that this important area of documentation will be fully discussed in the Hyderabad Convention. Publishers, authors, printers and booksellers, and librarians will have to cooperate in arriving at documentation standards. It is expected that members of these trades and professions will assemble in large numbers in the Convention and will produce something which will be of real and immediate use in the expanding economy of our country.



# Standards & Promotion of Exports \*

Of late, the burning question of export promotion drive designed as it is to earn more foreign exchange for expanding the industrial programme of the country, has been engaging the attention of the Government, the industry and the public alike. The adverse balance of trade, unavoidable though it may seem in the light of our developing economy, has been very perturbing, considering that the bulge in the fall of earnings increased to a dismaying figure of Rs 439.5 crores in 1957. To a considerable extent this adverse balance is due to the heavy import of foodgrains; but it is also due to the import of capital equipment and raw materials for meeting the needs of the industry for their programme of extension. But this adverse balance of trade, disturbing though it is, is not entirely an unavoidable feature of our economy. It is conveniently possible to off-set this adverse balance, all that we have to do is to restrict our imports and earn from more foreign exchange by extending our exports.

## Pattern of Indian Exports

The Indian exports, hitherto have been on a conventional pattern. Out of our annual export of nearly 600 crores, 18 items alone account for an earning of Rs. 500 crores. These include tea, jute goods, cotton yarn and manufactures, metal ores, leather, raw and waste cotton, vegetable oils, tobacco,

cashew nuts, mica, lac, hides and skins, coir and coir fibre, and wool and woollen manufactures. All the other items make up the balance of Rs. 100 crores. Is it not regrettable that our engineering goods account for less than 4 crores annually? So, in our efforts to develop exports we have not only to look to our traditional items of exports, but also enlarge their scope by developing the exports of manufactured goods, particularly of engineering goods.

That is to say, we have not only to search new markets for our traditional items of export, comprising agricultural and mineral items, but also for industrial raw materials and manufactured products. With the commissioning of our three new steel projects, it should be possible for the country to expand the exports of finished engineering goods.

There is another reason calling for such a change in the pattern of our exports. With the rising standard of living, and the increasing tempo of industrialization in our own country, the exportable surpluses of traditional items would tend to grow smaller every year. The ratio of exports to home consumption of these articles is becoming smaller every day, thus setting the price level of these commodities higher in the international markets. We have, therefore, to think on the lines of

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\* Contributed.



exporting more manufactured goods, particularly to our neighbouring countries.

The fact that most of our neighbouring countries in South East and West Asia and East and West Africa have shaken off the yoke of foreign rule, is encouraging for our export promotion drive. Since these countries are still in an underdeveloped state, and because there is pressing urge and growing need in these countries for the rapid improvement of standards of living of their people, we can expect that a demand for consumer and capital goods of all kinds from these countries will offer good opportunity to our producers. In India we have been fortunate in setting up on the path of industrialization quite early; so our country has progressed to a stage where we can offer our services and finished goods to the neighbouring peoples.

### **Need For Quality Control**

But before we do so we will have to earn the goodwill of our foreign buyers. In the past, many a time, our exports have suffered because of poor quality of our goods. Our exports have also suffered because of our failure to supply goods of quality contracted for. Many a time, the quality of the product was not uniform for lack of standardization. Quite often, weight and dimensions were at variance with those stated in the invoice or tender. Then, there have been complaints that supplies from India are not upto the samples originally forwarded. It is a healthy sign that the Government is alive to the situation, and have set up a number of Export Promotion Councils to remedy this sorry state of affairs.

It must be realized that the knowledge about the export promotion, about the industry and of the export markets, added to the encouragement and concessions granted by the Government to the industry to launch on an export promotion scheme are not enough. The basic need is the strict observance of quality standards; since any disregard of this basic need can reverse all the steps taken in the direction of export promotion. If the Industry has to build up exports, it can only be at the goodwill of the foreign customers. For this it is essential that our producers maintain acceptable standards of quality for their products and apply quality control methods during production of goods. Once our manufacturers are convinced that the quality control is closely linked with the export promotion drive, there would be no hesitation on their part to adopt standards and quality control methods; thereby offering to our foreign buyers products of acceptable quality. It is no denying that quality standards for the production of goods can alone create consumer confident, promote sales, stimulate production and help consolidate export markets.

