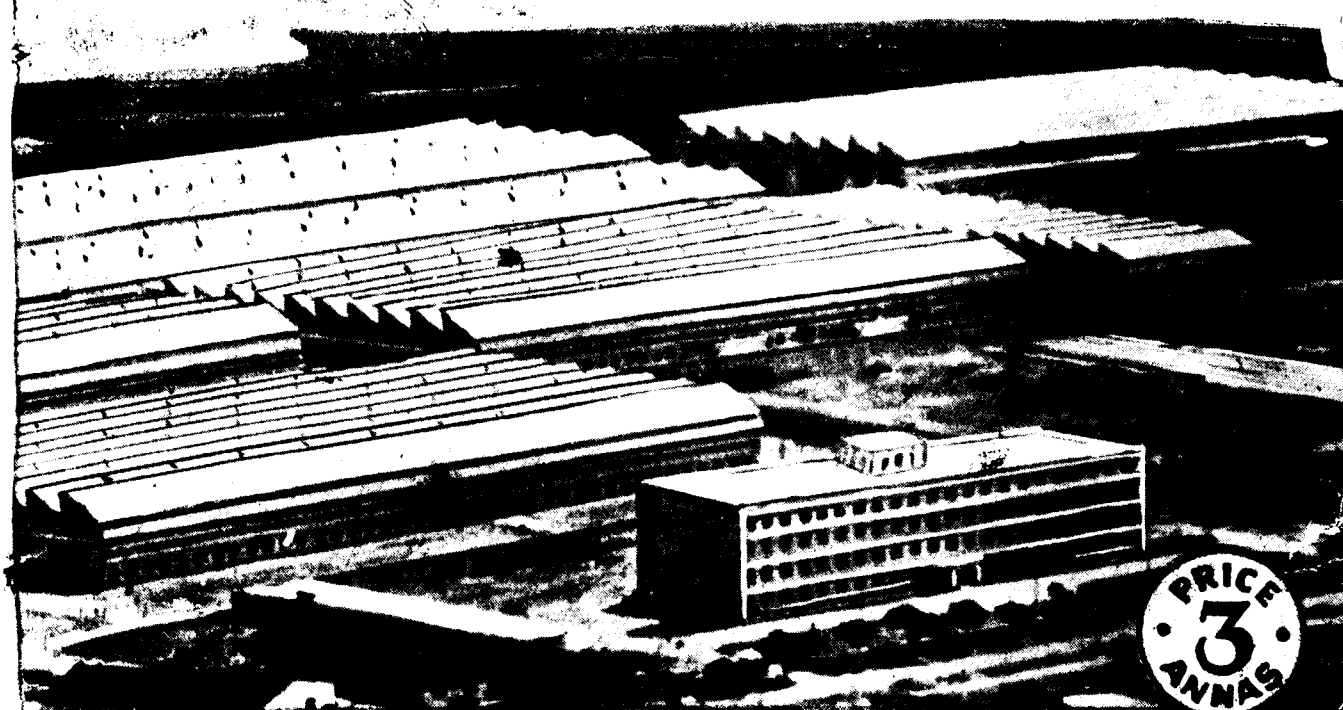
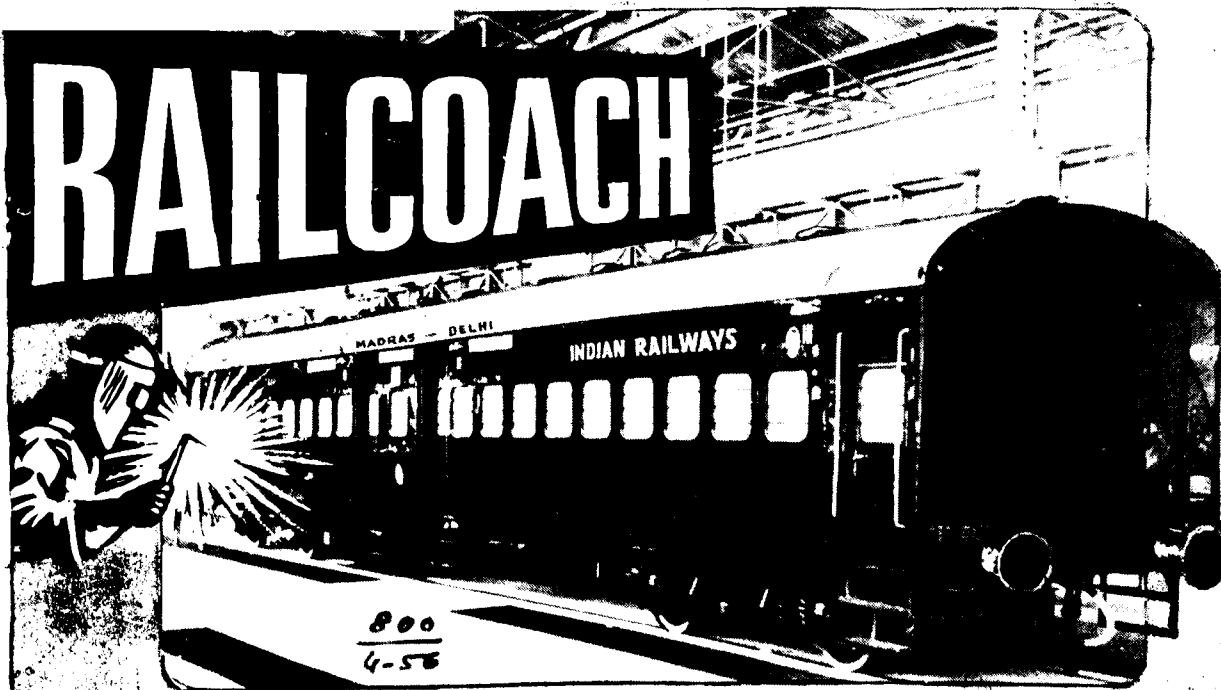




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ANNAS

TEGRAL COACH FACTORY, PERAMBUR, MADRAS-23

OCTOBER 1956

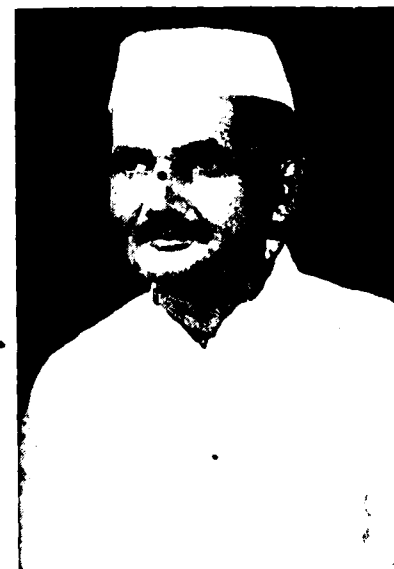
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MINISTER FOR
TRANSPORT & RAILWAYS

New Delhi
The 12th September 1956

The Integral Coach Factory, Perambur, is one of the two successful new ventures embarked upon by the Indian Railways after Independence—the other one being the Locomotive Works, Chittaranjan. The factory is growing from strength to strength and production, I am glad to find, is likely to be ahead of schedule. The number of staff employed in this undertaking is naturally bound to increase with the growing tempo and volume of work, and it is a wise decision to have a full-fledged magazine for the I.C.F. which, I hope, will, apart from being informative, lead to more sympathetic understanding between the employees and the management.

I wish the Magazine all success.

Lal Bahadur



DEPUTY MINISTER
TRANSPORT & RAILWAYS

New Delhi
19th September 1956

I am glad to know that the publication, Newsletter Magazine "Railcoach" started in January, 1955, has become extremely popular with the staff of the Integral Coach Factory, Perambur, and that steps are being taken to bring it out as a full-fledged Magazine from 2nd October, 1956. This date is associated with the birth of the Father of our Nation, Mahatma Gandhi. It has particular significance to the Perambur Coach Factory, where the first assembled coach was launched on 2nd October, 1955, by our revered Prime Minister. I have no doubt in my mind that the new Magazine which promises to be an improvement on the old Newsletter will be even more popular with the staff.

Perhaps the old Newsletter represented the unfurnished coach which the factory has started turning out and the new Magazine heralds the coming of the fully furnished coach out of the Perambur factory.

My hearty congratulations to one and all connected with this laudable venture.

D. V. Mahalan.



CHAIRMAN, RAILWAY BOARD

Ministry of Railways
Railway Board, New Delhi

Even as a Monthly Newsletter Magazine the RAILCOACH has embodied certain special features of general as well as all-railway interest. The growing demand for an increase in circulation is a proof of its popularity. The administration of the I.C.F. are to be congratulated on their enterprise in developing it into a full-fledged regular railway magazine. And for bringing out the first issue in its new form no more auspicious date could have been chosen than the birthday of the Father of the Nation, whose life will always continue to inspire us to give of our best at all times in the service of the country. I hope the new magazine will maintain a high standard and will be even more popular than its predecessor. To all railwaymen at the I.C.F. I send my greetings on this happy occasion and to those in charge of the management of the new Magazine my best wishes for their success.

Gandhi



FINANCIAL COMMISSIONER FOR RAILWAYS

Ministry of Railways
Railway Board
New Delhi

16th September 1956

It gives me great pleasure to find that it is proposed to bring out a new full-fledged Magazine instead of the present monthly Newsletter Magazine called the "Railcoach". The 2nd of October, which has been chosen as the date of the first issue of the new Magazine, is an auspicious one, being the anniversary of Gandhiji's birthday and of the inauguration of production at the Integral Coach Factory by the Prime Minister last year.

The Integral Coach Factory is one of our important production units, of which we should be justly proud, as it represents another step that has been taken in the attainment of self-sufficiency. It is expected that within a short period, the Factory would be able to meet all our requirements of integral coaches for the Broad Gauge.

I have no doubt that, with the well-known technical skill of our workmen, coupled with conscientious hard work, a high standard of efficiency would be attained, reflecting itself both in the quality of the coaches that are produced as well as in keeping down the cost of their manufacture.

I wish the Magazine all success.

Dayal



MEMBER, ENGINEERING, RAILWAY BOARD

Ministry of Railways
Railway Board
New Delhi

I am happy to learn that the Newsletter Magazine "RAILCOACH" has proved so popular that it is now proposed to publish it in the form of a regular Magazine. It is significant that this new Magazine is to be published on the 2nd October, Gandhiji's birth anniversary, which is a day of national importance, and the day our Prime Minister inaugurated the commencement of production of the Integral Coach Factory. Much depends on how soon we are able to achieve the targets set, and I am sure, through the enthusiastic co-operation of all those connected with this organisation, we will be able to exceed the targets and we must do so.

On this auspicious occasion, I send my greetings and best wishes to the officers and staff who are engaged in this great task.

Chhaya



MEMBER, TRANSPORTATION,
RAILWAY BOARD

Ministry of Railways
Railway Board
New Delhi

It has given me great pleasure to learn that the management of the Integral Coach Factory have decided to reshape the 'RAILCOACH' into a more comprehensive magazine. The day selected for this purpose is a memorable day in the history of the Indian Republic.

I have had occasion to go through the "RAILCOACH" and found it very interesting and informative. With its transformation into a full-fledged magazine, I am sure its importance will increase manifold.

Railways are our greatest national undertaking which can only run smoothly with the close co-operation of all its workers and the public. I hope this magazine will help to develop *esprit de corps* amongst the Railwaymen and propagate the cultural heritage of our country.

I wish the publication all success.



CHIEF ADMINISTRATIVE OFFICER
INTEGRAL COACH FACTORY

The "RAILCOACH" which we started in a humble way in January 1955, has met with a most encouraging and popular reception. The demand for this publication has been steadily mounting up and has brought home to us, that it would be well worthwhile to expand the scope of this house-organ into a regular Magazine providing a variety of fare. It is hoped that the Magazine will serve as a valuable medium for the dissemination of useful technical knowledge and also give interesting news of Railway and general interest including Art, Literature, Sports and amusement items. I have no doubt that, with the continued support of all concerned, this Magazine will grow from strength to strength and find its way to each and every home of the growing I.C.F. family, and also reach a wider reading public interested in the Railway Transport System of India. My warmest good wishes for the success of this venture.

CAO(R)'S MESSAGE TO WORKERS ON OCTOBER 1

Dated: 1st October 1956

To-day we are completing our first year of production. The year that is going out has been one of tremendous activity. Our production target for the first year was, in terms of the Technical Aid Agreement, fixed at 20 coaches. At the time of the Railway Budget, early this year, this target was doubled by Government. What has been our achievement? Not only have we been able to attain the increased target of 40 coaches set by Government, but we have done one better, in that, we are closing the year with an output not of 40 coaches only but of 43 coaches, i.e., 3 coaches more than even the increased target. We have also been able to make considerable progress in the manufacture of details and components and the First All-ICF-manufactured shell rolled out of the Assembly Line on the 14th August last much ahead of schedule. All this achievement has been most impressive and I hasten to give expression to my most heartfelt and grateful appreciation of the work that has been put in by all of us in this great national effort. The Swiss Team under their able leader, Mr. Braem, have spared no effort in giving of their best and their collaboration has been most efficient and cordial. My warmest felicitations to each and every worker of this great I. C. F. Family.

The experience gained during the first production year has made us face the coming year with robust confidence, and I have no doubt that we will more than fulfil our targets in the coming years.

K. Sadagopan

Chief Administrative Officer

RAILCOACH

(INTEGRAL COACH FACTORY MAGAZINE)

EDITORIAL NOTICE

All contributions must be clearly typed and doublespaced on one side of the paper only, and signed, not necessarily for publication, but as a guarantee of good faith.

Manuscripts and photographs, not accepted for publication, will not be returned unless the sender so requires. Intending contributors from outside our Factory, if they intend to get back unaccepted articles and photos, should send a suitably stamped and self-addressed envelope along with the material sent by them.

Contributions should be addressed to the Editor, not by name, and reach him not later than the 10th of every month for consideration for publication in the next month's issue.

The Editor does not assume any responsibility for the accuracy of the news supplied by correspondents or for opinions expressed by contributors. Opinions expressed in the "RAILCOACH" whether editorially or by contributors should be regarded as having no official authority.

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CONTENTS

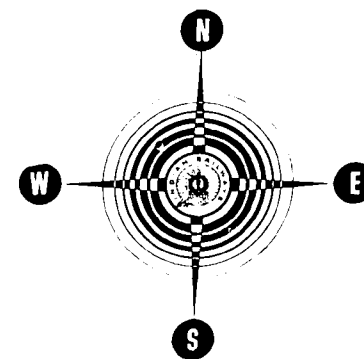
October 1956

	Page
Messages 1 to 7	
CAO(R)'s Message on October 1	8
Editorial	10
News and Notes	11
The Happy I.C.F. Family and its Achievements	21
Romance of Coach Building—2	23
Air Conditioning of Administrative Office	27
Materials that go to make the Integral Coach	35
Store it Well	42
Steel Mission to Calcutta	49
Productivity in Industry	51
Our Family	57
Lawns—How to Raise and Maintain	58
Thought Rambles	60
Eve's Page	61
Recast	62
Ramayana Lectures at Ayanavaram	64
The Romance of No. 9	66
Kiddies Corner	68
Sports Folio	71
The Interrupted Little Dream	73
Brain Teasers	75
Please Laugh	77
Important Visitors to the I.C.F.	79
Personnel Notes	84

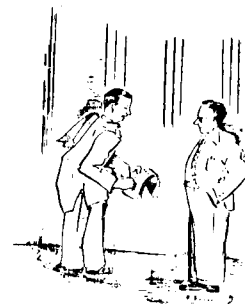
FROM THE EDITOR'S DESK

For us in the Integral Coach Factory, the 2nd of October is doubly significant. This is the date of birth of Mahatma Gandhi, the Father of the nation, to whom we all bow in reverence. We also remember with gratitude the sacrifice made by innumerable men, known and unknown, who, led by the Father of the nation, carried the country to freedom. Coming nearer home, on this date again, last year, production was inaugurated at the Integral Coach Factory by Shri Jawaharlal Nehru, our beloved Prime Minister. This day, therefore, becomes for us a day of stock-taking and further resolution.

It is on this date, therefore, that we have decided to come forth as a full-fledged magazine with a pledge to be of greater service to the staff of the Integral Coach Factory in particular and to the Railwaymen in general. On this auspicious occasion, we have received messages of inspiration from the Minister for Railways, Deputy Minister for Railways, the Chairman and members of the Railway Board and the Chief Administrative Officer, and for us these will be a source of great encouragement and enthusiasm. With the blessings of all of them, we feel confident that this magazine will be able to render the service for which it is being brought into being. We hope to be able to provide our readers a larger and more varied fare. Technical and Railway subjects will no doubt find a prominence, but art, literature, music and fun will all find their appropriate share, and we hope that this magazine will be able to offer some food for thought and also be of cheer to our readers.



NEWS AND NOTES



Manufacture of Rail Coaches Hindustan Aircraft's Plans

Of the various schemes and development projects contemplated by the Hindustan Aircraft under the Second Five-Year Plan, the last to be conceived and the first to come under way, is the manufacture of light weight, all-metal, welded integral rail coaches in collaboration with Machinefabrik, Augsburg-Nuremberg A.G. of West Germany (M.A.N.).

Details are now available of the agreement between the H.A.L. and M.A.N. for the manufacture of 1,300 broad gauge integral coaches per year at the Hindustan Aircraft Factory, signed in New Delhi on August 21. According to the production programme, the target output of 300 coaches per annum is expected to be reached within five years, when the entire coaches, including shells and bogies, but excluding wheels and axles, will be manufactured by H.A.L.

The switch-over from the manufacture of the existing 407 Model coach to the integral coach will be gradual, when, as the years progress, the number of 407 Model coaches produced at its factory in Bangalore will be progressively reduced.

The task of achieving the target of 300 integral coaches per annum is by no means simple. Additional buildings will have to be erected and the necessary plant and equipment installed. To assist H.A.L. in this task, M.A.N. have already sent their Chief Engineer to Bangalore to conduct a preliminary survey of the lay-out of the factory, undertake the necessary pre-planning work connected with the factory, establish a schedule supply of technical information and prepare the programme for the institution of various facilities connected with this project.

The Technical assistance collaboration of M.A.N. provides assistance to H.A.L. for the manufacture of 300 integral coaches per year at the Bangalore Factory, training of a number of H.A.L.'s technical personnel and possible extension of the scope of the agreement to manufacture other types of rolling stock, such as electrical multiple units, diesel cars, etc.

The suggestion of the Railway Board for the manufacture of about 350 broad gauge integral railway coaches per annum at the H.A.L. was first considered by the Board of Directors of H.A.L. in October, 1955 and within a short period, the authorities of

H.A.L. worked out details of the specifications and conducted negotiations with four leading manufacturers of rolling stock in Europe. In consultation with the Ministry of Defence and the Board of Directors, M.A.N. was ultimately selected for the technical collaboration.

Supply of Railway Coaches

The Government have made arrangements for meeting the requirements of 6,156 broad-gauge and 4,786 metre-gauge coaches of the Indian Railways during the Second Plan period. They are considering a proposal to set up a metre-gauge coach manufacturing factory round about Parel in Uttar Pradesh.

Operating Superintendents Confer

The main lines of a country-wide drive to secure the most intensive utilisation of railway rolling stock in the country were finalised at a four-day conference of the Chief Operating Superintendents of all the Indian Railways with the Railway Board, which concluded in New Delhi on August 23.

The top-level railway operating executives present at the meeting decided on a series of far-reaching measures designed to tackle the problem on an emergency basis with a view to closing to the largest practical extent the present uncovered gap between freight traffic, likely to develop during the Second Plan period, and the resources available for carrying it.

The Railway Board emphasised that in view of the shortage of funds it was of the utmost importance that the railways should, through superior organisational effort, economise on the new capital expenditure.

The Railway Board also reviewed the past operational results of each railway and set new higher targets of performance for the ensuing busy season (November 1956 to April 1957) in regard to wagon loading and wagon and engine usage.

The conference attached the greatest importance to co-operation from the staff. It was decided that frequent meetings of railwaymen at all levels should be arranged to explain to them the revised targets of performance, so that all classes of workers including even shunting porters and pointsmen, may have a clearer perception of their respective duties and their share in the fulfilment of the targets.

The conference decided that a systematic and persistent campaign should be initiated immediately to streamline all aspects of the operation, particularly in regard to faster loading and release of wagons at terminal points, expeditious disposal and proper marshalling of goods trains and punctual running of trains from the terminal yards. There should be greater supervision at focal points like Moghalsarai, Bezwada, Ratlam, Baroda, Waltair, etc., to remove any deficiencies which may exist.

An important decision related to the establishment of a number of "traffic control" areas to maintain constant touch over the telephone with the various points, which handle wagons, so that individual wagon movement and specific traffic movements could be closely watched with a view to ensuring better output from the existing yards and wagons. Telecommunication facilities should be strengthened in accordance with individual requirements.

It was also decided that tele-printer services should be introduced between important marshalling yards to convey full particulars of wagons despatched on different trains, thereby facilitating advance planning of further movement and disposal of wagons.

Among the other decisions taken at the meeting were the following: The "wagon chasing" organisation should be strengthened by posting selected senior and experienced personnel and their retention in these jobs should solely depend upon the results they produce. Loading inspectors should be appointed to introduce scientific loading of wagons, particularly in big sheds and transshipment sheds, so as to ensure better wagon loading.

Shri M. Ganapathi, General Manager, Western Railway, inaugurating the Route Relay System at Churchgate



Labour and Railway Administration

The railways are now considering the question of associating labour with management through the formation of management councils.

The Planning Commission have recommended widening the scope of the association of employees with the management by providing for their participation in the management councils. Questions as to the precise scope and manner of such participation are now being considered.

Incentive Bonus for Railway Staff

The incentive bonus scheme in the Chittaranjan Locomotive Works is working satisfactorily.

The Railway Ministry want to extend the incentive bonus scheme to other railway workshops and a special officer is going into this question.

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The Government are considering the suggestion of the Estimates Committee that the system of incentives and bonuses, prevalent in the Russian railways, should be introduced in the Indian railways.

Route Relay System on W. Railway

Shri M. Ganapathi, General Manager of Western Railway, inaugurated the "route relay" interlocking system which has been installed at the temporary Churchgate Station on September 1, 1956.

Shri Ganapathi congratulated the Indian engineers on completing the work departmentally which would enable trains to be received and despatched more expeditiously.

The General Manager said that the remodelling of the new Churchgate Station would go on according to

schedule and before July 1, 1957 the station yard of the new Churchgate Station would be ready and the seven-storeyed building of the station would be completed by April 1958.

The chief features of the "route relay" system of interlocking, the first of its kind in India, are: It simplifies the system of reception and despatch of trains. The new system enables all points and signals over the entire route to be set by the operation of a thumb switch. There would be two switches for the simultaneous up and down movements.

The electric power frame provided in the old Churchgate Station has been replaced by a control panel which consists of an illuminated diagram showing the passage of trains and reproduction of the track layout and

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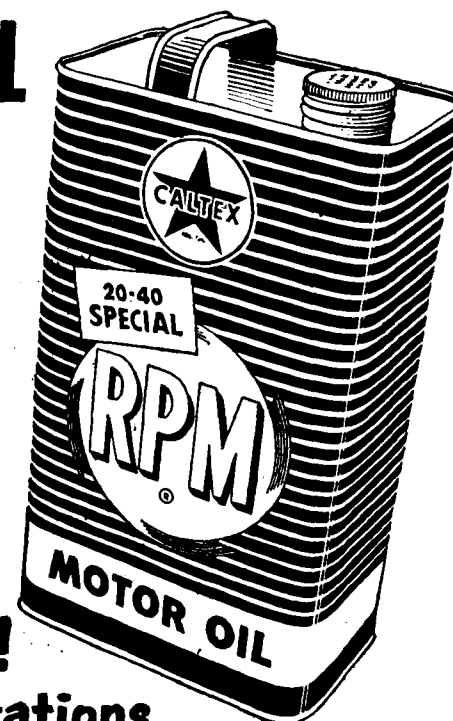
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at the same time accommodates the controlling switches or buttons.

The route relay system of interlocking has been designed by the Signal Branch of the Western railway and the entire work of installation of this system had been done departmentally. The work has been done in a short period of two months and has cost approximately a lakh of rupees.

The same system will be followed in the new permanent Churchgate Station and the control cabin will be a much bigger one, as the station will be having three lines with platform faces on either side and two sidings for stabling of rakes. The control panel also will show several other indications regarding the occupation of the lines which could not be provided in the panel at the temporary station.

The provision of "route relay" interlocking system will enable simultaneous movement of incoming and outgoing trains and thus enable trains to be run with greater frequency.

Begging and Smoking in Trains

Apart from prosecuting beggars and vendors in running trains who travel without tickets and cause inconvenience to the passengers, the authorities of the Southern Railway propose to undertake propaganda to check this inconvenience to passengers.

In this regard separate squads of railway employees are being formed for broadcasting in running trains with microphones and tape-recorders, appealing to the passengers not to encourage the beggars in running trains by giving them alms or allowing them to travel in trains without tickets. Special songs of appeal have been composed for the purpose in the various

regional languages. The squads have done experimental work in one or two sections with success. This mode of propaganda will be introduced in all sections with regularity very shortly.

The railway authorities are very anxious that smoking in the suburban train should be stopped as it is reported to have been causing much inconvenience to passengers in the crowded trains like the electric trains. Posters appealing to passengers to avoid smoking in the train have already been fixed in the suburban trains. The authorities are now considering the question of using the medium of slides in cinemas, in this connection.

Cyclosteel Process for Manufacture of Steel

British research scientists have discovered a new process for making a crude form of steel without the use of blast furnaces, according to a report in the New York Times, dated August 31, 1956.

This process, which has been called Cyclosteel, is, however, said to be in the experimental stage and not within the scope of commercial feasibility yet, but has "good chances of coming off" as a commercial process.

At present steel is made by the blast furnace method. Iron ore, coke and limestone are stacked in a shaftlike furnace and air is blown in at the bottom, burning the coke which, in turn, produces heat and the gases necessary to reduce iron ore to pig iron. This pig iron is then chemically processed and converted into molten steel either in a Bessemer convertor or in an open-hearth furnace.

Under the new Cyclosteel process, it is said fine drops of liquid iron ore, heated up to 1,600 degrees Centigrade

till it becomes a sticky liquid, are blown through a hot reducing gas (powered coal and oxygen) and a crude form of steel directly emerges.

Details of this process are reported to have been given by Sir Charles Goodeve, Director of the British Iron and Steel Research Institute, at a meeting of the British Association for the Advancement of Science at Sheffield on August 30, 1956.

Asked if Cyclosteel was likely to replace present steel-making techniques, Sir Charles was quoted as saying, "Modern chemical engineering has not had the impact on steel-making that it ought to have had. Blast furnaces are highly productive units, but the rest of the processes are not so good. Cyclosteel is a natural development of several new ideas, particularly, German ones and it should be

particularly valuable for finely divided ores."

Sir Charles, however thought a full-scale plant would take many years to work out.

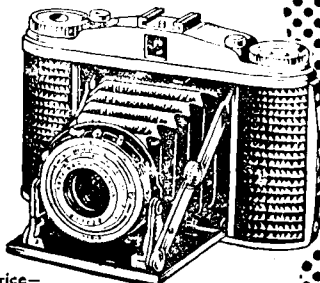
New Locomotives for Railways

The Indian Railways placed 1,299 new locomotives on the line during the First Five-Year Plan period. These included 43 diesel locomotives and seven electric locomotives obtained during the last two Plan years.

New locomotives numbering 447 were added on the line during the last Plan year. As against 1,299 locomotives placed on the line, 777 steam locomotives were taken off the line.

On April 1, this year, 30.7 per cent of all the steam locomotives on the line were over-aged.

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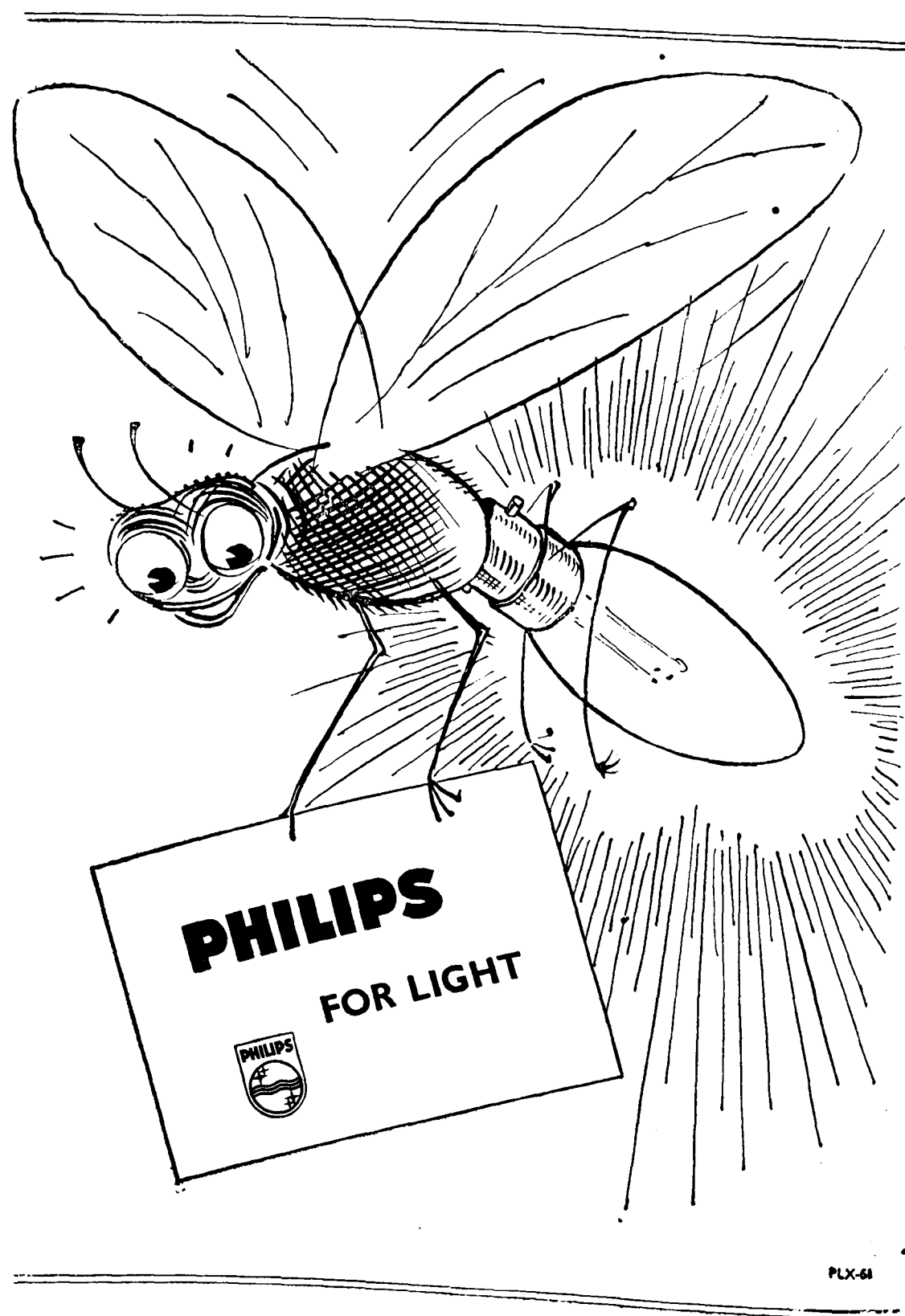
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"Now that we have obtained Swaraj and become masters of our own country, every citizen should take a vow not to steal railway and other public property and should not resort to ticketless travelling," said Shri O. V. Alagesan, Deputy Minister for Railways and Transport, Government of India while formally declaring open the Railway Protection Force Training School at Kimber Gardens, Trichinopoly, on September 1, 1956 before a large and distinguished gathering, which included Messrs. K. Ramachandran, Additional Member, Railway Board, T. A. Joseph, General Manager, Southern Railway, B. N. Lahiri, Inspector-General of Police (Railways), New Delhi, and K. Sadagopan, Chief Administrative Officer, Integral Coach Factory, Perambur.

Shri Alagesan then inspected the buildings where there were class-rooms separately for lessons in English, Tamil, Telugu and Canarese.

Madras Railway Division

The Royapuram Division of the Southern Railway was inaugurated on August 31, 1956 by Shri N. Kamalakara Rao, Senior Deputy General Manager, Southern Railway.

Shri D. B. Patel, Divisional Superintendent, in his welcome address, referred to the struggle the staff and the officers had in coping with the work under the erstwhile regional set-up.

Shri Kamalakara Rao Naidu said that, as pointed out by the Railway Minister, unified control under the Divisional system would minimise delays, red-tapism and also unnecessary work.

Wagons and Coaches for the Southern Railway

2,000 metre gauge wagons built by Metropolitan Cammels in U.K., have been allotted for the Southern Railway and these are now being received in Madras in a knocked-down condition. Messrs. Binny's Engineering Works are assembling them on contract at their new works at Meenambakkam. So far, 310 wagons have been erected and placed in traffic. The erection is in progress at the rate of 150 wagons per month. The firm is planning to increase the out-turn and it is anticipated that 2,000 wagons would be in service in about six months' time.

Rice from Tanjore area to the tune of 2,30,200 tons was moved in 23,020 wagons from November, 1954, to October, 1955. From November, 1955, to the end of August, 1956, the quantity increased to 2,30,300 and the wagons to 23,036 in a period of ten months. The outstandings on June, 1956 were 6,292. As on date, they were reduced to 146 wagons.

As a result of orders placed abroad by the Railway Board sometime ago, 400 metre gauge coach shells have been received from U.K. and Belgium of which 25 are for the Central Railway and the balance for the Southern Railway. Those steel shells are now being furnished in Golden Rock, Hubli and Mysore Workshops at a current rate of 24 coaches per month. In all, 270 coaches have been turned out fully furnished as III classes and are on traffic. The balance is expected to be completed by December.

The Southern Railway have also been constructing, since 1955, air-conditioned coaches according to the allotment of the Railway Board, viz., eight broad gauge and 12 metre gauge

coaches per year. The work is undertaken in Perambur Carriage Workshops for broad gauge and in Golden Rock Workshop for metre gauge. So far, 11 broad gauge and 12 metre gauge air-conditioned coaches have been built and are in service on important trains. More are under construction.

Medical cars are being provided on the basis of one bogie unit per 100 miles. They contain all medical equipment. Six broad gauge and 18 metre gauge medical cars have been built so far and are located at various stations on the Railway.

Re-modelling of Madras Central Station

The Central Station, Southern Railway's terminal in Madras City, will be re-modelled at a cost of Rs. 2.07 crores and work on the same will be taken up during 1957-58. It is expected that the work will take five years to be completed.

This will be undertaken in order to cope with the present increased traffic which has considerably outgrown the capacity of this station. During the Second Five-Year Plan, it is expected there will be further increase in the traffic handled at the station.

It is proposed to extend the passenger platforms so that they can accommodate trains of 16 bogies each. With the heavier type of W.P. engines, which are used for the Grand Trunk Express, the Calcutta Mail and the Bangalore Mail and hauling trains of 14 bogies, longer platforms have become a necessity even now. In addition, two additional platforms will be provided in addition to the existing

seven. The existing covering over the platforms will be extended to the full length of the platforms.

Two foot overbridges will be put up, one with steps for passengers and the other for parcels with lifts, to facilitate quick movement of passengers and parcels from one platform to another. Another feature will be the construction of a separate parcels office and circulating area on the eastern side for dealing with increased parcel traffic. Flush-out latrines and bathing cubicles will be provided on every passenger platform. Water coolers and additional R.C.C. benches will also be provided.

An adequate number of washing and stabling lines will be provided along with necessary workshop facilities for repair of the rolling stock and their maintenance. The Loco yard will be re-modelled.

Self-Printing Ticket Machines

Self-printing machines for the issue of tickets to passengers are now functioning at 43 stations on five zonal railways. The Central Railway has these machines working at as many as 28 stations. Ten stations on the Western Railway, two each on the Southern and Eastern Railways and one on the Northern Railway (at Delhi) are also functioning. These machines have been installed to reduce the length of queues in front of booking windows and help passengers in getting their tickets quickly.

Outstanding Services by Railwaymen

The Railway Ministry is considering the introduction of uniform rules on all railways for granting awards to railwaymen for exceptional and outstanding services.

The Happy I.C.F. Family and its Achievements

BY

K. SWARUP

Dy. Chief Mechanical Engineer

By now it is widely known that the work on the I.C.F. project was started in September 1952, in order to achieve self-sufficiency in the matter of coaching stock. Within the record time of 3 years the buildings, structures, the wiring, the distribution system of electrical energy, and the erection of 500 odd machines on foundations were completed and the production in the Factory was inaugurated on the 2nd October 1955, well within the target date as laid down in the Supplemental Agreement of 1953.

The Civil Engineers have done a splendid job and have given us magnificent structures, well ventilated and well lit, to work in. They have also given us a very nice system of road transport, the overhead cranes, etc. Our heartfelt thanks are fully extended to them.

The Electrical Department has put up a main receiving Station and 10 substations at the various convenient distribution points. All this required considerable thought and work.

The Stores department has also come up remarkably well in the first year of production, and practically all the raw material for the 135 coaches has been made available. Raw materials for the 3rd, 4th and 5th procurements have also been ordered and are expected in due course. Close co-ope-

ration exists between the Mechanical and Stores Departments.

We from the Mechanical Department have also gradually moved along and we have put up 500 different machines in different shops. The shop equipment, which is meant to reduce manual handling of material and provide easy manipulation of every material on the machines without undue fatigue to the operators, has mostly been manufactured here. The road transport has been established. The Technical School has been functioning and producing skilled artisans to meet our increasing requirements on the shop floor. The Drawing Office has not only done a good job in making out detailed drawings of over a thousand components to be manufactured in the I.C.F. but has also designed over 100 jigs and fixtures for the easy manufacture of the components. Besides, they have been busy in working out the design of a TLR Coach (Composite bogie third and brake van) in the light weight all welded steel construction. The Production Office has established satisfactory Production Control methods. This office is the brain trust of the workshops and tells them how to do a job, what equipment, machine tools, jigs and fixtures are to be used and what should be the time taken. Naturally it would take time for all the process cards to be finalised and

time-and-motion studies to be completed.

The Accounts Office has also devised a good Work Order system, which will allow job costing to be established on proper scientific lines. The Hollerith Punch Card system has also been introduced.

Let me now come to the performance on the shop floor. We have a very good team spirit on the shop floor between the Swiss and the Indians, between the workmen and supervisors, and supervisors and officers. It is because of this team spirit at various levels that it has been possible for us to achieve in the very first year of production, what we have been able to do. We were set the target of turning out 20 assembled KD coaches. Because of the good work being turned out in the first few months, it encouraged us to agree to double this target to 40 coaches in the first year. On the 28th of September, the 43rd coach has been turned out by Mr. K. Fuchsin, the Managing Director of Swiss Car and Elevator Manufacturing Corporation, who happened to be in Perambur on that date. This by itself is no mean achievement, but we have still gone a step further.

The first indigenous coach from components and subassemblies manufactured in I.C.F. was turned out from the assembly lines on the 14th of August '56, by the President of India. This was about 6 months ahead of the

target date. The indigenous production has now gone into full swing. All the shops have been established and are gradually gaining momentum. The work being turned out is of excellent quality and I am proud to say that in many cases the quality of our job is claimed to be even better than what Schlieren were able to supply. This has been possible because of the detailed planning that had been done in advance and the provision of about 800 jigs and fixtures for the production of components, subassemblies and assemblies on a mass production basis.

We are trying to develop good human relationship at all levels and provide good amenities and facilities for workmen, so that they find pleasure to work instead of the work dragging on.

We have also formed a Suggestions and Inventions Committee and will be glad to receive suggestions from the humblest worker, and I would assure him that it would receive very careful consideration, and, if it is accepted and is likely to lead to economies in material or labour or simplify any procedure, a suitable substantial reward will be given.

Before I close, I will beseech the kindly Providence that has showered all its blessings on us in respect of the first year's production, to continue to do the same in our further tasks that lie ahead of us.

Romance of Coach Building—2

BY

R. RAJAGOPALAN

Dy. C. M. E., (O.S.D.)