### **Role of Indian Standards Institution**

It is in this context that the importance of the Indian Standards Institution, ISI comes. The Institution, set up in 1947, has been formulating standards for promotion of indigenous industry. By now it has published nearly 1250 standards, covering all types of electrical, mechanical, civil and building industries and agricultural and food products, textiles and chemicals. Among the standards published, there are a large number which relate not only to traditional items of our exports, but also to manufactured goods, exports of which have to be expanded



to earn foreign exchange. These standards for instance, relate to aluminium utensils, chemicals, oils, hardware and building materials, electric fans, electrical tools and appliances, batteries, radios, and various other items. Not only these standards are acceptable in India, but they are also recognized by our foreign buyers as well. Indian Standards prepared as they are after taking into consideration the views of diverse interests, are suited both for internal and foreign trade. As a matter of fact, ISI, with the co-operation of the foreign national standards bodies, gets the views of foreign consumers before finalizing the Indian Standards. Again, being a member of the International Organization for Standardization, Indian Standards have the same recognition in foreign countries as foreign standards, say of British or American Standard Organizations, have in our own country. No doubt, ISI is an infant organization, only 11 years old, and many of our own exporters and industrialists, not realising its importance, and thinking on the old lines, look to British and other foreign standards. But, in our national interest, we should accept and implement our own national standards, formulated by ISI. Further, Indian Standards are formulated to suit tropical climate and conditions, so goods conforming to these standards should be more acceptable to our neighbouring countries.

### **ISI Certification Mark**

It will be appreciated that formulation of standards is not enough unless they are implemented expeditiously and whole-heartedly. Further more, for consumers, it is not enough. The producer may publicise that his goods conform to the Indian Standards, but

it is not enough from the consumer's point of view for the purchase of such goods. What he needs is a third-party guarantee from an organization of respectable standing and status to check the products and certify its quality. To meet this need, the Union Parliament enacted the ISI Certification Marks Act in 1952. Under the provisions of this Act, ISI issues licenses to manufacturers and producers whose goods conform to the requirements laid down in the relevant Indian Standards. ISI satisfies itself by means of surprise inspection and checks and testing of samples, picked up at random from the market and production lines, before its Mark is carried on a product.

Naturally, when a consumer purchases a product, bearing ISI Mark, he can be sure of its quality. Thus, the ISI Mark adds a considerable sales appeal to the products of the manufacturers who go in for ISI license for marking their products. This assists them, in the long time, to increase their sales.

To the producers the Certification Mark is also for great assistance, since it helps them to improve the quality of their products, manufacturing processes and techniques and facilities for the testing of materials. The system not only helps them in improving the quality of product, but also assist them to produce the same product at less cost. ISI Marking fee does not even add one per cent of the original cost of production. But through it, manufacturer is required to follow rigidly, during production, a scheme of quality control. AND it has been experienced that these quality control techniques help the manufacturer in increasing productivity and in producing more



goods of acceptable quality, by reducing the number of rejections in the end product. In the long run, the scheme is found out to be economical.

The application of ISI Mark at this stage is voluntary. However, in one or two cases, where the Government felt the interest of the country was at stake, they made its application compulsory; such as has been done in the case of export of aluminium utensils. Similarly, in the case of tea, the Government have imposed a ban on the export of tea in tea-chests, the panels of which either have not been certified by the Government or do not bear the ISI Certification Mark.