The Integral Coach Factory is designed to produce all-steel shells for Broad Gauge passenger coaches and as such will produce coaches, so to say, partly finished. It is now proposed to develop a furnishing unit so that the shells are also completed with furnishings and turned out as ready coaches. The unit has to be necessarily an ancillary one and will enable the coach factory to be really one turning out full coaches and not merely shells. But in this complimentary unit what romance and adventure there will be!

On a previous occasion it was explained how art and engineering blend in coach building with more engineering in the riding vehicle and more art in the finishings and appointments of passenger coaches.

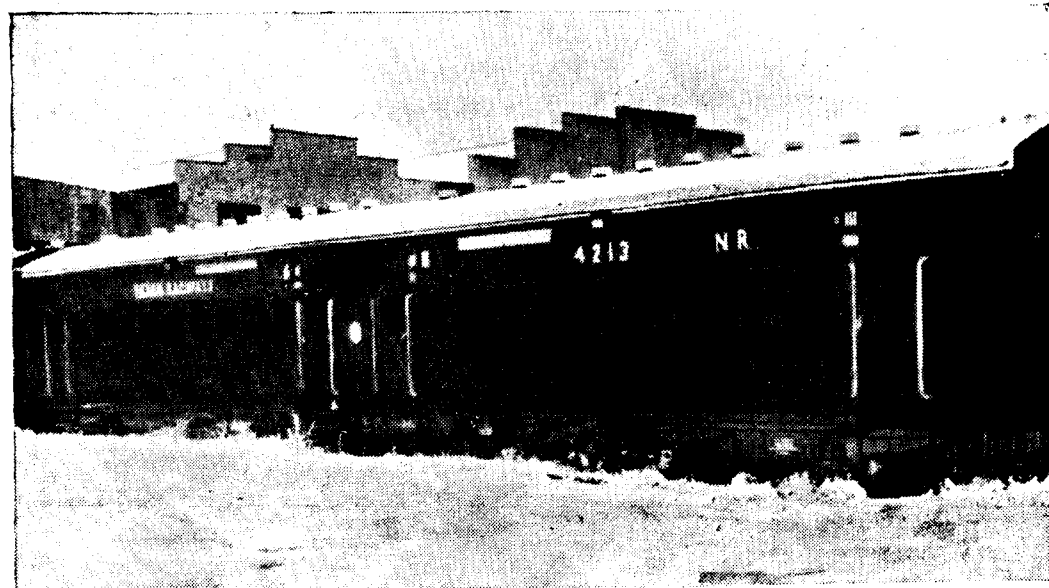
A railway passenger coach, unlike other transport vehicles, forms a real living room for the passengers. Long distances are covered and long periods of time are spent in it. Different conditions of climate, land, views, and people are covered often in one journey. Sustained high speeds of movement are obtained. Large groups of persons travel together on each train bound for destinations, the same, or at least on the same route. A comparatively good amount of luggage is carried with them. Hence it becomes necessary that the coach offers, besides riding safety and comfort, an adequate accommodation for them and their luggage, and room to sit, stretch themselves or sleep when necessary and otherwise make them happy during

their journey. Sufficient of their baggage should be within their reach but not obstructing them. Lavatory facilities are needed. Bathing is necessary for hot climates and Indian habits. Food is needed on the journey. The passenger wants to lounge or read or comfortably watch the passing scenery which he can enjoy unlike from an aeroplane. He wishes to play a game of cards and perhaps enjoy an argument with co-passengers which is particularly interesting between strangers as they are and probably will be so again, at the end of the journey. He desires to overcome the rigours of extreme weathers, sometimes changing from hot to cold on the same journey. Railways have to give him the opportunity fully to enjoy his journey if they are to retain his custom and discharge their obligations in this respect. On Railways passenger revenues do not make for much profit and on some perhaps cause some loss. In India, passenger traffic offers a definite profit to the Railways and can therefore claim more attention.

How are these needs met? They are met by different classes and types of carriages; services are offered on trains such as buffet and dining cars and luggage cars. Day cars, sleeping cars and air conditioned coaches are provided. Single and double berth sleepers, parlour cars, observation compartments, dome compartments and similar special conveniences are made available. Radio music is offered in lounge compartments; telephones are



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provided which can be connected at halts to enable passengers to speak from the trains with others in their houses or offices. There are lavatories and wash places with excellent equipment and hot and cold water laid on.

Interiors of passenger carriages are fitted up in the best manner to give cleanliness, variety, tasteful decoration and utility. Panelling of delightful colours and designs are used with materials which are developing almost day to day. Surfaces veneered with decorative timbers, plastic laminates, clean streamlined finishes, bright aluminium mouldings, murals and mirrors adorn the sides and partitions. Reading and other lights are fitted to match harmoniously the rest of the interior. General lighting of the fluorescent type give a high level of cool illumination and heighten the beauty

of the interior. Seats and backs in timber, shaped after careful research, give support where needed and relaxation, and avoid fatigue even after many hours. Plush upholstery in matching designs and spring cushions for seats and backs make one pay for higher classes of accommodation gladly. Foam rubber cushions are brought into use to make one's sleep fully restful and even a pickup. Floors are of layers of cork and timber with linoleum or carpets on them and are noiseless and kind and soft to the foot. Wide windows give full view and glareproof glasses shut out needless noise and dust without blocking the interesting vision of the flying countryside.

Services are offered on the train in better classes by attendants. Trains are vestibuled for movement between carriages so that drinks and snacks

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| ★ Wood-working machinery — Ducuroir, Belgium | ★ Electro Thermal Electro Chemical Electro Metallurgical Plants |
| ★ Combined Punching, Shearing and Cropping Machine—Dutrannoit, Belgium | |
| ★ Air Compressors—Irmer & Elze, Germany | |

Demag,
Duisburg

are made available to passengers at their seats. Passengers are able to go into restaurant cars or buffet cars or have a few minutes in the parlour or observation cars. Washing and shaving facilities are offered.

Full trains are airconditioned so that all conveniences described are enjoyed in controlled weather conditions and entirely independent of the outside climate, while in other cases air-conditioned comfort is available in specific air-conditioned coaches.

These describe what are possible and are being provided for the railway passenger in advanced countries. Not all of them are now seen on the Indian Railways. Their present problem is different. Demand for passenger room continues to be high and over-crowding is met everywhere. In the next Five Year Plan more demand is expected and every endeavour has to be made to meet it in full. Capacity for coach building in the country is limited and inadequate. Imports demanding foreign currency need to be carefully limited to essential requirements while indigenous industry should be developed and also made to go as far as possible. This is also why the Integral Coach Factory, originally intended to manufacture shells and hand them to railway Workshops to complete, now plan to develop capacity to furnish them themselves and to do so as rapidly as can be done. On the one hand a maximum number of third-class coaches are to be planned to give additional capacity. These will be to the best designs such as developed in the integ-

gral shells as produced in this factory and would include many amenities. On the other, Railways will also bring into service, trains with vestibule inter-connections and on-the-run dining and buffet and other services. Fully air-conditioned trains with chair cars and sleepers will run on trunk routes and at high overall speeds. These are forerunners of what the future is to bring. Interior will utilise press-boards and plywoods with decorative finishes, stoved enamel colours, aluminium mouldings, stainless steel and light alloy fittings, fluorescent lights and other finishes. Ample space, good lighting and fannage, sufficient water supply and other amenities are assured and improved upon over existing levels. And as the Five Year Plans of the Government bring higher standards of living to the people and demand by them of further improvements in the conditions of travel, the Railways will have anticipated their needs and be ready to meet them fully.

Towards this objective, the Integral Coach Factory will be aimed, so that it can design and manufacture completely integral carriages of various types as may be required, while for the present it is manufacturing only third-class coaches and is developing its peak capacity at a very fast rate. The furnishing unit now planned should be able to meet the variety of demands as they would arise, while it would no doubt ensure full capacity for the production of adequate numbers and plan its construction and development as rapidly as possible.

Air Conditioning of Administrative Office

BY

G. N. UPADHYAY

District Electrical Engineer

Introduction :

The local climatic conditions, very sultry and humid practically allround the year, have made the Air Conditioning of the Administrative Office a matter of necessity, with the consequential advantage of working comfort, greater efficiency and incentive for the staff working inside the building.

The process of Air Conditioning is a comprehensive one by which simultaneous control of temperature, humidity, cleanliness, motion and distribution etc., of the atmosphere within any premises can be achieved. Broadly speaking, air conditioning can be classified into three classes :—

- (1) Summer Air Conditioning system.
- (2) Winter Air Conditioning system.
- (3) Year round Air Conditioning system.

Though the Air Conditioning of the Administrative Office is designed for lower inside conditions of temperature and humidity than outside, in view of the local climatic conditions, which do not necessitate winter heating, it is practically year-round air conditioning system.

Air Conditioning—General :

The desired controlled conditions of air temperature and humidity will be much different from the varying conditions prevailing outside. Besides, fac-

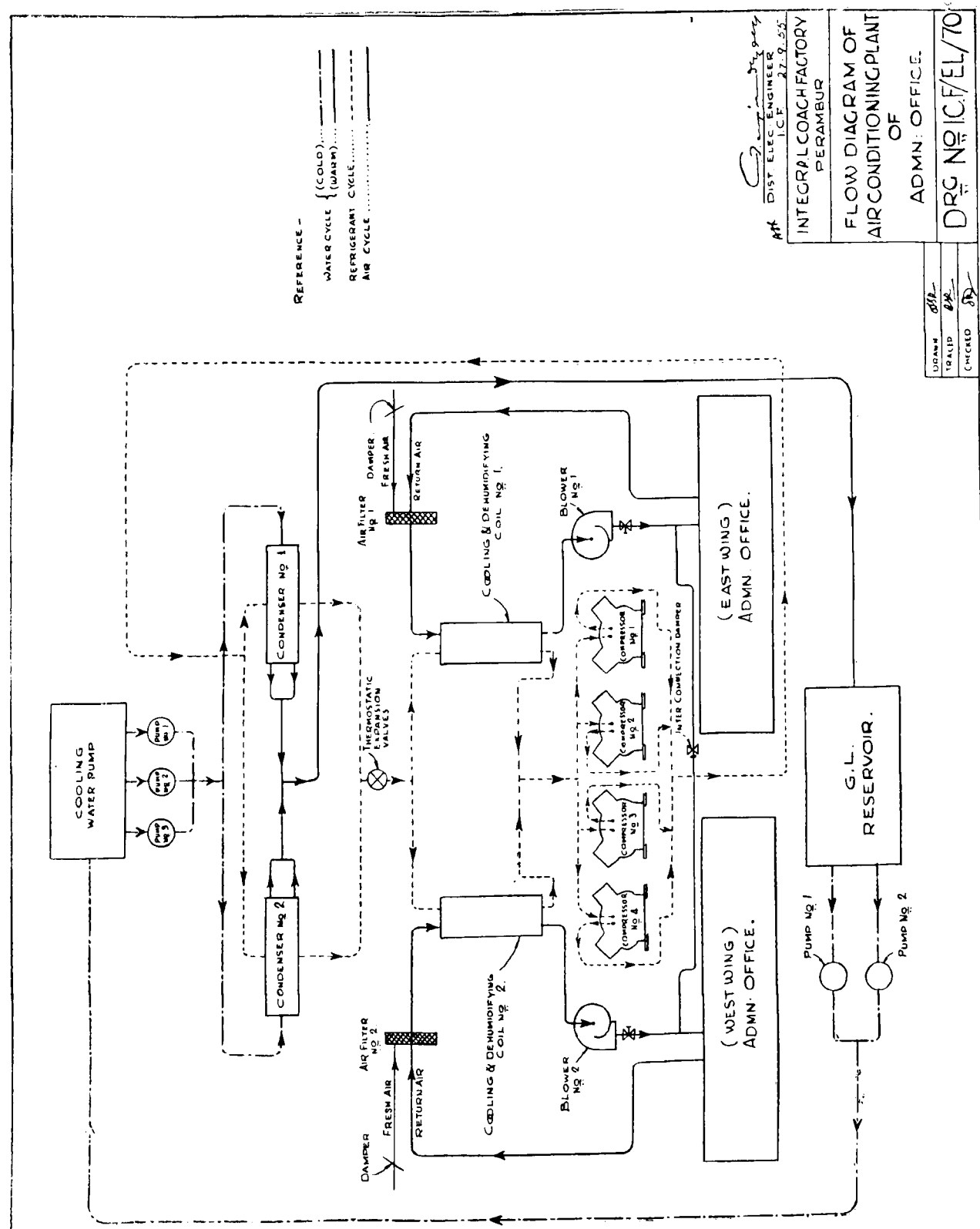
tors like radiation of sun light on the walls and ceilings of buildings, internal sources of heat and water vapour, lights and fans have to be taken into consideration in the design of the Air Conditioning plant to enable maintenance of the desired steady conditions of comfort inside, irrespective of the varying extraneous factors.

The Air Conditioning process essentially consists of three cycles of operations and is similar to the principle of working of any common refrigerator.

- (1) Air Cycle.
- (2) Refrigerant cycle.
- (3) Condenser cycle.

Air Cycle : The air cycle consists in passing the return air through a bank of filters, cooling and dehumidifying the air, discharging this air under pressure through a system of ducts into the air conditioned premises. This closed cycle is repeated again and again. Depending on the method of cooling the system can be either “direct expansion type” “or chiller water” type. In the former, direct expansion of the refrigerant medium at low pressure in the cooling coils cools and dehumidifies the air passing over the cooling coil. In the “chilled water” process, the above cooling effect is transmitted to the air through an intermediate chilled water medium.

In all cases, certain regulated amount of fresh air is added to air cycle which maintains slightly higher pressure in the conditioned space than outside,



Schematic flow Diagram (See page 33)

thereby avoiding the possibility of infiltration of unconditioned air into the building. On the other hand, leakage of conditioned air is prevented by providing air tight windows and doors.

Cool air, being unable to hold any moisture above saturation quantity, rejects the excess moisture by condensation and is to that extent dehumidified. Prior to cooling of air, it is passed through suitable fibrous or fine metallic mesh coated with dust catching oil. It may be mentioned here that "electronic precipitators" are the latest devices for the purpose.

The change of fresh air is so regulated that there would be two fresh air changes every hour.

Refrigerant cycle :—Low pressure refrigerant vapour (freon 12 gas in this instance) is drawn by the compressor, is compressed at high temperature and pressure into refrigerant condenser cooled by circulating water which extracts the heat of the refrigerant that consequentially liquefies.

This liquid refrigerant passing through an expansion valve evaporates, picking up its latent heat from the air blown over cooling coils. These vapours are drawn through compressors and thus this cycle is repeated.

Condenser Cycle :—This comprises of a cooling medium (water in the present case) passing through the condenser to cool and liquefy high pressure refrigerant. The cooling water which gets warm in the process, can be circulated after re-cooling which is usually done in a cooling tower or pond.

Factors of Design of the Air-Conditioning Plant

Tonnage :—The capacity of any air-conditioning or chilling plant is mea-

sured in "tons" of refrigeration. A ton of refrigeration represents the average cooling effect by melting one ton of ice (Short ton of 2,000 lbs.) at 32°F over 24 hours which in terms of thermal units works out to 12,000 BTU/hour.

The capacity of the air conditioning plant is assessed by considering the heat gains from all causes :—

(1) Flow of heat due to difference of inside and outside temperature through walls, ceilings, windows, doors, etc.

(2) Solar heat gain—due to infiltration of solar heat through exposed roof and side walls.

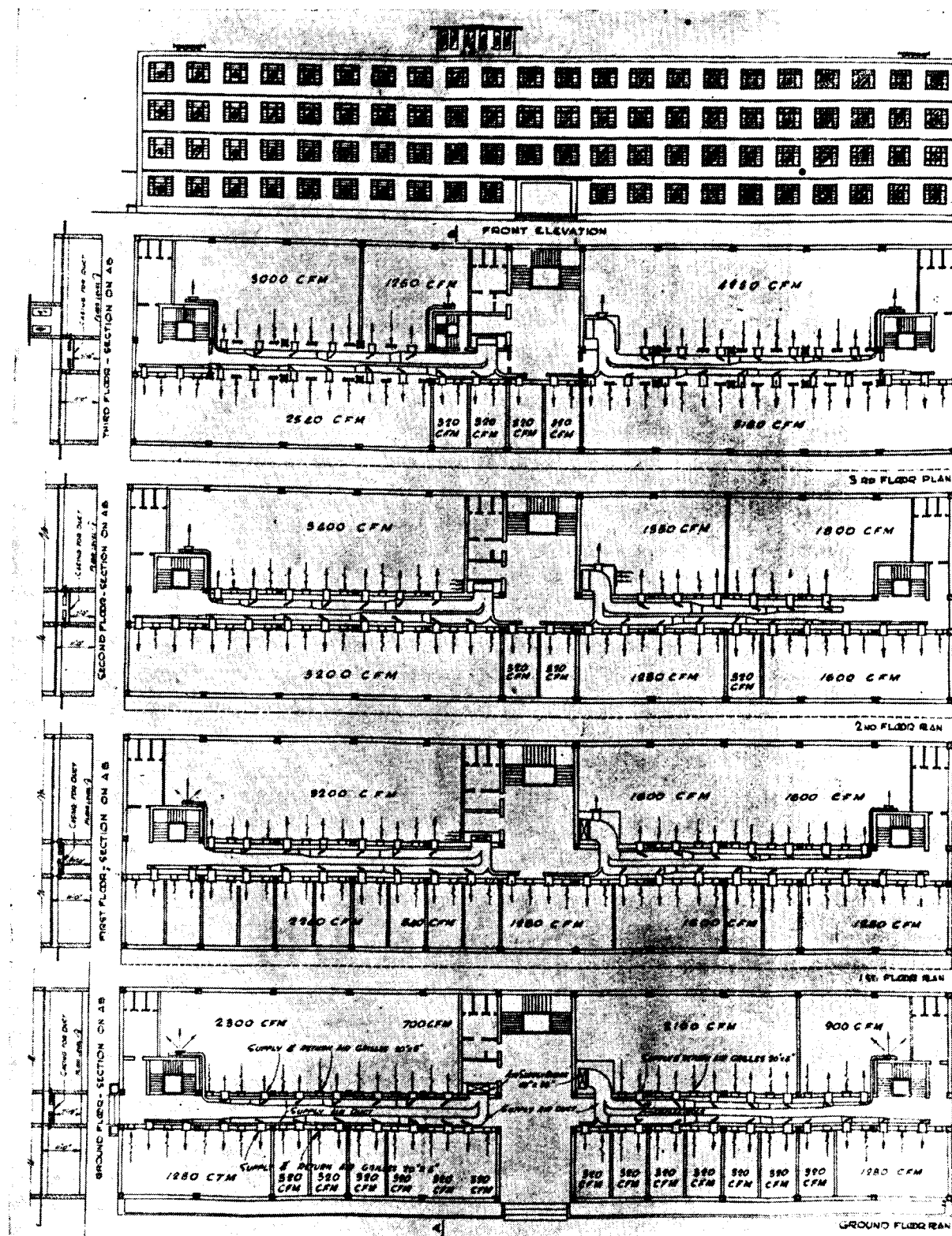
(3) Infiltration and outside air heat gain due to change of fresh humid air into the air cycle.

(4) Occupancy load due to breathing and activities of the occupants inside the conditioned space.

(5) Other internal heat loads like electric lights, working of fans, etc.

After detailed computations of the overall heat gains, for all causes, the tonnage, the number and size of air conditioning units are then determined and the quantity of air that should travel through cooling coils, temperature, humidity and velocity of air travel are decided. The layout of duct work for supply and return air with reference to the building is planned up. Based on the desired quantity and velocity of air, the size of blower, distribution of grills, etc., are worked out.

From the heat load calculations, the weight of refrigerant required per minute and its optimum temperature in travel through cooling coils is determined. The refrigerant cycle



Lay-out of air-conditioning ducts in the Administrative Office (See page 34)

being a closed one, the same weight of refrigerant passes through cooling coils, compressor and condenser. The volume of gas corresponding to this weight of refrigerant at a given suction temperature and pressure being determined, the size of compressor unit or units, refrigerant discharge pipes, condenser, expansion valve, etc., are decided upon, keeping in mind a stream-line flow of the refrigerant.