Apart from that, if our producers could accept the ISI Certification Mark on all exportable goods, we can win the confidence of our foreign buyers. It is not enough to have certain standards in business production, our producers must also carry the assurance of quality to the consumer, may he be in India or abroad. The easiest way is to carry to the buyer an assurance of quality in the form of certified goods carrying the ISI Mark. That is how Japan, for example, has been able to

regain and actually expand her exports in the post-war period.

Implementation of Indian Standards by our industrialists would help promote our export trade which is very vital for India for earning foreign exchange at this critical juncture of our development. Any complaint about the quality of exported goods not only hampers our foreign trade, but also lowers our prestige as an exporting country. To-day the percentage contributed by India's export to our national income accounts for only 45 percent. Naturally, there is a great scope to increase the exports, particularly of our engineering and conventional export goods like tea, jute, textiles, etc. Exports depend not only on the production capacity but also on the competitiveness of the prices and the quality of our exported goods.

All our progressive industrialists who are alive to the need of the hour, realize and accept the fact that India can achieve a substantial expansion in our exports provided they pay close attention to the maintenance and improvement of quality of their exportable goods.



# Functions of Standards

DR. A. N. GHOSH,  
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Primitive man's use of tools for self-preservation was a first step in the achievement of his destiny. He first used stones or branches of trees which just suited his purpose. Gradually he learnt to improve upon them and eventually to control them. Improvements through untold millennia ultimately led to the production of things of similar dimensions and composition not in ones and twos but in great numbers. This may be looked upon as the first step towards making things in standardized ways.

As man became more civilized and learnt to live as a social being, he set for himself, at first unconsciously, the task of establishing standards of behaviour and practice in relation to one another. Spoken word is, perhaps, the oldest standard that man brought about in those pre-historic times. Other standards of behaviour slowly developed and crystallized into folkways, taboos, rituals, ceremonies and patterns of worship.

Standardization permeates almost all fields of human endeavour, and a standard may, in general, be defined as a model or a rule established by authority, custom or general consent.

Even law constitutes a form of standardization.

However, the words 'standard' and 'standardization' are used today in connection with technology, industry, business production and processes. Standards of weights and measures, such as the metre, the kilogram, the pound, etc., are as necessary for our national economy as the alphabet is for literature. To meet the needs of modern science, numerous standards of scientific measurements have been set up, such as the units of time and temperature. Money itself provides the means to measure value, and its stability is of cardinal importance to national economy.

## **Research and Standardization**

Industrial progress proceeds, in the first instance, from the discovery or invention of one or more basic ideas by the scientist and the research worker. The development of basic ideas for suitable application in the field of manufacture and other industrial activity requires time. Man's venture into the new territories of development of natural resources of material and power may be compared to the progress of



an army determined on new conquests. The successful assault forces, after they have overcome resistance from the enemy, are followed by other units whose job is to consolidate the gains. They do so by setting up a temporary field headquarter which brings up fresh supplies, co-ordinates the work of different units, maps up pockets of resistance, sets up military governments in the occupied territory and, in general, helps the forces for further conquests. This headquarter of the army is temporary and continually moves up to take new positions as the army progresses.

Man's fight to wrest from Nature her secrets and to utilize them for his own benefits begins with the scientific research workers. The conquests of this assaulting unit need to be consolidated, co-ordinated, codified and formulated to enable man to make still further progress. Thus, we may say that while research provides the means of advance into the territory of the unknown, standardization performs the task of consolidating the position after the advance has been made. In this advance, research uses, even for its own progress, standard conceptions in the formulation of a theory.

### **The Two Functions**

We may say that essentially an industrial standard performs the following two functions :

- (1) It establishes a temporary level of requirements and conditions under which practical industrial application of basic ideas would be possible technically as well as economically ;
- (2) It co-ordinates all factors, the

harmonious working together of which is required for complying with the conditions determined by the temporary level of stability.

The temporary level must have sufficient flexibility, like that of the temporary headquarter of an advancing army, for making a shift to the next temporary level when it becomes necessary to do so due to progress in the art. With sound standards, an industrialist is enabled to adopt the best way of doing a thing at the moment ; if tomorrow he finds a better way, he will codify it in a new standard, that is to say, he will take a new stand. A standard, therefore, is where the industry stands for a while not for the purpose of 'stay-put' but where it just stays temporarily in order to consolidate and make fresh plan for progress.