Apart from the main equipment dealt with above, accessories include (1) thermostats, for automatic control of the temperature of inside conditioned space by cutting on or off the sections of the plant as warranted in stages, (2) automatic electrically operated solenoid valves and thermostatic expansion valves for controlling the flow of refrigerant to the cooling coils and (3) all safety controls for compressor against unduly high or low pressures, lubrication, failure, etc.

Air Conditioning Plant of I.C.F. Administrative Office

The air conditioning plant of the Administrative office is designed to cater all the four floors of the building except the corridors, staircases and entrance foyers. The total air conditioned area of 45,135 sq. ft. with an air space of 4,73,920 cu. ft. is maintained at a temperature of 76°F—80°F (dry bulb)—60-65% relative humidity with two fresh air changes per hour and a maximum air velocity of 30 feet per minute at head level in rooms.

A separate 11 KV/400 V. electric substation with a step-down capacity of 300 KVA caters the power requirements of the Air Conditioning plant and Administrative Office.

The air conditioning plant comprises of the following main equipments :—

4 Nos. 65 ton reciprocating type compressors designed for parallel operation, coupled by V-belt drive to 75 H.P. motors, complete with shut off valves, unloader, high-low pressure stat, etc.

2 Nos. 100 ton shell and tube condensers with liquid line valve, relief valves, etc.

6 Nos. direct expansion finned type evaporators.

2 Nos. 15 H.P. motor driven 725 R.P.M. air blower fans, each of capacity 29,100 c.f.m.

3 Nos. 12.5 H.P. centrifugal water pumpset each of capacity 300 G.P.M. at 70 feet and air filters, valves, indicators, temperature and pressure controls, duct-work, etc.

The following is a brief description of the plant and its performance.

Cooling Section

Air is actually filtered, cooled, dehumidified and circulated in two sections, one for west wing and the other for east wing. Each section essentially consists of :

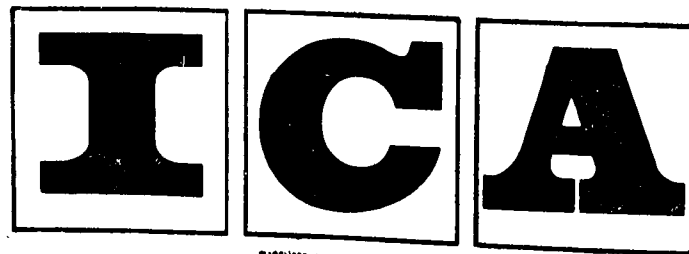
1 double inlet centrifugal fan, 36 inches wheel diameter down discharge type, driven by 15 H.P. drip-proof type squirrel cage induction motor,

3 Larkin 6 row deep evaporator coils,

20 heavy duty cleanable type air filters,

1 manual by-pass damper,

1 manual supply air outlet damper.



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The blower fans draw air through the finned type heat-transfer cooling coils and deliver it to the duct system.

The cooling coil is maintained at about 45°F by the evaporation of freon inside copper tubes, the quantity of freon being thermostatically regulated by an expansion valve. The hot and humid air, coming in contact with and finding passage through the evaporator gets cooled and loses moisture due to condensation. The condensed moisture is drained off.

Compressor Section

This section can be termed as the heart of the plant. The three 65 ton compressors, operating in parallel draw freon from the evaporator at 70 lbs. sq. in. pressure and compress the same to 213 lbs./sq. inch and 105°F, in which condition it is delivered into the condenser. Each compressor is equipped with high-low pressure switch for suction and delivery side, by-pass relief valve and lubrication failure protection, etc.

The electric unloader system of each unit automatically unloads the compressor successively in steps of 50% as warranted by load conditions while the time delay relay helps to start up the compressor on no load.

Condenser Section

Two numbers 100 ton shell and tube condensers are provided with circulating water by two 12.5 H.P. pump-sets of 300 G.P.M. at 70 feet head. During circulation through the condenser the circulating water becomes warmer by 8 to 10°F due to heat abstraction from condensing freon. The condensor is provided with liquid inlet and outlet valves, relief valve, purge-cum-high pressure valve, etc.

The requirement of 36,000 gallons of cooling water per hour is drawn from the ground level reservoir in front of the Administrative Office through a water sump with a storage capacity of one hour's requirement. This water, after circulation to condenser, is let back to the ground level reservoir. It is contemplated to convert the water pond to a cooling tower with spray nozzles so that the warm water may be re-circulated after re-cooling.

(The schematic flow diagram explains the cyclic performance of the plant.)

Duct Work and Insulation

The cold air coming through the evaporator coils, is discharged by blowers at a velocity of 1,800 ft. per minute into sheet metal air ducts enclosed concentrically in bigger R.C. ducts up to the corridor, one on the west and the other east of the entrance hall. The cold air ducts then rise vertically and branch off in each floor in the corridors. The subsidiary ducts connect the adjustable inlet grills on the walls of different rooms above door level. The return air escapes through another set of non-adjustable grills into the annular space outside the supply ducts over false ceiling and then through the space between air raisers and masonry of R.C. ducts, return to the return air chamber of the Plant Room. The ducting for each wing can be independently controlled or inter-connected. The quantity of flow into each wing, section or room can be regulated by adjustments of flap controls and grills respectively. The whole metallic duct-work is suspended above false ceiling of celetox tiles. The exposed roof of the top-most floor is insulated from solar heat absorption into conditioned space.

(Drawing on a previous page shows the layout of air conditioning ducts in the Administrative Office).

Controls

The temperature and humidity of air are regulated by a number of automatic thermostatic controls, solenoid valves, programme switches and relays.

The thermostatic expansion valves regulate refrigerant flow at an adjustable range of settings depending on the load conditions. The thermostats, i.e. electric switches actuated by temperature conditions, control programme switches which in turn operate solenoid valves, depending on whether the cooling effect remains satisfactory.

The thermostats also bring back automatically the idle sections of the plant into operation when air temperature tends to rise due to restoration of heat load. The recycling relays control the respective starting positions during failure of power supply, ensuring that all motors do not start simultaneously.

Capital Cost and Execution

The air conditioning of the Administrative Office is estimated to cost Rs. 3.83 lakhs. The break-up figures

of the cost among important items are as under :—

	RS. LAKHS
(1) Three 65 ton compressor units. Two 100 ton condensers, two air handling units, refrigerant piping, controls, etc.	1.82
(2) Stand-by plant (1 compressor, 1 pumpset and 1 blower motor)	0.35
(3) Duct work including false ceiling	0.61
(4) Circulating water system with two pumpsets, water piping, etc.	0.16
(5) Insulation of exposed roof	0.38
(6) Spares and Tools	0.09
(7) Other sundry works	0.09
Carriage of materials	3.50
Contingencies	0.16
Total	0.17
	3.83

The supply, erection and setting to work of the installation were done by Messrs. Blue Star Engineering Co., on contract basis. The plant was commissioned in August 1955.

Materials that go to make the Integral Coach

BY

C. G. DEVAYA

Production Engineer

Standardisation of materials is a pre-requisite of effective mass production. The main factors that weigh in the specification of quality are dependability in operation, durability of the product in actual use and suitability for economical production. While the best materials should be purchased, insisting on the highest grades for all products defeats the purpose of economical production. In selecting the materials required for the coach, the above characteristics have been duly taken into consideration and, more important still, the availability of the materials by manufacture in the country, if not just at present, at least in the near future under the various projects in the Second Five Year Plan has been carefully examined.

While the majority of the items in the first procurement for 135 coaches were imported, parallel efforts were made to locate and encourage indigenous manufacturing capacity of the imported items. Press advertisements were issued explaining our requirements and specifications have been furnished to the likely manufacturers and imported samples shown to them to give them the necessary guidance in manufacture ; where manufacturers showed definite promise of good workmanship, educational orders for smaller quantities were placed to assess their capacity. The manufactured pro-

ducts were subjected to close scrutiny by physical and chemical tests apart from other tests for workmanship and when finally suppliers were satisfied that they could do the job, orders were placed on them for the bulk supplies. Such action to develop manufacturing capacity has yielded excellent results and we have been able to obtain in the country several items of materials required for the Coach which were in the first instance imported. There is little doubt that advantages gained by the ability of the factory to turn out Coaches required in the country can be real only when all the raw materials and other components that go to make the coach are obtainable in the country.

The coaches are of all-steel welded design and therefore the bulk of the material used in the construction is steel. The design of the shell and bogies provides for the utilisation of pressed members, which are manufactured out of steel plates or sheets. Thin sheets are used from thickness 1/16" to 3/32" and the plate thicknesses range from 1/8" to 1 3/4". Flats are used to a considerable extent in order to simplify manufacture. The other steel sections consist of rounds, squares, hexagonal bars and rolled sections. The other rolled sections used are very few in number, only about 1/2 ton being used against the total of 20.71

tons of steel used. A break-down of the items of steel used as raw material is furnished below :—

	Quantity per Coach Tons
1. Flats ...	3.08
2. Squares ...	0.16
3. Rounds ...	0.95
4. Hex. Bars ...	0.11
5. Flats for forgings ...	0.23
6. Squares for forgings ...	0.31
7. Rounds for forgings ...	0.90
8. Thin Sheets (Armco) ...	7.10
9. M.S. Plates ...	7.33
10. Other rolled sections ...	0.55
Total ...	20.72

The manufacturing technique adopted in the construction of the coach calls for certain special properties in the steel used. Due to the fact that most of the parts are manufactured by pressing, the steel is required to have definite deep drawing qualities. The assembly of the details is done by welding—arc welding, spot welding, automatic seam welding and submerged arc welding processes being utilised. Therefore the steel is required to be of weldable quality and a guarantee to this effect is insisted upon when purchasing the steel. These qualities of deep drawing and weldability are not obtained in the commercial steels such as are normally produced in the country at present to IRS or BS specifications. It is to be noted that even for the commercial steels, due to the great demand, import has to be resorted to and the import of the special steels is therefore inescapable. For our steel requirements, German DIN Specifications have been adopted and such specifications have been supplied to the Iron and Steel Ministry with the

request that, in planning the installation of the Government Steel Plants, necessary action may be taken to produce the steel to specifications as required by us. Confirmation has already been received that the steel sheets and plates required by us will be produced at Rourkela and confirmation regarding the production of our other steel requirements is awaited from the Iron & Steel Ministry.

The specifications for the thin steel sheets below 1/8" which are used for the roof sheets, exterior pannels, etc., are reproduced below :—

St VIII 23t DIN No. 1623 : Thin Sheets below 1/8" hot rolled.
Special deep draw sheets to meet deep draw specification DIN 50101.

Ultimate tensile strength : 20-26 tons/sq. in. Elongation, min : for sheet thickness of : approx.

1/32"—1/16"	1/16"—5/64"
= 26%	= 28.5%
5/64"—1/8"	
= 30%	

Refer DIN 50114.

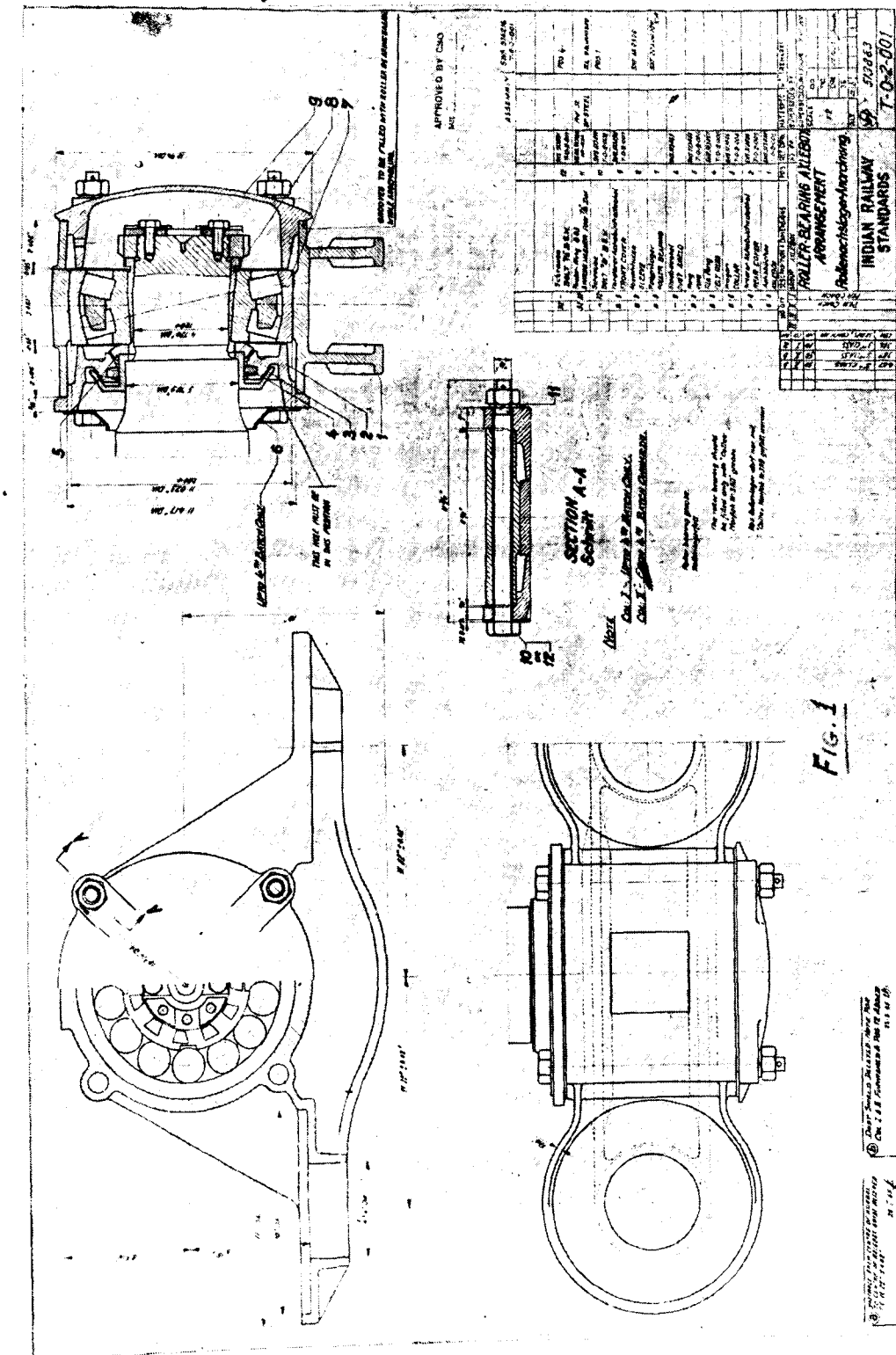
Single and double bending tests : according DIN 1623 and DIN 1605.

Surface to be without blemishes, double pickled and oiled.

Dimensions and weights according to DIN 1541.

Supplies to comprise of *Siemens Martin Steel* or electro steel. Weldability to be guaranteed.

Against this we are also accepting the American produced Armco Steel sheets which have a copper content of .2 to .3%. Copper to this extent in the



The Axle Box Housing (See next page)

steel serves the purpose of rendering the steel anti-corrosive, without affecting the deep drawing quality. The Sulphur and Phosphorous content is strictly controlled to within .07% to give the necessary deep drawing qualities.

High tensile steel of tensile strength 44 to 54 tons/sq. in. are used for the Draft Key, Draw bar and for certain parts of the Bolster anchoring arrangement and the side bearers. Such steel conforms to DIN 70-11. Steel to DIN 60-11 with a tensile strength of 38 to 44 tons/sq. in. is used for the Draw gear and screw coupling. The brake key is manufactured from heat treating Chrome Molybdenum steel (42CrMo4) with a tensile strength of 57 tons/sq. in.

The wheels and axles used on the coach are manufactured from materials to the normal IR Specification No. R 16-54, R 19-53 and R 15-51. The design of the Wheels and Axles is, however, not the same as the IRS Standard and as the existing capacity available with Tatas is fully utilised by the demand of the Railways, Wheels and Axles are being imported at present. It is anticipated that when the Durgapur Steel Plant comes into operation, we shall be able to obtain our requirements of the Wheels and Axles in the country.

Steel Castings to IRS M2 Grade I are used in the coach for the axle box housing, the centre pivots upper and lower and the draft casting. Although the steel castings are produced in the country, the capacity is limited and we are obliged to import our requirements of steel castings, which are supplied mostly by Switzerland, Germany, Belgium or Italy. Of these castings, except the axle box housing, the others are easy of manufacture and within the capacity of the foundries in India.

The axle box housing (see Fig. 1) is however more intricate in design and being highly stressed in certain portions, and calls for workmanship of the highest standards. Even the slightest porosity cannot be tolerated in the castings. Educational orders have been placed in the country for these castings and at least two foundries have shown some promise of being nearly capable of producing the axle box housing and this matter is being pursued to ensure that we may obtain our requirements in the country.

A new Steel Foundry is proposed to be installed at Chittaranjan, and when this materialises, it will greatly help the industries to obtain the Steel castings of the required quality.

Silico Manganese Steel, oil and water hardening, has been specified for the manufacture of the helical and laminated springs respectively. The helical springs are of oil hardening quality and have a square cross section obtained from an initial trepezoidal section and alternatively provision has also been made for the use of springs with round cross-section. The laminated Springs (see Fig. 2) are made from Silico Manganese Spring Steel of water hardening quality and the spring leaves have been designed with a special section for permanent lubrication. The section corresponds approximately to a horizontal I section and thereby when the plates are assembled a cavity all along the length is obtained between the spring plates for lubrication (graphitic). These cavities are connected through holes drilled in the centre and the lubrication at intervals can be done through a hole in the spring buckle. This eliminates the working friction which is excessive in a spring with rectangular section.

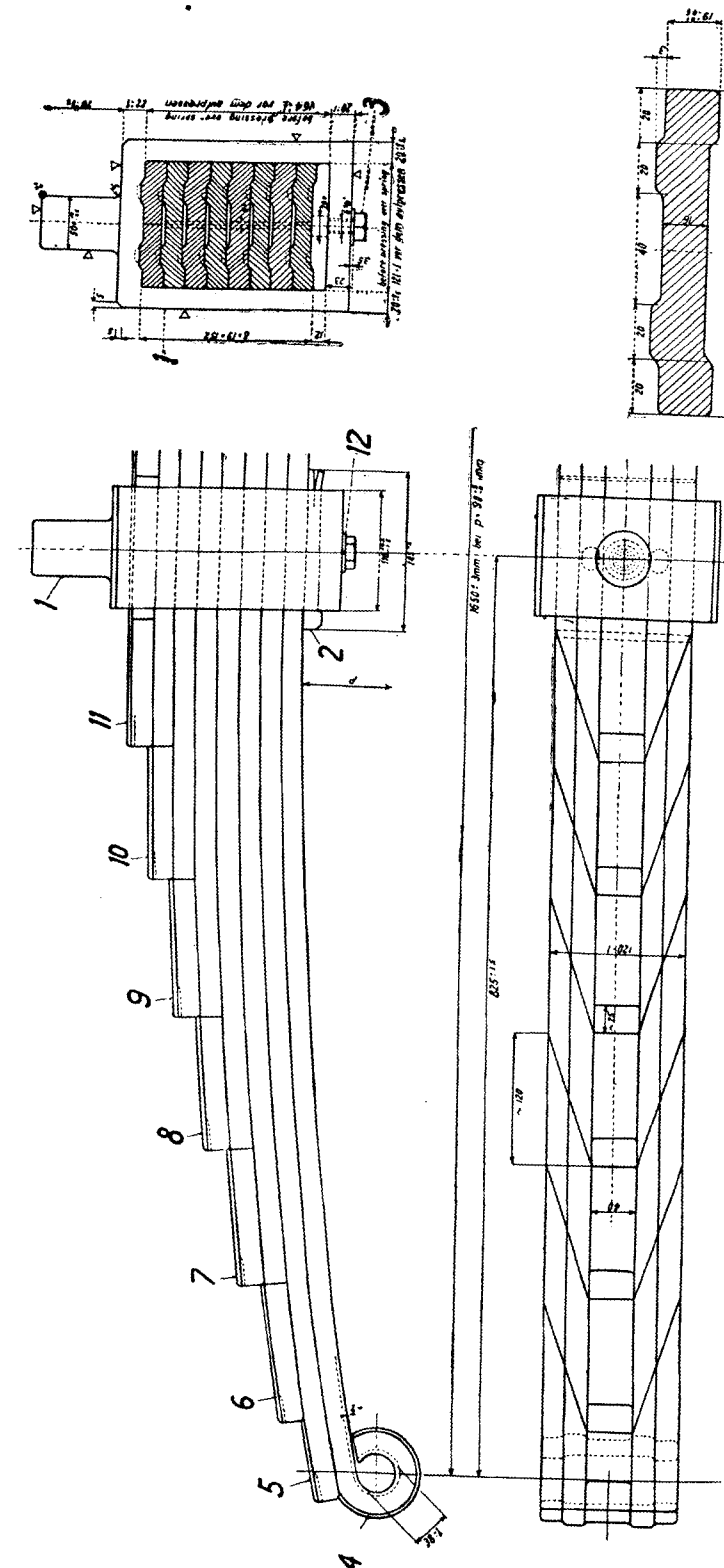


Fig. 2

The laminated springs (See previous page)

plates and also eliminates corrosion due to trapped moisture which would lead to fracture of the plates. The plates are prestressed and it is claimed by Bochumer Verein who have patented this section that springs made from such prestressed sections can be loaded to such an extent without its showing any permanent deformation and that the stresses calculated in accordance with the usually known bending formula lie much higher than the yield point or even the tensile strength of steel. The net result is that a softer cushioning is obtained in travel due to the greater working capacity of the spring and maintenance costs are also reduced due to the greater life expectation. Here again the indigenous manufacture of springs will depend upon the Government Steel Plants planning to produce the special spring steel sections required by us.