A standard may be defined as a formulation established verbally, in writing or by any other graphical method, or a model or sample to serve during a certain period.

It serves to define, designate or specify certain features of :

a unit, an object, an action, a process,

a method, a practice, a function, a measurement,

an arrangement, a duty, a right, a responsibility, etc.,

or a combination of any of these.

A standard remains effective for only a limited period as it may have to be changed due to the progress in art. It, therefore, is dynamic and not static.



## Scope of Standards

A standard may cover all aspects of economic activity, industry, agriculture, commerce, science, education, forestry and so on. It may be :

- a code of practice ;
- a specification of quality, composition, etc ;
- rules of sampling or inspection ;
- methods of test ;
- a definition of terms ;
- a scheme of simplification, i.e. limitation of variety, etc ;
- a set of rules for grading and grade definitions.

Standards may serve different interests depending upon the level at which they are worked out. A standard may be prepared by an individual for his personal use ; it may be laid down by a company to meet its purchase and sales programme ; it may come under the purview of an association of trade for the convenience of its members ; it may be formulated by a national standards body to serve all na-

tional interests ; and, finally, it may be on the international level and further the free flow of international trade.

A standard has, for its objects, the promotion of economy and efficiency in production, disposal, regulation and/or utilization in goods and services. It is laid down on the basis of understanding and consultation. It represents an agreement and not a decision. As it is an all-party agreement, it has a voluntary character.

The national standards body in India is the Indian Standards Institution. In the course of its existence of the last 12 years, it has produced some 1250 Indian Standards on the basis of agreement by providing common ground of understanding among all concerned. Indian Standards are the result of collaborative work in its technical committees in which producers, dealers, consumers, industrialists, technologists, research and testing organizations and others interested in the work participate actively. The standards produced cover diverse fields of industry and agriculture. In the last few decades, large-scale industry has begun to understand and to utilize standards and has reaped the rich harvest which standardization yields.



# Safety & Health in Industry

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## **Problems of Safety & Health in Industry**

How to prevent the heavy toll of accidents in industry each year stands out as a problem of tremendous national importance even today in the industrially advanced countries, and this is so in spite of the efforts to mitigate the hazards of the factory system of manufacture on the part of the Factory Inspection Services and various other agencies over a period of more than a century. No sooner are control measures evolved to deal with accidents of a particular nature than others of a differing type have generally been found to occur. This has been due to the technological development leading to the introduction of newer types of machinery and the evolution of newer processes to meet fresh needs, bringing in their wake hazards which were practically unknown before. Measures for ensuring the safety and health of the workers disclose an ever-recurrent series of problems to be met, and it is doubtful if finality can ever be achieved in the matter. Thus, emphasis during the years immediately following the Industrial Revolution, when steam engines were the source of power, was on the guarding of transmission machinery and improvement of physical working

conditions. The introduction of electricity as a source of power in industry brought new hazards in its train. With the rapid technological advances that have taken place in recent years modern industry is ever growing in complexity. The introduction of gigantic machines, working at enormous speeds, and the evolution of newer processes of manufacture, involving a huge array of new and hazardous chemicals, many of them of a complex nature, have tended to bring with them a stream of new and rapidly changing problems affecting the safety and health of the worker, each with a special risk and calling for detailed study and research in evolving remedial measures.