S.K.F. Roller Bearings (*See Fig. 1*) are being used for the axle journals. These are spherical bearings, which are self-aligning and contribute to the better riding qualities of the coach and also in reducing maintenance costs. For the immediate future there does not appear to be much prospect for such bearings being manufactured in India. Availability by import is however quite easy at present.

Aluminium extrusions are being used for the manufacture of the various details for the window shutters and window guides. These extrusions, which were imported in the first instance, are now manufactured in the country. The process of extruding consists of heating circular aluminium alloy billets to a temperature of about 980° F. by electrical induction and extruding them through suitable dies by means of a press of over 1000 tons capacity. The extrusions are heat treated

to give the required physical properties and are extremely useful as fabricating materials for coach components. Considerable machining and assembly work is eliminated and it is possible to produce a neat job by the use of these extrusions. The alloy has a tensile strength of 20 to 26 tons with an elongation of 10 to 20%. Very close tolerances are specified in dimensions to ensure ease in assembly of the manufactured details. The permissible twist in a section is .006" per running foot and the permissible angular deviation for certain specific profiles is ½°. There is no doubt that these aluminium extrusions will have a great future and contribute to the growth of industry in the country.

Aluminium Alloy Castings are used for the front and rear covers of the Axle Box and also for the lower bearing housing of the door. These are gravity die cast and heat treated to give an ultimate tensile strength of about 17 tons per square inch. The castings are produced in the country by the several non-ferrous foundries. Aluminium sheets are used for the louvre windows.

Several rubber profiles are used particularly for the windows and doors, for sealing purposes and as buffers. These are required to be suitable for tropical use and shore hardnesses are specified for each profile. India is the home of rubber and it is therefore not surprising that these rubber items to the required specifications are being purchased in the country.

The standard IRS paints are used for the exterior of the coach, but for the interior special bituminous emulsion paints are specified to ensure protection against corrosion. As all the parts of the Integral Coach are

stress bearing, prevention against corrosion is a very important factor.

Of the several other miscellaneous items which are required for the coach, the stainless steel screws are presenting some difficulty, as these are being produced in the country by the wasteful method of machining from stainless steel bars, whereas these can be imported at a much lesser cost. The imported screws are manufactured by cold forming the heads and rolling the threads and thereby wastage is eliminated. It is hoped that, with the growing demand by the rail coach, automobile and other industries, the production of stainless steel screws with cold formed heads and rolled threads will be taken up in the country. The stainless screws are used in the assembly of the various window details

and they keep free from rusting. All bolts and nuts and other parts likely to rust are protected by galvanising.

Galvanised malleable iron castings are used for the roof tank filler flanges and cover. The vacuum brake equipment and buffers are of the IRS standard.

In the next few years, when Rourkela, Bhilai and Durgapur Steel Plants go into operation and other ancillary industries gain the necessary impetus, it is hoped that all the items that are required for the coach will be available indigenously. The only one item, which may present a problem is the Axle Box Roller Bearing, but, with the modernising of rail transport, it is hoped that these will be adopted universally and produced in India.

Store It Well .

BY

A. V. SUGAVANESWARAN

D.C.O.S. (Purchase)

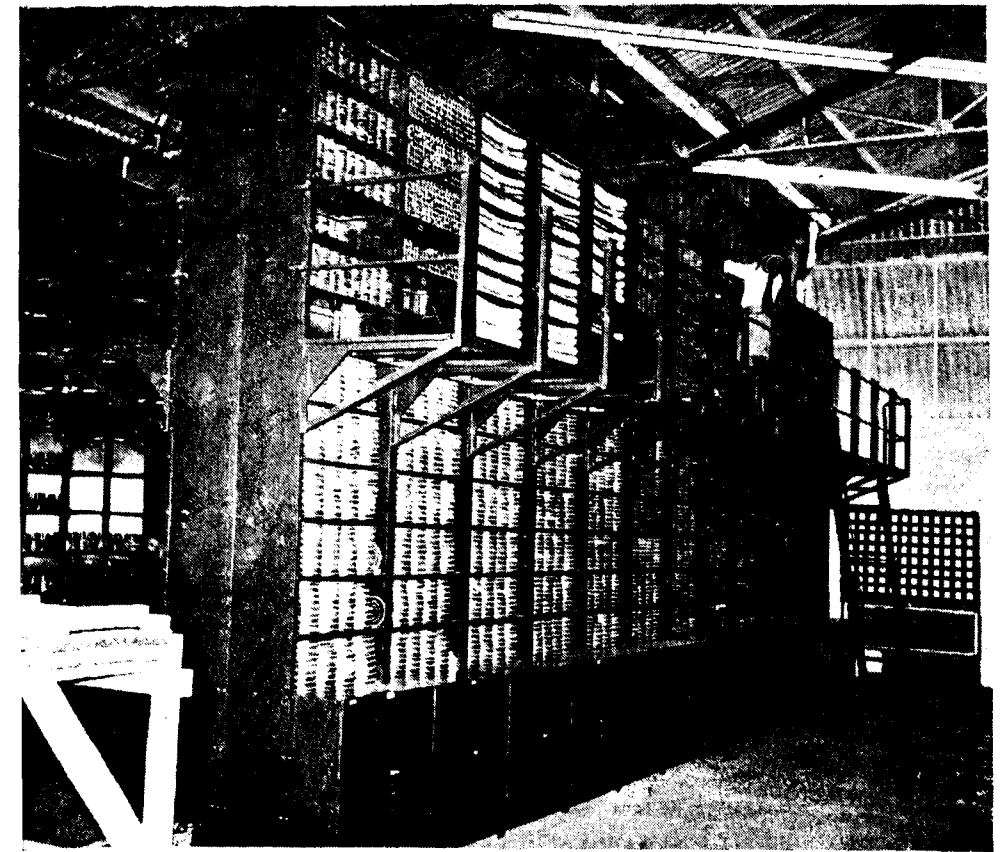
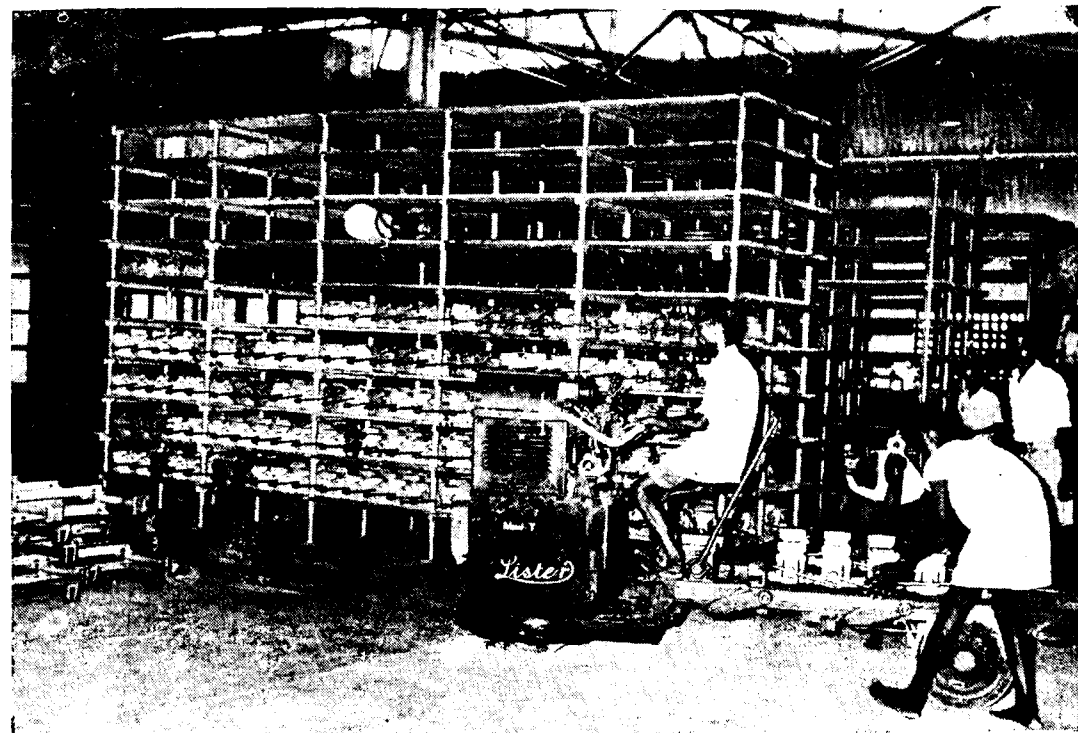
How many of us have bestowed thought on that cute little thing, the tube of tooth-paste ? Even the half-sleepy man is able to handle it easily. The tube of tooth-paste is an ideal container enabling one to take the contents out of it readily as much as one wants.

It is a delight to handle a thing if it is in its proper place. It, however, requires considerable forethought and attention to devise the proper way to keep each item as the same method would definitely not be suitable for all materials. Even the few odd items that

are required daily in a household require considerable attention for proper storage. It can well be imagined how much attention is necessary to plan the storage of thousands of items of stores required to be kept in stock for use in a big workshop like the Integral Coach Factory.

Should we at all have racks in the Stores Depot ? Hundreds and thousands of items of tools and other small fittings, if spread on the floor, will require considerable covered accommodation. When storing small items on the ground it is not possible to use

..... is confronted by the giant 15' high steel racks



"It is a delight to handle a thing if it is in its proper place"—Double racks using pipes fabricated in I.C.F.

the height of the godown. On the other hand if there are suitably designed racks we can keep a much larger number of items in a given area than without the racks. Proper utilisation of covered accommodation is, then, the main justification for providing racks in Stores Depots. When materials are stacked properly in racks in any given order, it is much easier to locate any one item of stores. Further, racks designed with an eye to their appearance will add to the general appearance of the godown and take away the drabness which is otherwise likely in a Stores Depot.

The most important consideration in the design of racks is the facility

for handling the particular material or materials that are proposed to be housed in the racks. There is no point, for example, in providing a very high rack for heavy materials as it will be considerably difficult to lift the heavy materials over a great height on receipt and then to bring them down from their bins at the time of issue. Wherever it is necessary to adopt certain precautions in housing particular items of stores to prevent deterioration or damage during storage, such precautions should be borne in mind while designing racks for these items. It is desirable to keep rubber items in a cool dark place ; while designing racks for such items it is

necessary to provide closed racks to keep the bins dark. The rack should be strong enough to bear the weight of the material for which it is intended. It is also necessary to provide lockers for items like soap, towels, pencils, etc., for purposes of security.

"First come, first issue" is a good maxim which every Storekeeper should normally observe; according to this, materials received first should be issued prior to materials received subsequently. What happens, however, in quite a few instances is that subsequent receipts are piled over earlier receipts with the result that at the time of issue the materials received last which are on top are issued first. In some instances a proper design of racking arrangement would enable this maxim to be observed. In the case of mild steel plates and sheets, vertical stacking between supports enables earlier receipt to be issued first.

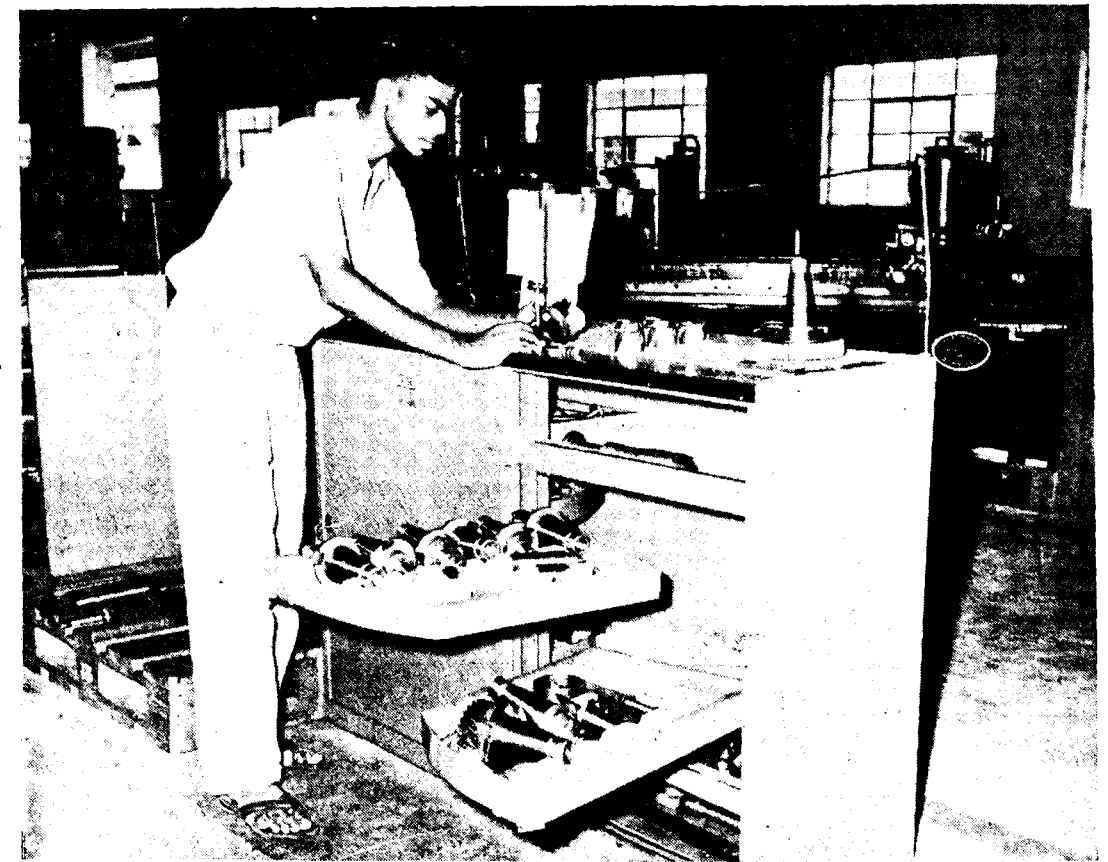
With the above general remarks on the need for storage racks, their design and utility, I shall take the reader to the Stores Depot in the Integral Coach Factory and give him some brief idea of how we have dealt with this subject here.

As one enters the G shop one is confronted by the giant 15' high steel racks. These have been erected here in lengths of 18'. But each rack is actually 3' long and 6 such racks have been erected in each row. These are counterfront double-sided steel racks each 15'3" high by 18" deep above counter each side. The counter top portion is 30" deep each side and 3'3" high. Each rack of 3' is provided with 16 shelves including top and bottom at 12" apart. The counter top portion on either side has been fitted with double leaf doors and provided with locks. In order to reach

the upper bins of such a high rack it has been necessary to provide an open type steel gallery fixed at a height of 9'3" above floor level; the gallery is 3' wide and is fitted with a hand-railing 3' high; ladders are provided to reach the gallery. These racks enable a large number of items to be kept in a given area. Where a small quantity of a small item such as taps, dies, etc., are to be kept, these bins can be further subdivided into pigeon holes for keeping them. Dominating the entire G shop, these racks are particularly useful for tools, machinery, spares, etc.

Other types of racks for various materials have been manufactured in the I.C.F. Using black pipes as verticals joined together by mild steel angles and the whole framework rigidly bolted, these racks have wooden planks to form shelves; the planks are removeable, being fixed to the cross angle by means of bolts with counter-sunk heads. Thus the planks can be raised or lowered to suit the type of material to be kept. These racks are 14' long and 10' high.

In the normal type of racks, materials have got to be taken out and loaded in trailers or trucks for issue. To reduce such handling, Pallet racks have been designed. These are mere frameworks to accommodate Pallets which may be described as 'Movable Bins.' The framework in the pallet racks is also fabricated out of pipes and angles as in the case of the racks described above. The Pallet rack consists of four vertical bays and four horizontal tiers. Thus 16 bins or pallets are available in each rack. The overall dimensions of the single Pallet rack are 16'-0" long, 10'-0" high and 30" wide. The entire Pallet together with the materials stacked on it can be



Tool Cabinets the shelves swing out...

removed from the rack framework by means of a Fork Lift Truck. This type of rack is eminently useful where fixed quantities are issued at a time. It is however important to bear in mind while locating these racks that the interspace between two adjacent rows of such racks should be about 7' to allow the Fork Lift Trucks to ply between them.

Large quantities of Aluminium Extrusions which are required in the manufacture of the Integral Coach are kept in specially designed racks fabricated out of channels and tubes. An interesting feature of this type of rack is the provision of timber padding to prevent the finished surface of the

Aluminium extrusions from getting scratched by the steel racks.

For stacking mild steel sections in the open gantries a special type of rail rack has been designed. This is just a platform formed by 75 lb. D.H. rails fixed to the ground to a height of one foot. Each rack is about 20' long and 16' wide. Adjustable clamps about 3' high which can be slid along the surface of the rack and kept in position by means of adjustable bolts are provided to separate different sections of steel. The main idea in providing this rail platform is to facilitate crane handling of these heavy sections as well as to prevent the steel from coming in contact with water during rains.

For keeping the tools in the various shops, special types of tool cribs and tool cabinets have been adopted, based on designs in common use in Europe. Adjacent to each machine, a tool cabinet is provided to keep the tools required for operating that particular machine. The main features of these steel tool cabinets are that they are made of boltless and rivetless construction and are provided with shelves adjustable up or down without screwing; the shelf itself is also boltless and rivetless in construction and is made of sheet steel frame on three sides and angle on one side revolving on a pivot of very strong construction on opposite corners. The main advantage of this design of tool cabinet is that it enables the shelves to be swung out so that any tool kept on this shelf may be easily picked out; this eliminates groping for tools lying in the interior of shelves.

The tool cribs are intended for storing tools required by various workers in a particular shop. Each tool crib is 1116 mm. long, 700 mm. wide and 705 mm. deep and is provided with a suitable number of drawers. A few of these tool cribs are formed into a counter in each shop and the tools required in that shop are kept in the drawers in these tool cribs. The drawers slide on telescopic ball-bearings

to ensure full accessibility and are provided with spring shafts to prevent the shelves coming out. The framework of these cribs as well as of the drawers are made out of steel and the entire construction is welded. Partitions are provided in the drawers to enable a large number of items of different sizes to be kept. The cribs are provided with locking device; provision is made for keeping tokens against which tools are normally issued. Incorporating quite a few ingenious contrivances, these modern tool cribs and tool cabinets have been manufactured for the first time in India for the Integral Coach Factory by a leading firm of steel cabinet manufacturers.

An adequate number of almirahs have been provided for keeping domestic items under lock and key. For

keeping Electrodes, steel shelving racks open type 8' 6" high $\times$ 3' 0" wide $\times$ 2' 0" deep have been designed with shelves made of 1" $\times$ 1" $\times$ 1/8" steel angles covered with 1/8" mild steel sheets.

The reader must have had enough of racks by now. The subject of the design of racks is a vast and fascinating one for a Storesman but may not be so very fascinating for everybody else. It is this thought that hastens me to cry a halt, though the subject is by no means adequately dealt with in this small compass. It is said that if a thing is worth doing, it is worth doing well. This is what the modern Storesman means when he says "If a thing is worth storing, it is worth storing well."

Tool cribs—(The drawers slide on telescopic ball-bearings)



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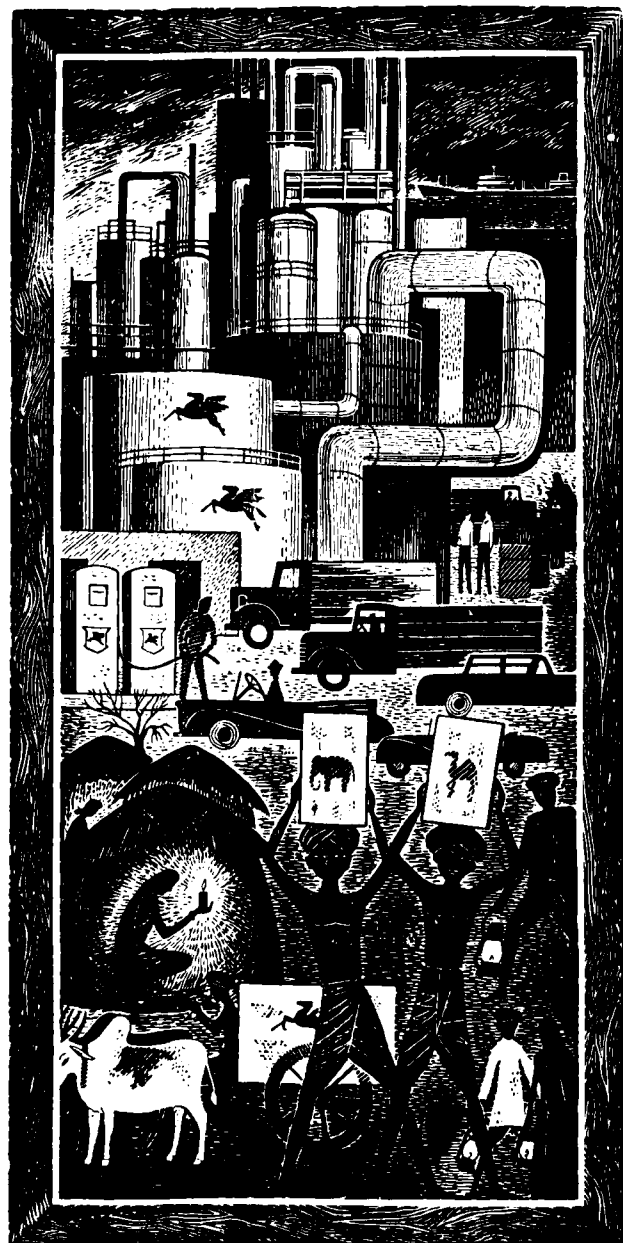
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Steel Mission To Calcutta

BY

K. S. RENGACHARI

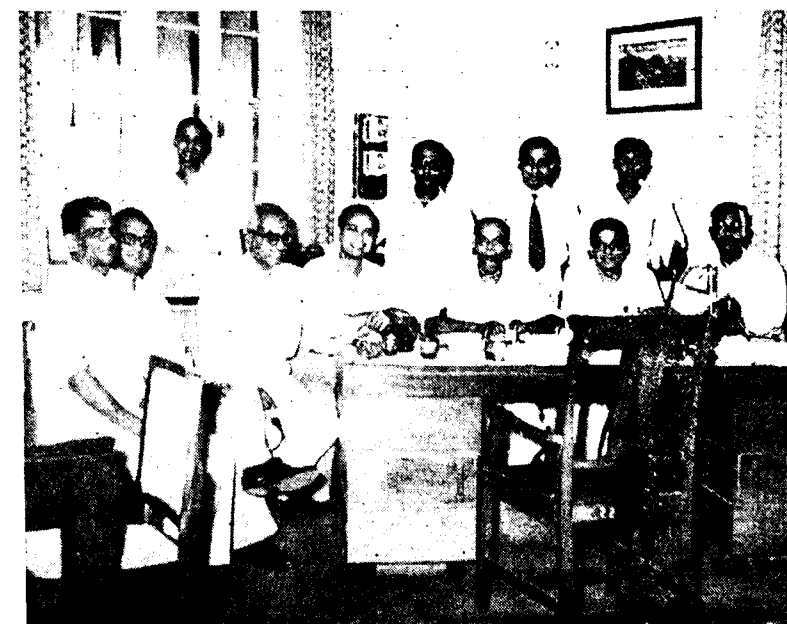
Office Superintendent, Stores

Devotion* to duty makes the job one undertakes a pleasure. The procurement of steel for the 3rd and 4th batch of 350 coaches presented considerable difficulty and at the instance of the Iron and Steel Controller, 200 copies of schedules for inviting tenders were prepared and sent to him. When the Iron and Steel Controller advised this Organisation of the date of opening of the tender, the Progress Superintendent was sent to collect the quotations and bring them here. The tabulation of 190 items relating to 16 firms was undertaken and completed in a record time of 12 working hours. The technical recommendations of the Swiss Technical Superintendent were obtained in less than a day.

With the same amount of fervour and enthusiasm a batch of Stores Staff headed by Sri A.V. Sugavanewaran (D.C.O.S./Purchase) made haste on their trip to Calcutta to expedite, in conjunction with the Iron and Steel Controller, the review of all the tenders received, giving due consideration to the technical recommendations and issue the Acceptance of Tenders on the firms who had offered materials suitable to our needs. Even in the train the huge tabular statements 5' long and 1' 6" wide were spread over a full seat and the entire set of staff spared no pains to see that what they had done stood the rigid test.

Even in the office of the Iron and Steel Controller, close co-operation pre-

The "Steel Mission" to Calcutta - at the office of the Iron and Steel Controller, Calcutta



ailed. The Iron and Steel Controller, Deputy Iron and Steel Controller, the Accounts Officer, all were doing their best to give us the utmost help in finalizing the tenders, thus contributing their bit in allowing this national undertaking to make unimpeded progress. Within a record time of 4 days, these tenders were finalised and orders to the tune of 14½ lakhs of rupees were

placed. This can be considered a remarkable success and the accomplishment of this fact is to a large extent due to the fillip given by our beloved C.A.O. (R) who has time and again advised that we, as one family, should dedicate ourselves to the task set before us in our march on the path of National Progress.

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Productivity in Industry

BY

K. SANTHANAM

Principal, Technical School

Introduction :

"Productivity" is rather a difficult term to define but it can be said to be 'the ratio between the output of wealth and the input of resources used up' in the process of production. The British Institute of Management defines productivity as the volume of output which is achieved in a given period in relation to the sum of direct and indirect effort expended in its production. Thus it will be seen that a mere increase in production will not mean increased productivity and that the emphasis is on the expense at which the results are obtained. In short, productivity reflects the efficiency with which the resources are being used. The greater the efficiency of utilization of resources, the greater the productivity.

In the context of the ambitious Second Five Year Plan, there is talk of increased production everywhere. It does not mean that the increase in production must be consistent with the expenditure incurred and so the concept of the term "productivity" has thus come to acquire a pronounced significance. Even countries like the U.K. and the U.S.A. which are industrially advanced, are constantly reviewing their production methods with a view to increasing the productivity in their industries and it is only proper that we, who are striving to increase our national wealth, should become 'productivity conscious' and turn our thoughts towards increasing the productivity in our industrial activities.

Factors affecting Productivity :

The activity in any plant can be broadly grouped under five different headings :

- (1) Organisation
- (2) Products
- (3) Physical facilities
- (4) Personnel and
- (5) Production.

In a plant, if the organisation is good, if the products are properly selected and designed, if the plant has been located properly and planned effectively, if the personnel are properly selected and well trained, and if the production is well planned and controlled, then the productivity attained should be fairly high.

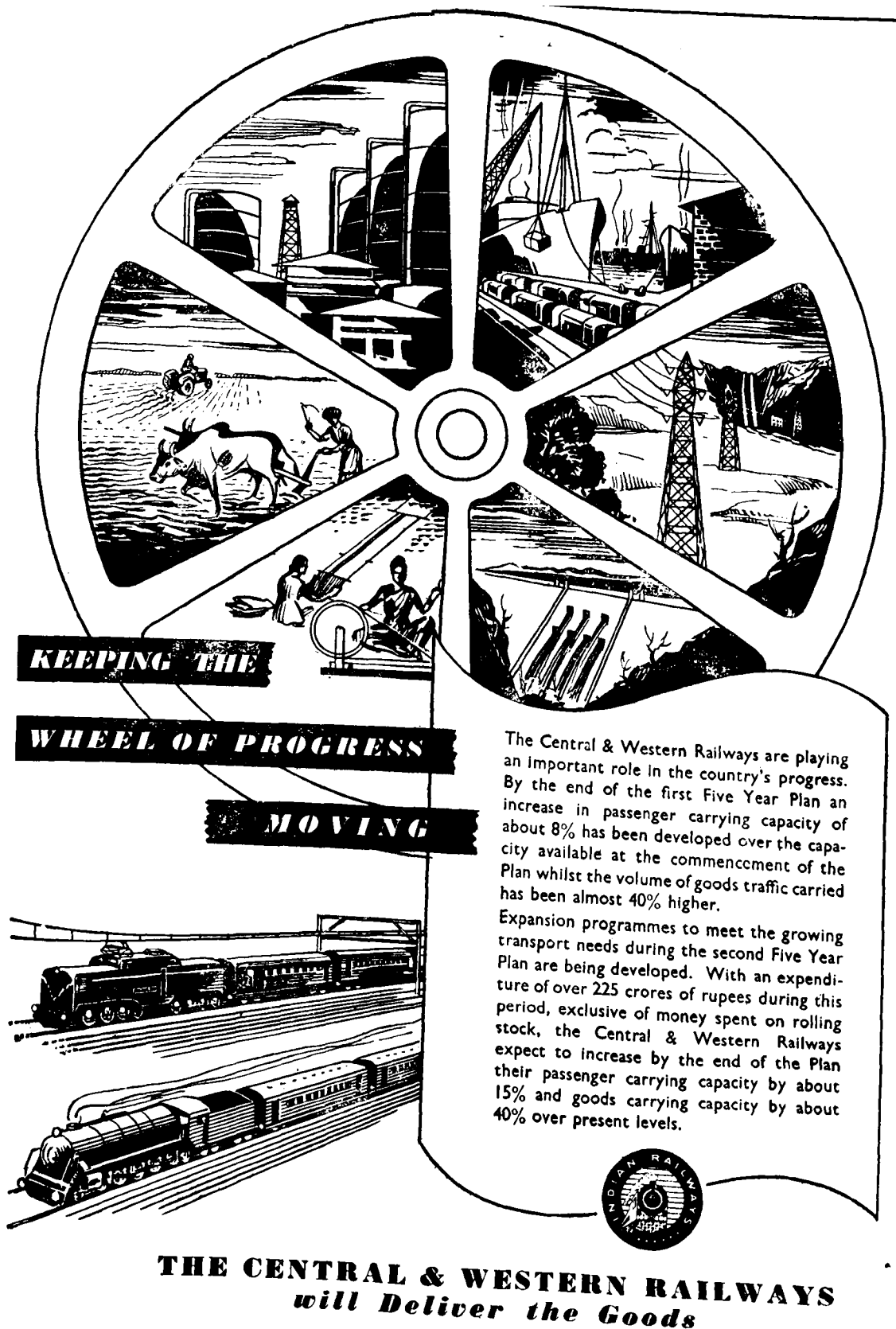
The conditions favourable for good productivity are as follows.

Organisation :

The organisation referred to covers both the management and supervisory staff.

Management has a vital part to play, for, in increasing the productivity of an enterprise it may be necessary to make radical changes in policies. An understanding and progressive management is essential for, in many cases the benefits likely to accrue from changes proposed may not be readily apparent.

In an industry full co-operation of labour is also essential for making any scheme a success. This co-ope-



The Central & Western Railways are playing an important role in the country's progress. By the end of the first Five Year Plan an increase in passenger carrying capacity of about 8% has been developed over the capacity available at the commencement of the Plan whilst the volume of goods traffic carried has been almost 40% higher.

Expansion programmes to meet the growing transport needs during the second Five Year Plan are being developed. With an expenditure of over 225 crores of rupees during this period, exclusive of money spent on rolling stock, the Central & Western Railways expect to increase by the end of the Plan their passenger carrying capacity by about 15% and goods carrying capacity by about 40% over present levels.



ration has to be obtained through the supervisory staff, who form the link between management and labour. The co-operation obtained depends on how well the supervisory staff play their part and, for playing their part effectively, the supervisory staff have to be men of the right type and properly trained.

The following points will prove helpful in making the supervisory staff function effectively.

(1) They should be carefully selected and adequately trained. To enable the proper person being selected, the nature of work to be done and the ability required to do the same with the physical, educational and other standards required are to be clearly laid down. After selection, sufficient training should be given to the recruits to enable them to know the objectives of the management, the structure of the organisation, their own place in the scheme of things and, finally, what the management expects of them. The

men should be given adequate theoretical and practical training in the beginning and in addition, refresher courses have to be arranged from time to time, so that the supervisors are abreast of the times.

(2) The lines of authority and responsibility should be clearly defined. The number of men a supervisor has to personally supervise should not be unduly large.

(3) They should be kept informed of the policies of the undertaking.

(4) They should be kept informed of the cost of the products manufactured, so that they can become cost-conscious and actively assist the management in eliminating waste.

Products :

In manufacturing a product the processes to be adopted and the tools to be used are largely decided by the product itself. A complicated machine will, in addition to a high initial cost, require a highly skilled worker

The 12 workers of the I. C. F. who attended the reception held by the President at Raj Bhavan, Guindy, on the 15th August, 1956



to operate it and may call for elaborate setting, and special tools. Elaborate processes tend generally to prove costly. A manufacture which does not involve costly machines or processes usually lends itself more readily for increasing productivity and so, where the products are complicated the first step will be to see if the products cannot be modified suitably without in any way detracting from their utility. In all such cases efforts should be taken to achieve a greater degree of simplification, standardization and specialisation.

Simplification : This refers to the process of doing away with superfluous varieties of the same product so that it is possible to concentrate on a narrower, on a smaller, range of products. Taking the case of motor-car production, for example, it will be readily seen that a manufacturer turning out only three types of cars, say, small, medium and big, will be in a better position to achieve economy in production than a manufacturer turning out a dozen types.

Standardization : The most important feature of economical production is quantity and, where a large number of slightly different components can be replaced by a lesser number of identical components, it is obvious that great savings in production costs can be obtained by processing a few large batches instead of a number of smaller ones.

Specialization : In the case of a product consisting of a number of components, it may be that some of the components require special processes to manufacture them. In such cases instead of installing special plants for manufacturing these components, it is often cheaper to obtain such

components from firms, if there be any, who are specialists in the field.

In modifying a complicated product the following points are worthy of consideration :—

(1) Wider and better application should be made of the science of 'design for production.'

(2) The limits, fits and finish prescribed should be attainable.

(3) The material prescribed should be such that it does not call for expensive processes for 'working on it.' For instance, in prescribing the material for a product, which in the making calls for extensive machining, whatever the other advantages possessed by the material, it will be necessary to take into consideration its "machinability" also.

Physical facilities :

This includes plant location, layout, equipment, internal transport, maintenance and colour conditioning. The facilities to be provided, points to be considered in providing them and conditions favourable for maximum utilisation of the facilities are as under :

(1) The location of a plant has to be decided taking into consideration the availability of labour, transport facilities, power supply, raw materials, water, etc.

The type of labour obtainable in the area is important because, if, for example, an industry is to be located in an agricultural area, it would be prudent to recognise that the bulk of the employees will be agriculturists, who would like to be away at the time of sowing, harvesting, etc.

Transport facilities assume importance as adequate provision is neces-

sary for both bringing in raw materials and despatching of finished products.

Power supply : Certain industries like aluminium industries require enormous supply of power. If other conditions are favourable, it will be advantageous to locate such industries where power is available in plenty, in preference to locating them away from the source of supply and transmitting power over long leads.

Raw Materials : In the manufacture of iron, gold etc., where the finished product is very much less in weight compared to the raw material viz., ore, it will be advantageous to locate the industry where ore is available in plenty as otherwise transport charges for the ore itself may be a serious burden on the industry.

Water : In industries like manufacture of newsprint where a large quantity of water is required, the location of the industry should preferably be where the supply of water is plentiful. Even otherwise there is always the need to ensure adequate water supply for domestic consumption.

(2) **Lay-out :** The next aspect to be considered is lay-out. This is governed by the type of industry and the space available. Where the space available is limited, it will be necessary to have more than one floor, a good example of this being the Cotton Mills in Bombay. The layout should be such that the work flows in one direction and that as far as possible back tracking is avoided. Steps should also be taken to see that unnecessary handling of materials is kept to the minimum.

(3) **Equipment :** The number of machines to be provided in the various departments of an industry should be such that the production capacity of one department is correctly balanced

with that of the others. Serious bottlenecks will otherwise develop, and machines may have to be kept idle.

The availability of machines for work should be constantly reviewed and prompt action taken to replace the defective and obsolete machines.

Wherever possible, power-operated tools should be provided to save time and minimise labour.

(4) **Internal Transport :** In the making of a product the time spent in transit from one operation to another is generally considerable and any reduction in that time will cut down the total time taken to manufacture the item. Hence, wherever possible, mechanical handling should be introduced for transporting articles, in preference to manual handling.

Mechanical lifting arrangements should be provided to place and remove heavy articles from machines, as otherwise the operator working on the machine will have to do the work, getting fatigued unnecessarily.

(5) **Maintenance :** In this respect, preventive maintenance is a salutary principle, attention being given before any actual breakdown occurs and not afterwards. Machines have to be inspected periodically and action promptly taken to replace worn-out and fatigued parts and thus avoid necessity to manufacture components after the actual breakdown has occurred, resulting in loss of production time.

(6) **Colour conditioning :** Colour has both physiological and psychological effect on human beings and colour conditioning is the art of making the best use of these effects. A worker is confined to his workspot for the greater portion of the day and so it will be worth while to make it attrac-

tive for him to remain and work there. As stated in one of the magazines, colour conditioning moves critical parts of machinery into focus, moves ceiling upward, walls outward and brings materials and assembly lines into sharper contrast without actual motion.

This reads like a conjuror's claim. Actually it is not, for a number of firms in India have resorted to colour conditioning and obtained desirable results such as reduction in absenteeism and accidents and increase in production. The main idea behind colour conditioning is to create a cheerful and restful atmosphere. It is claimed that a room, where, due to working conditions, the temperature is high, can be made to appear cooler by painting the walls with a shade of blue. A restful feeling for the eyes can be created by painting the non-moving parts of a machine in a shade called 'vista-green' and the surrounding walls in a different shade of green. In view of the desirable effects produced by it, colour conditioning can be called an indirect incentive, as it creates a restful atmosphere for the worker, and enables him to work practically with the same efficiency throughout the day.

Personnel :

In any industry a very vital part is played by the workers in promoting productivity. The most important source of productivity is the "Will to work of Labour." It has to be realised that enthusiasm, loyalty and attention to work cannot be bought and that it has to be earned. For this purpose, it will be necessary to make the workers feel part of the concern and the following steps will be useful in achieving the object :

(1) Brief induction or orientation courses should be given to new entrants.

This enables them to have an idea where exactly they fit in in the organisation and what part they have to play.

(2) Ample scope to improve one's prospect should be provided and publicised.

(3) The system of wage payment should be simple so as to be capable of being applied by workers themselves.

(4) Careful consideration should be given to provide good physical working conditions.

(5) Incentive systems should be introduced.

(6) Labour Welfare should be taken care of.

(7) Wages of different categories of staff should be such that adequate incentive is provided for them to aspire for promotion.

(8) Suggestion schemes should be introduced.

Production planning and control :

For the successful working of a plant, the work to be done should be planned and the plan worked to faithfully. The object is to ensure that the work is done on the right machine at the right speed and feed, that the information and materials required for manufacture are available when and where required, that machines are not idling and that men are neither overworked nor underworked. In this connection it will be desirable to keep the planning staff informed of the cost and performance of the components and arrange for close co-operation and interchange of information between the design and planning and production control sections.