## **Measures to Guard Against Accidents**

To meet this changing situation in industry, the complexion of the Factory Inspection Services has also to be modified from time to time: In the earlier years the Factory Inspection Services were more concerned with the guarding of machinery; later, with the recognition resulting from analysis of accident records, that the human factor entered in a majority of the accident, the guarding of machinery and education in caution to see that the safety measures introduced were properly adhered to become the two



significant factors in accident prevention. With the increase in mechanisation and the development of new processes of manufacture the Factory Inspection Services felt themselves unequal to the task before them and had to be strengthened by the addition of specialists drawn from different professions and disciplines. It was soon realized that the inspection services, however, well equipped and organised, alone could not effectively deal with all the problems that they were confronted with and recourse had necessarily to be taken to obtain the co-operation of scientists and technical experts as also the help and assistance of technical and scientific organisations, research institutions, and various other agencies in evolving measures for mitigating the hazards met with in modern manufacturing industries. This has resulted in the drawing up of specific regulations of codes of safe practices covering a variety of industries.

### Changing Face of Rural India

India which for ages has been a predominantly agricultural country, is being rapidly industrialised so as to provide facilities for productive employment for her growing population. Filip to this development was, no doubt, provided by World War II to meet the exigencies of war. The rapid pace in industrialisation that the implementation of the successive Five Year Plans has brought about is something phenomenal. Today, we have many new industries spread all over the country and more and more of them are fast springing up.

Technological progress in the older industrial countries has been gradual. The introduction of measures for ensuring the safety and health of the workers could adjust itself without

much time-lag to each technical advance, aided considerably by the traditions set up during the gradual evolution of the industrial pattern in the country. These advantages, however, do not obtain in our country. If this country is to be spared the human travail that followed industrialisation in the older industrially advanced countries, we must draw upon the experience of these countries that in seeking economic prosperity it is necessary to effect saving in human efficiency and human life.

### Rising trend of Accidents

As it is, whatever may be the contributing factors the rate of accidents in our industries gives cause of serious concern. The following are the figures for the last five years :

Year	Total injuries	Rate per 1000 workers employed.
1939	36006	20.56
1953	93687	37.06
1954	94032	36.31
1955	116284	42.54
1956	128455	44.56

From the foregoing, it may be seen that the rate of accidents shows a rising trend. It has been argued in some quarters that leave of absence is granted in a generous way even in cases of minor injuries and that has been responsible for the swelling up of the figures relating to accidents in recent years. That this may not be so, and that we may have to look to other causes for this increase, is to a certain extent borne out by the figures relating to payment of permanent disablement benefits in the areas covered by the Employees' State Insurance Scheme. The figure for the years 1956 and 1957 are given below :



Year	No. of insured persons at the end of the year.	Permanent disabilities		Deaths	
		No. of cases	Amount Rs.	No.	Amount Rs.
1956-57	13,74,506	1141	1,92,913	58	80,267
1957-58	14,73,985	1574	3,09,447	69	1,32,978
Total for the year		1956-57	Rs. 2,73,180		
Total for the year		1957-58	Rs. 4,42,425		

Considering that the increase in the number of persons covered by the scheme in 1957-58 is only 7% higher than in 1956-57, the increase in the case of permanent disabilities and fatalities is disproportionately high. In Industry, the direct cost of accidents is but a small fraction of the actual loss of each accident involve because of disruption in production. Thus, the compensation paid is no indication of the economic loss sustained by the country from accidents. It is estimated that in U.K. the total loss to industry due to accidents is to the tune of £70,00,000 per annum.

Our accident rate is high in spite of the fact that these figures do not include the accidents in many of the hazardous occupations such as dock work, building work and works of engineering construction; nor do these figures take into account the occupational diseases associated with various occupations as we do not have adequate information on these aspects. In this connection mention may be made of the results of a survey carried out recently in the mica mining industry. The data emphasise that mechanisation without adequate safeguards leads to deterioration of working conditions. During recent years hand drilling has been substituted by pneumatic jack hammers. The hand drilling operations

gave rise to cost concentrations of about 100 million particles per cubic foot of air while in striking contrast drilling with jack hammers without any dust control device led to high dustiness in the working atmosphere with an average dust count of 1000 million particles per cubic foot. This, in turn, was found to be reasonable for high incidence of silicosis among the later group of workers. The studies have further shown that wet drilling operations properly carried out could eliminate the hazard from dust by keeping the dustiness within safe limits. Obviously, the use of mechanical equipment for drilling could not be considered without the provision of an adequate system for the supply of water.

Then again, a survey in the motor car battery manufacturing industry revealed that conditions leading to lead poisoning were widely prevalent in the factories, the lead concentration in the working atmosphere being found to be invariably higher than 1.5 mgm per cu ft of air, this being the maximum allowable concentration (MAC) for lead accepted on the basis of numerous studies carried out in the various parts of the world. Early lead poisoning was found amongst 10.6 percent of workers examined in the factories.



These and various other studies recently carried out in the country also go to show that the mechanisation in industry and the introduction of new processes should go hand in hand with the methods evolved for safeguarding the health of the workers engaged in such operations. Many of these provisions may appear to be far too elaborate considering the standard of living of our workers but where health and safety is concerned this should not make any difference.

### **ISI's Role**

When a worker takes employment in a factory he has the right to expect that adequate precautions are taken to ensure his safety and health. But the problem is not simple. It is not merely a question of

drawing upon the experience of the older industrially advanced countries, but trying to adapt them to meet the local situations. The necessary climate of opinion has to be created and interest in such work stimulated. This would take a period of years, but the problem has to be tackled with a sense of urgency. In this the Indian Standards Institution could play a very important part. Being an organisation closely associated with the industry, the national laboratories, professional bodies, scientists and other technical experts, it could help in the development of codes of safety practices. Since in the preparation of these codes the industry as also the various technical experts would be closely associated, the codes would be acceptable to industry and labour alike.



# Quality Alone Sells

J. S. GULATI  
*Assistant Director, ISI.*

## India On The March

The pace of industrialization in India, under her five-year Plan, has been quite encouraging; as a result of which the industrial and economic wealth of the country has been rapidly increasing. The programme of industrial development under the Second Plan has taken into account development of raw-materials, capital and consumer goods, and also finished products, the export of which we are steadily increasing to earn valuable-foreign exchange. Once considered ambitious, the targets, envisaged in the Plan, are now well within the reach of the nation. As a matter of fact, in a few spheres the targets have already been accomplished ... a clear tribute not only to the vision of our planners, but also to the Industry in the successful implementation of the programme of industrial development.

We need not enumerate all the targets of production; they are quite impressive and convincing of our capacity to develop our economy. One factor, however, is very clear that throughout the Second Five-Year Plan, stress has been laid on **quantity** of production and nowhere on the **quality**. This point needs a clear mention especially in the context of our fast industrial expansion and exports promotion measures.

## Quality Alone Sells

Faced with a difficult foreign exchange position, the Government have restricted the imports to the barest minimum; alongside special measures are being taken to expand the exports. This makes special demands on our producers, so as to make India independent in the supply of all essential consumer goods. Because of import restrictions, the consumer in India has started relying, almost entirely, on indigenous products. But it is a very common experience — and the consumer is quite vocal on this point — that the quality of indigenous products is not of the required standard, though the price in many cases is higher than that of imported products. It is true, our manufacturers are handicapped for want of suitable raw materials, capital equipment, technical know-how, etc. Every developing State faces the same situation, because the industry cannot attain the highest norms of quality overnight. It is essentially a slow process; but the consumer, used as he is to the imported goods of highest quality, often bemoans the uncertain standards of Indian goods. Part of the blame is due to some unscrupulous producers, who are trying to exploit the 'seller's market', thinking that anything would sell because of the prevailing scarcity conditions. In many cases, taking advantage of the absence of the



high quality competitive goods, they may even be tempted to fix the price of products arbitrarily.

Under these circumstances, the consumer is at a loss, not knowing what to purchase and what not to purchase. In fact, many consumers who, used, as they are, to buying imported goods, purchase Indian goods out of necessity and not because of choice. Naturally, if such a sorry state of affairs is allowed to grow, it would dissipate the faith of our Indian consumers in the capacity of the indigenous industry to produce quality goods. Since the industry must develop and flourish on the goodwill of the consumer, it is time that our manufacturers start giving as much importance to quality as to quantity of production.