Workstudy should be undertaken to simplify works processes with a view to economising in labour, material and equipment.

OUR FAMILY

(In this column we propose to introduce to the readers leading personalities of the Integral Coach Factory family. We start the series with the first skilled workers to join the Mechanical and the Electrical departments respectively.—Ed.)



Shri Dusi Ramanna Bhukta was born on 7th May, 1920 in a Railwayman's family in Srikakulam district. He was educated in the Municipal High School, Srikakulam, and after doing business and serving as a Telephone Operator in the Tata Iron & Steel Mines, joined the Chittaranjan Locomotive Works as Greaser in 1948. He rose to the rank of a Driver (Mechanic) in June, 1949. He was transferred to the Mechanical department of the Integral Coach Factory in 1950 and joined the Plant Park as Mechanic. He was promoted as Mistry Grade I in December, 1953. He had the honour of being chosen to garland the President, Dr. Rajendra Prasad, when he visited the Factory on the 14th August, this year.



Shri Conjeevaram Nagarathinam was born on 15th August, 1932 in St. Thomas Mount. He received his early education in the Municipal High School, Tirupattur, and passed the Wiring Certificate Examination from the Central Polytechnic, Madras, in 1949. He worked as Wireman with private firms till 1951 and joined the ex. South Indian Railway in the same capacity. He joined the Integral Coach Factory as Electrical Fitter on the 3rd November, 1952 and was promoted as Mistry Grade II in February, 1956. He was associated with special illuminations arranged during the visits of the President and the Prime Minister to the Integral Coach Factory.



Lawns—How to Raise and Maintain

BY

S. G. IYER

(Assistant Engineer, General)

One of the most striking features in a bungalow, office, club-house or factory, is a well-kept garden with a carefully laid out lawn. Laying out of a garden is entirely a matter of individual taste and no specific rules could be prescribed. The success of a garden and lawn depends more upon the care bestowed on it, than on the expenditure of a large amount of money.

Even in a small garden there should be an adequate area reserved for a lawn which enhances, by contrast, the brilliance of flower beds and is also restful to the eyes. Flowers gain added attraction and grace against the silhouette of a lawn. But an imperfectly maintained lawn has just the opposite effect, even if the flower beds and borders are kept well. Keeping the lawn in a soft, green and velvety condition throughout the year needs persistent effort.

A well drained rich loamy soil is best suited for a lawn. Before monsoons, the ground should be thoroughly dug up to a depth of 1.5 feet and stones, roots, etc., removed from the ground. The sub-soil is then exposed to the sun to kill the weeds. The ground should

be carefully levelled, clods of earth broken up, and cleared of weeds. Into the soil thus prepared, is incorporated farm-yard-manure mixed with an equal quantity of leaf mould, at the rate of one cart load of each for every 300 to 350 square feet of lawn area, and the ground is lightly rolled. The soil should be allowed to settle down during the first showers. The surface is levelled by filling in depressions caused by the first rain and all weeds that might have come up are removed. The surface should be turned over once again, working in another slight doze of manure or compost, and re-levelled with a harrow or with a wooden plank drawn over it. The ground is now ready to take the grass.

There are four different methods adopted for laying the lawn.

(1) Seed sowing ; (2) Turfing ; (3) Turf-Plastering ; (4) Dibbling roots.

1. *Seed sowing* : The ground prepared as stated above is raked a little and the seeds sown. Before sowing, the seeds, tied in a cloth, must be soaked in water for nearly 48 hours, in order to hasten germination. The seeds are mixed with sand or earth to ensure

uniformity in sowing. A thin layer of mixture containing farm-decomposed cowdung, leaf-mould, red earth and sand in equal quantities is spread over the surface soil to cover the seeds ; the area is then watered. An ounce of seed can cover an area of about 500 s.ft. The above method is however rarely adopted in Madras area.

2. *Turfing* : Sods of earth with thickly grown hariyalli grass which is available readily on dry tank beds are used ; the sod is cut carefully with a space into rectangular or square blocks and laid side by side on the prepared ground. The ground is lightly rolled or beaten by stick or rammer. Free spaces, if any, are filled with chopped grass, covered with fine soil, and watered liberally. A lawn can be established this way in a surprisingly short time (but does not present a very true and uniform surface).

3. *Turf-Plastering* : Fresh hariyalli grass or Doob-Cynodon-dactylon (arumham-pul in Tamil) is best suited to the climate of South India. It is soft, vigorous in growth, easily available, grows under all conditions and admirably resists the heat of the summer season. The grass is cleaned of other weeds and chopped into bits of 1.5 to 2 inches in length. The grass should be dug and chopped on the same day as it is to be used. The chopped grass is mixed with a semi-solid mixture of fresh cowdung, red earth or garden loam with water. The mixture is evenly spread on the above prepared ground and covered with a thin layer of a little wet manure mixture to cover the exposed root bits. Initially, the water can should be used for watering.

A slightly different method is adopted in some places adding more water to the mixture and plastering the mixture to a uniform thickness of an inch on the prepared ground. A layer

of straw is spread over it for shade which is removed when the grass shows signs of growth.

In 10 to 15 days, grass begins to sprout and if there are any weeds they are removed immediately. When all the roots have come up well, the lawn is lightly rolled. Within a month the grass will be ready for cutting first with a scythe, and after the roots get well established, the lawn mower may be used.

4. *Dibbling* : When the prepared ground is wet (after a rain preferably) small roots of the hariyalli grass are dibbled about 4 to 6 inches apart ; the roots spread and grow in 6 months. This is the slowest method of having a lawn although it is much cheaper than the other methods described.

The lawn thus made, by any one of the methods described above, needs regular mowing, rolling, watering, weeding and careful attention ; care should be taken to remove weeds then and there ; otherwise they soon multiply and overgrow the grass. In the absence of rains, watering heavily once or twice a week is very necessary. As the grass grows, mowing and rolling makes the lawn velvety and thick. It is desirable not to roll the ground where the soil is too wet. To have a perfect green lawn, lawn fertilizer or ammonium sulphate mixed with groundnut cake, and bone meal (1 : 3 : 2) is useful, provided there is sufficient organic matter in the soil. To enrich the organic matter, the soil is raked once or twice a year before and after the heavy rains. Application of well decomposed manure mixed with half its volume of sand and red earth will greatly benefit the lawn, by intensifying its greenness, and richness. The pleasure of being able to sit out in an evening on a green carpet of lawn is better enjoyed than described.

Thought Rambles

The Music of the Falls

BY
S. R. S.

I had occasion to visit Courtallam for the first time considerably late in life. Except for the last two years, I have been a regular visitor to the falls every August. Courtallam is essentially Tamil in its culture and it is one of the treasures of the Tamil Country, even like the plantain leaf. The falls have had references in Tamil literature and a separate classic under the title "*Kutrala Kuravanji*" has been sung in its praise.

July-August is the season that gives the place a beauty of its own. The rest of the year the town is deserted almost.

Apart from its being a health resort, it is a place worth contemplation for a thoughtful man, having a celestial beauty of its own. During the season when waters are rushing down intensely from the herb-topped hills and the weather is balmy, a visitor feels as if he had been transported into a place where work is vice and doing nothing is the best virtue. For one who desires to do nothing at least a month in the year, I would recommend his visiting Courtallam and letting his body be beaten by the onrushing water.

Somehow I have liked the Five Falls better than the Courtallam falls. It has a heavier shower. No buildings mar the neighbourhood and the waterfalls stand unique in an atmosphere of hills and greenery.

One of the stanzas of a poem I had written a couple of years ago on Courtallam lies this way :—

"Cool and gay, soft and full of sweet scents,

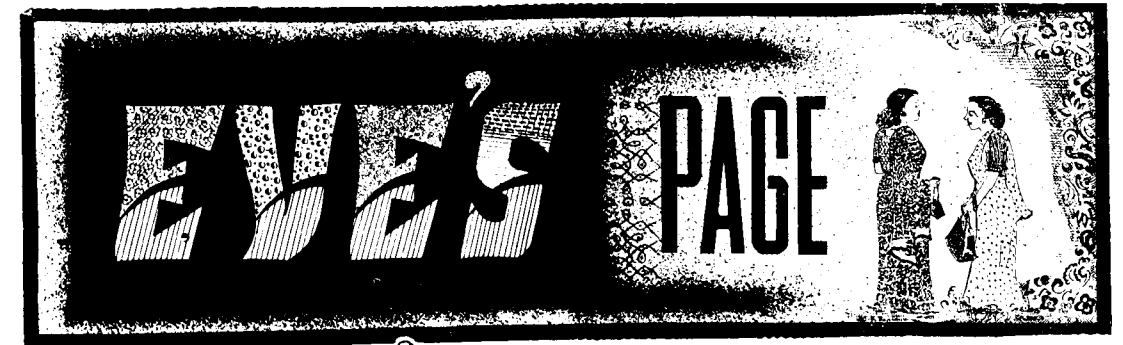
Laden with the efficacy of herbs,
That are enshrined on the crest of
your mountain summit,
You shower forth in gay celestial
rapture."

* * *

The falls of Tenkasi remind me of the poet Kalidasa. He lived some centuries ago and gave Sanskrit language a new life and vigour. Like the waterfalls that flow down unbidden, poetry came to him as the very breath. The Ramayana of Valmiki is a simple masterpiece. There is no ornamental flourish in the language but there is a softening sobriety in the theme and mode of narration. Of course there are places surcharged with poetic rhythm. In Kalidasa every poem is a gem. While narrating the services of a king to a celestial cow, it was Kalidasa who could compare the space between the cow's horns to the pathway through which the king could attain his ideal. Even humour comes to Kalidasa in the guise of mellifluous poetry. While describing the death of Tataka who lay dead, struck down by the arrow of Rama, the poet says that she was like a woman rushing towards her lover, her body smeared with sandalwood—the sandalwood being blood in her case and her husband already dead and in the other world.

I read in the newspaper some days ago that schemes were afoot to erect a monument of Kalidasa but that the proposals had been dropped for the present.

Monument or no monument, the great bard is going to remain amidst us through his mellifluous poetry.



On Women "AMBUJAM"

Confucius said that woman was the masterpiece in creation. As a concept this is a true saying. To contemplate on the creation of an Adam and an Eve for the multiplication of the species renders one a little philosophic.

If man can be called a temple in the wonderment of God's work, woman may be described as the ornamental tower of the temple. The gentleness, the softness, the mellifluousness of her figure is worth a life's contemplation. Goethe said that the society of woman is the element of good manners. But this, I feel, does not bring out the full potentialities of the Eve in creation.

To move a Goddess and look a queen may not be the destiny of every woman but to keep a home and rear children up into noble youth is definitely the duty of every woman. Apart from the physical services she is called upon to render there is some nobler aspect in her existence which deserves attention. The tenderness with which she deals with a problem at home and the emotion she impulsively expresses in the first flush of facing a critical situation are worthy of admiration for a poet. It was someone who said that woman's grief is like a summer storm. While a handsome woman is

a jewel, a good woman is definitely a treasure.

Balzac, the novelist of the last century, paid the noblest tribute woman could ever have had by saying that she had one thing common with angels, that suffering beings belonged especially to her.

Of course hard words have been said about women by literateurs. Alexander Pope said that woman was at best a contradiction still. But more tributes have been paid to woman's station in life than condemnations both by modern feminists and by writers of old.

Subrahmanya Bharati, a voice of renascent India, who created the simplest and at the same time the most ornamental poetry was a feminist to the core. It was he who appealed to our womanhood to cast off all shackles that bound them by tradition and rise to perform their duties and hold their responsibilities :—

"An uplifted face, an unbending walk,
Fearlessness towards anybody in the world."

These he said, should be the essential qualities of modern women in our midst.

RECAST

BY

T. S. JAYARAMAN

A century of change is how the 20th Century is described. Science which went at snail's pace in the previous centuries is racing at a gallop and it may soon get the speed of a Jet Plane or a Rocket. This is a measure of the wisdom of the present generation, a product of the circumstances of our times. Likewise the wisdom of our ancestors was the outcome of their times. It is incorrect therefore to apply their standards and principles to the present day conditions.

Yet it is surprising that thousands of men and women are still influenced in their lives by the plausible phrases made by our ancestors. These phrases have no longer any meaning in the present times. Take for instance the adage "A rolling stone gathers no moss." This may have had some meaning in olden days when the villages and the small towns were practically isolated from one another and a stranger who looked out for a job in a new place was unwelcome. In our times it is the "rolling stone" that very often gets the opportunities. The young man of today tries hundred and one jobs and vocations before he comes upon the one for which he thinks he is best suited.

I am inclined to suggest—I am almost positive—that our ancestors were eminently incompetent. Otherwise how does one account for the fact that they were unable during many centuries to discover or invent even a fraction of what we have done in

just half a century? Steam, Electricity, Telephones, Television, Adult Education, Adulteration, Free Thought, Free Trade and Atom Bomb (the last to destroy all the previous discoveries!); all these belong to our times! On the other pan of the balance place the achievements of our ancestors—frivolities such as God, Ghosts, Principles and Prejudices, Self-respect, and Chastity. It is obvious at once to all but the blind as to which generation is more competent. I, therefore, suggest in all earnestness to the appropriate quarters the need to appoint a high power committee to be entrusted with the task of recasting the old proverbs to suit the changed conditions of to-day. Here is an indication of the lines on which such recasting can be done :—

Old

Husband that roams muddles at home.
Thinkers govern toilers.
Fools build houses and wise men buy them.
Marriage halves our griefs and doubles our joy.
What you think you can do yourself do not rely upon another.
Contentment leads to Happiness.

Recast

Muddles at home make the husband that roams.
Toilers govern thinkers.
Wise men build houses and fools buy them.

Marriage multiplies our griefs and minimises our joy.

What you can rely upon another, do not do yourself.

Discontent leads to Prosperity.

The clock is chiming 9, reminding me of my bed time. I hear the reader murmuring that it is too early to go to bed, but my answer is that I have been regularly following the maxim of our fore-fathers "early to bed and early to rise". Habit dies hard!

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RAMAYANA LECTURES AT AYANAVARAM



Presentations being made to Sri Thirukkudanthai Srinivasa Raghavachariar

The series of lectures on Ramayana given by Sri Thirukkudanthai Srinivasa Raghavacharya Swami in the Ayanavaram Railway Quarters Colony for the past seven months, concluded on 9-9-56 with the celebration of Pattabhishekam. In the morning there was Pooja followed by Vedaparayanam. Students of the Egmore Samskrit School then recited Samkshepa Ramayanam and a few chapters from Bhagavad Gita under the guidance of Shri P.A. Subramanya Iyer, the Principal of the Samskrit School.

The main lecture on Pattabhishekam by Sri Thirukkudanthai Srinivasa

Raghavachariar came off in the evening, preceded by recitals from Tiruppavai by Shri Chintamani Iyengar and party. At the end of the lecture a purse containing Rs. 1,001 was presented to the lecturer on behalf of the organisers. A silver plaque depicting Rama Pattabhishekam was also presented to the lecturer by the devotees. The evening function was attended by nearly a thousand devotees.

Speaking on the occasion, Sri D. Ramaswamy Iyengar complimented the Railwaymen of the Integral Coach Factory and the Southern Railway for conducting this series of religious

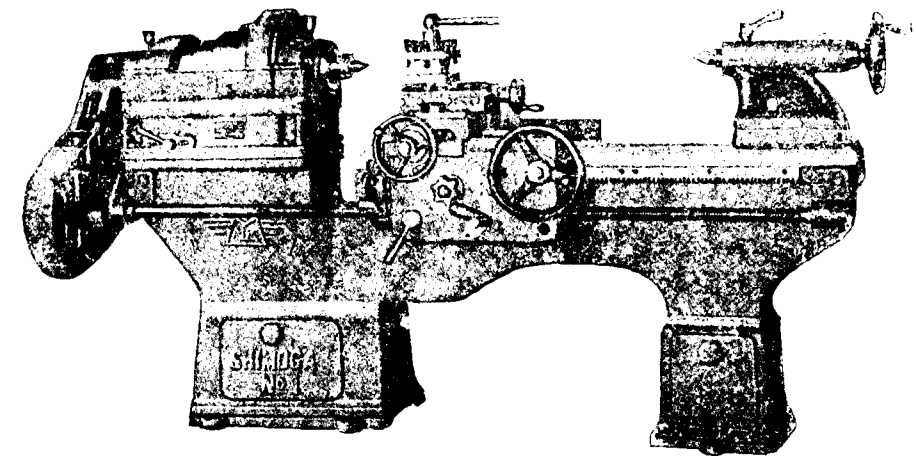
discourses with sustained interest. While such religious discourses were happily a common feature in places like Mylapore and Thyagarayanagar, he was glad to note that Ayanavaram had not lagged behind. Speaking of the lecturer, Shri Ramaswamy Iyengar stated that in him we had a very erudite scholar well-versed both in Sanskrit and Tamil classics. The peculiar charm of Shri Srinivasa Raghavachariar was that he brought out the Sastraik meanings of the subjects he handled in such a manner that even present day audiences, with modern

views, were able to appreciate them. Ramayana was not written by Valmiki as a mere story; Rama was the very embodiment of Dharma and it was necessary to have a proper background of the Sastras to appreciate the Ramayana in the correct perspective.

Shri K. Varadacharia Swami also spoke on the occasion eulogising the erudition of the lecturer.

The function came to a close with the proposing of a vote of thanks by Shri A.V. Sugavaneswaran.

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The Romance of Number 9

BY
SAS

"Gooth morning, Monsieur" said a pleasant voice.

I looked up from my "H.G. Wells." A butterfly had apparently just entered and taken a seat. "Good Morning," I replied and lowered my eyes back to my book.

We were just pulling out of M..... and it was snowing heavily but it was comfortably warm in the artificially heated compartment.

"You Indian?" she enquired.

"Yes!" I replied raising my head again.

"Ah! How much does nine times nine is?"

"Eighty-one," said I curtly. I was not in a mood for conversation. I was not to be disturbed from my interesting chapter.

"Let me show you something," the butterfly burst in. I gave up and put my book away.

"See" she said, drawing out a paper and pen. I moved closer and watched her write.

$1 \times 9 = 09$	$0 + 9 = 9$
$2 \times 9 = 18$	$1 + 8 = 9$
$3 \times 9 = 27$	$2 + 7 = 9$
$4 \times 9 = 36$	$3 + 6 = 9$
$5 \times 9 = 45$	$4 + 5 = 9$
$6 \times 9 = 54$	$5 + 4 = 9$
$7 \times 9 = 63$	$6 + 3 = 9$
$8 \times 9 = 72$	$7 + 2 = 9$
$9 \times 9 = 81$	$8 + 1 = 9$
$9 \times 10 = 90$	$9 + 0 = 9$

"See" she said triumphantly:
"The first figures of the products in-

5a

crease 0 to 9 and the second figures decrease from 9 to 0."

I was impressed. I hadn't noticed it before.

"See" went on the butterfly, "I show you something more."

And she wrote:

$1 \times 8 + 1 = 9$
$12 \times 8 + 2 = 98$
$123 \times 8 + 3 = 987$
$1234 \times 8 + 4 = 9876$
$12345 \times 8 + 5 = 98765$
$123456 \times 8 + 6 = 987654$
$1234567 \times 8 + 7 = 9876543$
$12345678 \times 8 + 8 = 98765432$
$123456789 \times 8 + 9 = 987654321$

"See" she repeated.

I saw: it was interesting.

"Something more."

9×9	$+ 7 = 88$
9×98	$+ 6 = 888$
9×987	$+ 5 = 8888$
9×9876	$+ 4 = 88888$
9×98765	$+ 3 = 888888$
9×987654	$+ 2 = 8888888$
9×9876543	$+ 1 = 88888888$

I seemed to have met a mathematics juggler. Next she wrote: 12345679 and asked me to pick any number. I chose 7.

"Multiply by 9" she said.

"Sixty-three."

She went on:

12345679
$\times 63$
37037037
74074074
77777777

"I have you so many 7s because you like 7." She laughed triumphantly.

I goggled!

"Now take any 4-figure number." 9763.

"Reverse the figures and take off small number from big.