Coming to the export side, we notice that despite the concerted efforts of the Government of India to promote our exports, our adverse balance of trade rose to nearly Rs. 40 crores in 1957. Apart from other reasons, it is an admitted fact, our exports have suffered because of our failure to supply goods of quality contracted for. There have also been complaints that supplies from India are not upto the samples originally forwarded, nor the quality is uniform from supply to supply. Quite obviously, the knowledge about our export potentialities, about the industry, and of export markets, along with the encouragement and concessions granted by the Government to the industry to launch on an export promotion scheme, are not enough. The basic need is the strict observance of quality standards. Any disregard of this will reverse all the steps taken in the direction of exports promotion. The industry can build up its exports or the sales solely on the goodwill of the

customers, may they be in India or abroad. Under the circumstances, 'quality sells' does not remain a mere motto, but should become a creed and an article of faith with our manufacturers.

### **Standards Help Improve Quality.**

The present-day industrial advancement as well as prosperity is due to standardization which assures interchangeability of parts and products. Standards do not help the mass production of goods but also the production of quality goods. Our manufacturers can improve the quality of products and win the confidence of customers, by maintaining acceptable standards of quality and by applying quality control methods in production processes.

Standardization has been a part of human activities right from the prehistoric man to the modern ages. Even now, we have individuals and firms prescribing specifications for ordering their purchases. But national standards command greater adherence and confidence, since they are formulated with the active and co-operative efforts of consumers, producers, technologists and the like. It is true, that national standard (since they try to reconcile the different views and needs of various interests) are the minimum standards; but standardization does not freeze the quality or design of a product. Standardization is a continuous process, so that when the country's resources and industries are able to meet the minimum standards, they are again revised, prescribing higher standards. Thus, standardization is a dynamic activity, never satisfied with the quality already achieved, but always striving for better quality. In this process,



standards continue assisting the indigenous industry not only in the production of goods of quality, but also in improving their quality.

Indian Standards — nearly 1250 by now — have, without any dispute, helped the development and growth of indigenous industry in India. It has also assisted the industry in discovering new processes and raw-materials and new uses for the existing raw materials, and also in finding out the most economical uses for various materials and products.

### **Carrying Assurance of Quality to the Consumer**

Formulation of standards is not enough, unless they are implemented whole-heartedly and expeditiously. The consumer is not concerned with the advertised claims of the producer in regards to his products, nor he has the time, capacity and resources to check their quality, except, of course through the trial and error method. He puts his faith in the producer when he purchases his goods, and it is his duty to see that his products meet the advertised claim, in the interest of sales promotion, the highest norms of quality for it. It is heartening to see that the Government is alive to the need for winning the faith of the consumer, and various quality marking schemes of the State Governments are a step in this direction. At the national level the ISI Certification Mark is serving the same aim, by carrying to the consumer its third-party guarantee of the quality of certified products. Thus, the ISI Mark is trying to win the goodwill of the consumer, and his faith in the indigenous products. It is time to carry the assurance and guarantee of quality to our foreign customers.

For instance, Japan, in her post-war period, by applying compulsory pre-shipment inspection and certification marking for her exportable products, has won foreign markets. It is time our manufacturers also come forward to accept the certification marking on their products, not only for the home products, but also for exportable goods. In fact the desirability of making such a Mark compulsory, in cases where safety and health of the people or exports are involved, cannot be questioned by any person.

Prime Minister, Shri Jawahar Lal Nehru was right, when he stressed, while addressing the Indian Standards Convention 1958, "If we wish to create confidence about an industry and the sale of our goods, then they should be of high standard". He insisted that "it really has become quite essential for the purpose we are working to-day, for planning, exports etc., that we should fix standards, adhere to them, and in fact raise them continually". Expressing regret over the attitude of some of the producers, he said, "even though we deal with science and technology of high order, minds of some have not quite grasped all these basic facts. Some industrialists may say that their goods are quite good and may argue why they should get their goods when they can sell the goods without any inspection. They must understand that standards to them are as essential as examination are to students. People producing goods make themselves judges, when some body else should be the judge". It is hoped that our manufacturers would appreciate this "first basic principle" in the context of our present acute shortage of foreign exchange and uncertain standards of goods.







(continued from last cover page)

Best & Co. Private Ltd.  
Biological Products Private Ltd.  
Bombay Cycle & Motor Agency Ltd.  
Brook Bond India Ltd.  
Burmah-Shell Oil Storage & Distributing Co. of India Ltd.  
Caltex (India) Ltd.  
Central Railways  
Defiance Automobiles  
Director of Industries and Commerce,  
Government of Andhra Pradesh  
Director of Information and Public Relations,  
Government of Andhra Pradesh  
Dunlop Rubber Co. (India) Ltd.  
General Electric Co. of India Private Ltd.  
General Radio & Appliances Private Ltd.  
Hindu Auto Engineering Co.  
Hyderabad Allwyn Metal Works Ltd.  
Hyderabad Asbestos Cement Products Ltd.  
Hyderabad Chemical & Pharmaceutical Works Ltd.  
Hyderabad Construction Co. Ltd.  
Hyderabad Laminated Products Ltd.  
Hyderabad Tin Products Ltd.  
I. A. E. C. Hyderabad Ltd.  
Indian Cable Co. Ltd.  
International Ore & Fertilizer (India) Private Ltd.  
Karam Chand Thaper & Brothers (Coal-Sales) Ltd.  
Krishna & Co.  
Madhav Surendra & Co.  
Madras Circle Pipe Dealers Association Ltd.  
Maduri Motors  
J. B. Mangharam & Co.  
National Employees Mutual General Insurance Association Ltd.  
Nizam Sugar Factory Ltd.  
Osmanshahi Mills Ltd.  
Prudential Co-operative Central & Urban Bank Ltd.  
Raja Bahadur Sir Bansilal & Sons  
Roneo Ltd.  
Shetty's Pharmaceuticals & Biologicals Ltd.  
Singareni Collieries Co. Ltd.  
Simpson & Co. Ltd.  
Sirpur Paper Mills Ltd.  
Sirsilk Ltd.  
B. Shankerlal & Co Private Ltd.  
Standard Vacuum Oil Co.  
State Bank of India  
Tata Iron & Steel Co. Ltd.  
T. I. Cycles of India Ltd.  
T. I. M. Sales Private Ltd.  
Union Bank of India Ltd.  
Utility Metal Works  
Vazir Sultan Tobacco Co. Ltd.  
Voltas Ltd.

**Ladies Reception Committee**

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Begum Akbar Nawaz Jung  
Mrs. Meher Soli Cardmaster  
Mrs. Gool Chinoy  
Mrs. June Vernon-Dyar  
Mrs. Sheila Gear Evans  
Mrs. Rohini Haksar



# Indian Standards Convention, Hyderabad

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Shri Sathyanarayan Gupta, Mayor of Secunderabad  
Shri M. P. Pai, ICS  
Shri D. S. Reddy

SECRETARY : Shri C. A. Rebello

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Shri D. P. Agarwala  
Shri R. Amolakchand  
Shri B. Ananthaswami  
Shri A. S. Ansari  
Prof. S. V. Ayyar  
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Shri Dandoo Pentiah  
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Shri C. B. Taraporewala  
Shri Thirumal Rao  
Shri R. M. Trivedi  
Shri I. Varkey  
Nawab Zain Yar Jung Bahadur

### Organizations

Andhra Scientific Co. Ltd.  
Andhra Sugars Ltd.  
Associated Cement Co. Ltd.  
Automotive Manufacturers Private Ltd.  
Azamjahi Mills Ltd.

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