9763
$- 3679$
6084

"Add the different numbers together $6 + 0 + 8 + 4 = 18$.

"Add those together."

$1 + 8 = 9$

"Try this with any 4-figure number and you will always get 9. 'Alway'."

"Try another trick! Take again 4-figure number."

4261

"Add together like befor."

$4 + 2 + 6 + 1 = 13$
$1 + 3 = 4$

"Meenus this from your number."

4261
$- 4$
4257

"Add together like befor."

$4 + 2 + 5 + 7 = 18$
$1 + 8 = 9$

"Hmm!" I said. "Cigarette?"

"Mercy, Monsieur."

Flick!

Puff!

Puff!

"More?"

"Yes," I said eagerly referring to the mathematical tricks.

"Take a 3-figure number." 593

"Reverse, and meenus small from big."

593
$- 395$
198

"You always see middle number is 9 and first and last together make 9. Alway! Furthermore, if you reverse your answer and add together you always get 1089."

I verified:

198
$+ 891$
1089

"That is amazing," I remarked.

"Now we both take six 4-figure numbers. You take one, I take one. O.K. ? I tell you now, the total will be 29997."

So we wrote:

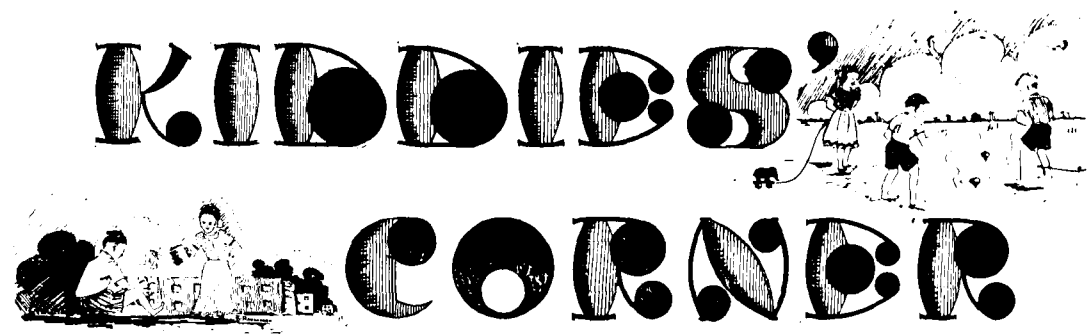
I : 6798
Butterfly : 3201
I : 4321
Butterfly : 5678
I : 9999
Butterfly : 0000
29997

I laughed heartily. "I have caught you." I exclaimed.

"You choose your number so that your's and mine together make 9999."

"Ya, Ya" she laughed. "You clever. But now give me one five-figure number."

(Continued on page 72)



The Rose and the Giant

BY

“ HARSHA ”

Long long ago there lived a giant by name Akshasura in the forests of Dandaka. You know a giant is a physical mountain with a huge mass of muscle, strong of limb. As our literature has portrayed, the giant has always an aptitude to do evil and till the arrival of a goody-goody hero who would kill him, he ravages the earth in all directions.

The giant Akshasura, besides the usual physique, had also a mind that thought and questioned. You cannot call him kind-hearted but nevertheless his evil deeds were limited to a certain area and in number also. He did not feed on men but he had a great liking for trees. He used to fell trees with the strength of his arm and, with his large mouth, used to munch the leaves and the stem. It was said by people in the neighbourhood that because of Akshasura one quarter of the Dandaka forest had been destroyed. Fortunately or unfortunately no hero was there to interfere in Akshasura's activities.

Akshasura used a large cave in the middle of the Dandaka forest as the place of his rest. At the entrance to the cave there was a cluster of plants with bunches of roses on them. They

were large, fine roses, beautiful to the sight and tender to the touch. From a distance the plants seemed to form an ornamental gateway to the cave.

Somehow Akshasura loved the roses immensely. He did not destroy the plants. Perhaps he had enough trees to feed him in the neighbourhood. Daily, when he started on his outing he used to stand at the entrance, contemplate the flowers and tenderly kiss some of them. Also when he returned he did not enter into the cave without devoting some attention to the roses.

The giant thus lived on and a time came when a large area near the cave had been destroyed because of the onslaughts of the giant. For visible distance there was no tree or plant or any green thing. Nowadays the giant had to walk a long distance in search of his food. In course of time he began to feel a little sick and tired.

One day the giant woke up to find that he could not get up and move freely. His limbs were aching and he had a sore feeling in the eyes. His muscles had got tired. You know, giants too have their old age and death !

Akshasura felt very hungry and he moved with great difficulty to the doors of the cave. He peeped out and the first thing that struck his eye was the desolation he had caused all around. A sweet smell came to him carried by the passing wind and he remembered the roses. He moved a little outside and looked at the cluster of flowers that beautified the cave. He mused a little while and felt somewhat happy at the thought that he had permitted the roses to exist. Hunger pinched him and the lower part of his senses wished to have something to soften the hungry feeling. Akshasura's mouth began to water and he thought about the roses in the neighbourhood. He had left the flowers out of his purview because of mercy or perhaps because of a higher feeling in him.

Now the giant thought that he would taste only one rose ; after all the destruction of one rose would not kill the plants. He moved nearer to the nearest rose and plucked a flower, put it in his mouth, munched and swallowed. Immediately he felt as if he had drunk *Amrita* (the drink of the Gods) His aching limbs began to get stronger and his muscles became full of ' vim ' and vigour. He rose up and ran.

The giant now had understood the truth that one rose was equal to hundred trees he had to destroy daily. But the feeling of strength lasted only till sunset. Again, when he woke up the next morning, he found that he was tired and not able to move. Again he moved with difficulty to the cave's mouth, plucked another rose and ate it. But again he became weak towards the evening. He ate away rose after rose and at last one morning he found that only one rose was left.

It was at the far end of the cave's front. The giant moved to the corner and sat close to the rose. He contemplated the beautiful flower for a long time. They had been very helpful because they served him as food in the neighbourhood. They had been beautiful as a colourful frontispiece to the cave.

Now he was in front of the last rose. He was in the act of wrenching it from the plant. The rose spoke.

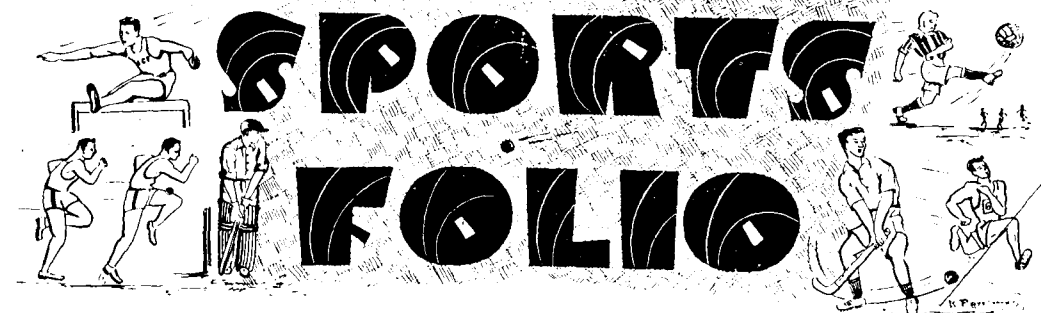
“ Selfish giant, we were giving beauty to the entrance to your cave. We are tender flowers. We gave you strength. I am the last of this breed. You are going to eat me now.”

The giant heard and thought for a while. He did not want to take away the flower from the plant. It was the last remnant of a fine family of flowers that had been useful and beautiful at the same time. No, he would not touch the rose. It ought to be there.

He kissed the flower and slowly moved into the cave. He reached his bed of straw and wild leaves and fell down. He spent the rest of the day in deep thought. The whole duration of his past career flit across his mind's eye. What had he done, except eating and sleeping ? He had not performed any useful activity. He had destroyed the trees in the forest and had eaten away almost all the roses in front of his cave. His life had not been useful. It was better he rather died.

So he laid himself down for nearly a whole week without rising up. His body became weaker and weaker and at last one midnight the giant raised an awful cry and breathed his last.

Kiddies, do you love Akshasura or hate him ? Think about the problem for a while !



• Sports and Games Training on par with Factory Training

BY

A. D. PARTHASARATHY

Sports Coach

Sports and games training have a two-fold effect ; one is the physical effect and the other the mental and moral effect which in a broad sense may be termed "educational." This two-fold effect is very necessary to develop our nation in the industrial sphere. This development is mainly based on the "educational" effect. The exercises on the Sports field and the progressive stages of work in the workshops, if rightly organised, develop a cheerful and joyous spirit, alertness, concentration and perfect control of brain over the body. This in short, is discipline and can be termed as 'Neuro-muscular co-ordination.' These two elements are blended in varying degrees in every factory worker and one aspect or the other is to be regarded as more important depending upon whether the worker is at his workspot or on the sports field.

Every normal adult desires to keep himself fit through play or work. Reference to literature on "the philosophy of work and play" will suffice to convince us that any programme of work or sports and games that do not afford adequate opportunity for work or play suited to the craftsmen and sports participants respectively, within their sphere of activity, is not educa-

tionally sound. An intelligently organised workshop must be invariably associated with sporting activities and the staff should be more responsive in this respect for the creation of a healthy and congenial atmosphere.

The programme of a factory or sports and games organisation should be based on certain basic principles which enable the workers, athletes and players to develop their physical and mental powers. Therefore an intelligent selection of activities is necessary to ensure that they are within the capacity of the workers or participants. These activities must be organised with tact and where necessary, suitable demonstrations will have to be arranged.

Besides, a well-chalked-out programme should always be there to induce social order so as to develop a spirit of co-operation and loyalty towards worthy causes, generating initiative, resourcefulness, courage, and physical, mental and moral stamina. These qualities are not inherent in everybody for him to cultivate individually, but it can be developed by co-operative effort with a team of people.

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More opportunity should be given for workers and sports-and-games learners to make themselves conversant with organising extra activities apart from their normal work, which of course carries more value in the development of our Nation.

We must educate the workers and sportsmen about the programme which should be so planned and organised

that it will result in acquisition of knowledge, good habits, and skill, useful for the immediate present as well as the future.

Organising on these lines, any factory or sports institution will have stability to stand on par with the other nations, both in crafts as well as in sports.

ROMANCE OF NUMBER 9

(Continued from page 67)

I chose : 78361.

"Now we both choose five more five-figure numbers like before and I tell you the total is 278359."

So I put down :

I : 78361

I : 42651

She : 57348

I : 32619

She : 67380

278359

I had followed what she had done, but how she arrived at the total was not clear at all.

She noticed the question mark on my face. So she explained : "You have only to subtract 2 from your first number and put a 2 in front of it and you get the total, see ?"

"Now I have showed you 9 tricks with number 9. It is the most interesting number. I have had more romance with number 9 than with anybody else."

So saying the butterfly flew out of the compartment as the train came to a stop.....

When the train started pulling out again, I heard a voice on the platform saying,

"How much does nine times nine is ?"

Short Story :

The Interrupted Little Dream

BY

T. V. VENKATESWARAN

Lying in bed at night and thinking about our mighty Factory or about the visit of VIPs. or the part played by me during the particular day in office or about the achievements of our fellow-workers and feeling happy over it has been the way I have found out to fall asleep daily.

This particular day I was foreseeing the future and my thoughts easily reached the year 1960 by which time we hope to produce one Integral type of coach every six working hours. I went deep into the comforts in Rail Travel that our citizens will be afforded when the ICF-built coaches glide out of the factory in a continuous flow and fell into slumber, engrossed in the thought

One of my friends was to board the Malabar Express that day and I was just in time at Madras Central Station to see her off. She had been allotted a berth in a Coupe and I was happy when I found that the reservation was in an all Steel ICF-built coach. I thought I could explain things to her in detail about the comforts inside the coach and the advantages of an ICF-built coach compared with the other types of coaches. I took a stroll on the platform and I saw my friend coming at a distance.

As she legged leisurely down the highway of the station as if she were walking on a pavement of New York's fashionable fifth avenue, every passer-by stopped and stared. With an almost studied non-chalance, she ignored everyone and walked on towards the platform where I was standing.

A happy couple were inside the compartment in which accommodation had been reserved for my friend, the husband having come to bid adieu to his wife.

Shyamali was happy to see me at the station. She cut some jokes saying that she felt proud to travel in such a beautiful ICF-built coach and, more especially, when I was working in that Project where the wonderful coaches are manufactured. She said, "You are people who produce one in six hours things like this." During our conversation I saw one man getting in my friend's coupe and taking his seat. First I thought that he came to see the woman already inside the compartment and see her off. But the man, to my astonishment, was making himself comfortable as if he had to cover some thousands of miles during night time. I pointed him out to Shyamali. She was surprised by his action. When we talked about him, he stared at us. Shyamali was impatient, as it is with every woman, for a stranger was inside her reserved coupe !

There were only a few minutes left for the departure of the train. I guided my friend into the compartment and she was delighted to see the comforts provided inside. She confessed that she had often thought on the one hand of the wonders of science, the comforts and conveniences it had placed within man's reach and, on the other, also of the grim risks and destruction involved in making use of mechanical appliances. But I com-

Miss Shyamali, by nature, was short-tempered. She flew into a temper and, had I not stopped her in time, something serious would have happened. I took charge of the situation and pointed out to the gentleman in question that his action was not just. He would not listen. We exchanged some hot words and finally came to blows. By the time, the guard of the train had whistled and the train had started

Outside, the moon was shining bright and it seemed as if it was mocking at me for the peculiar dream I had. Somewhere, I heard the whistle of a locomotive, steaming in some direction, as if that too was aware of the funny dream I had.



BRAIN TEASERS

4. A told B "I am thrice as old as you were, when I was as old as you are now." If the sum of their ages now is 100, what are their ages ?

C A T
 C A T

 S . . .
 T O M .
 . . S O

 M O U S E R

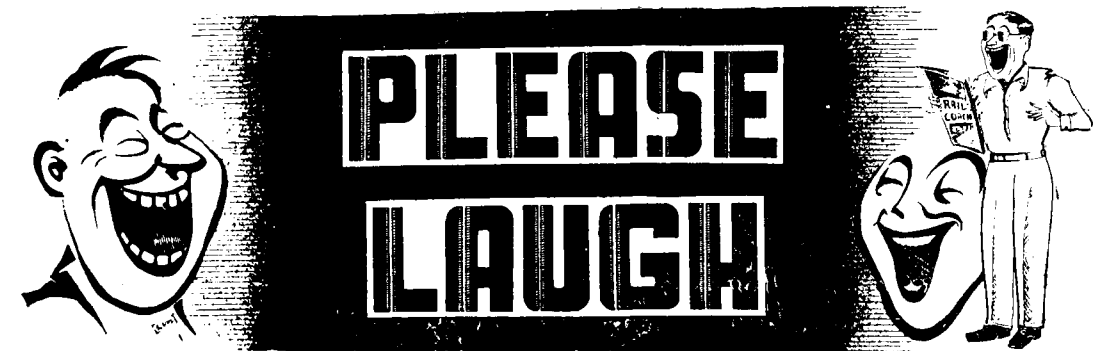
74

Southern Railway VISIT SOUTH INDIA . AND SEE	
BADAMI	Famous for Jain excavations and cave temples of the 6th Century A.D.
BIJAPUR	For the Gol Gumbaz, a perfect whispering gallery and the second largest dome in the world.
CHIDAMBARAM	The famous temple dedicated to Sri Nataraja or Siva in His aspect as the Cosmic Dancer.
COURTALLAM (Via Tenkasi)	Well-known for its waterfalls. A famous bathing place and health resort.
HUMPI (Vijayanagar)	Marvellous ruins of the old capital of the Never-to-be-forgotten Hindu Empire, Vijayanagar.
KODAIKANAL	The charming hill station near Madura.
MADURA	Capital of the Ancient Pandya Kings, noted for its great Meenakshi Temple.
MYSORE	The city of lights. The enchanting Brindavan Gardens are only ten miles from Mysore.
OOTACAMUND	The queen of hill stations in India.
RAMESWARAM	For a holy bath and its famous temple.
TIRUPATI	The seat of the Lord Venkateswara or Balaji. Here every day is a festival day.
TRICHINOPOLY	Noted for its shrines at Srirangam and Tiruvanaikaval.
TRIVANDRUM	For its famous art gallery, museum and zoo.
MADRAS	Chief Commercial Superintendent

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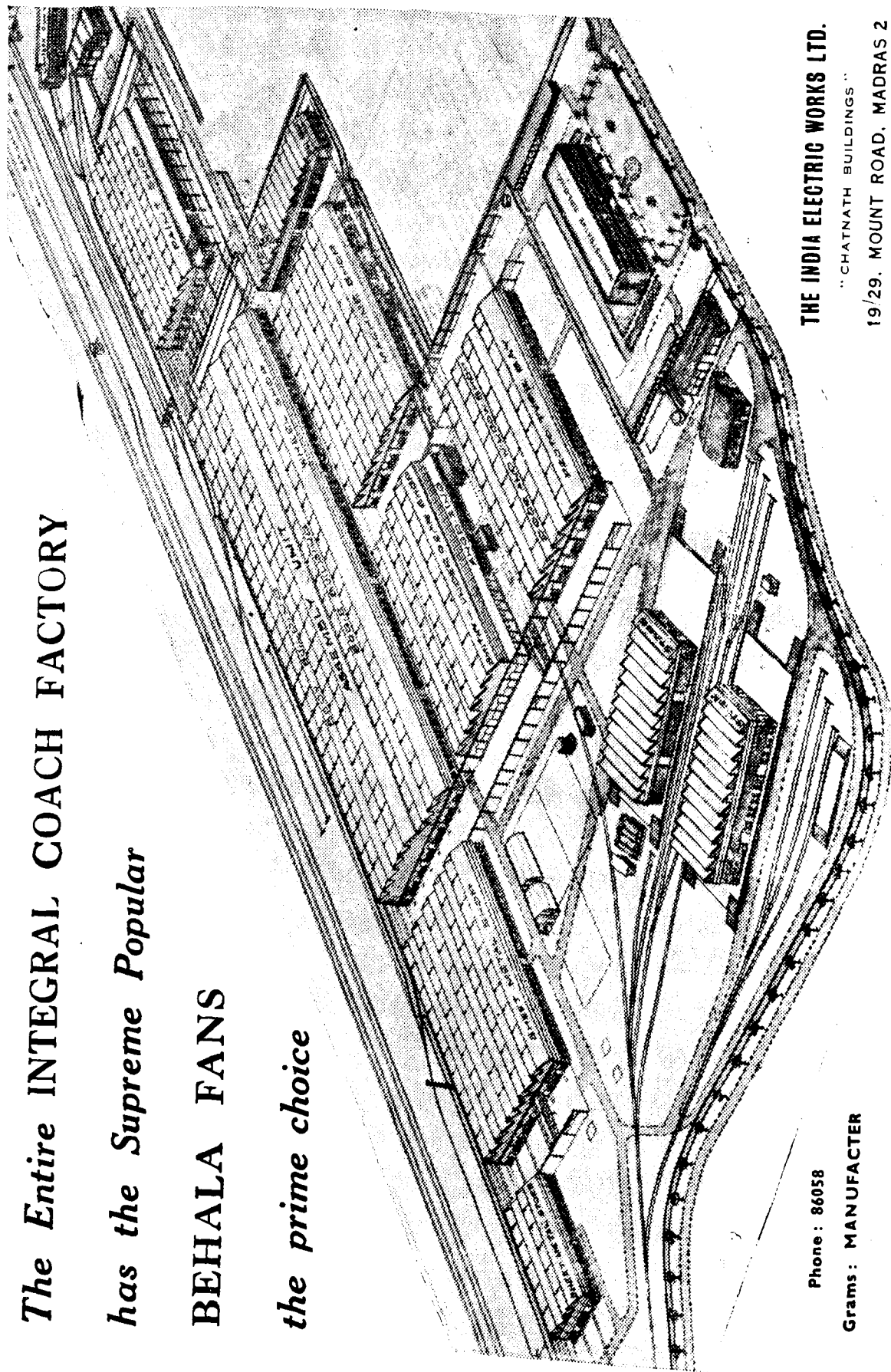


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Important Visitors to the I.C.F.

Dr. L.C. Burman, Director of the Indian Standards Institution, New Delhi, visited the Factory on the 4th September, 1956 and was shown round our works.

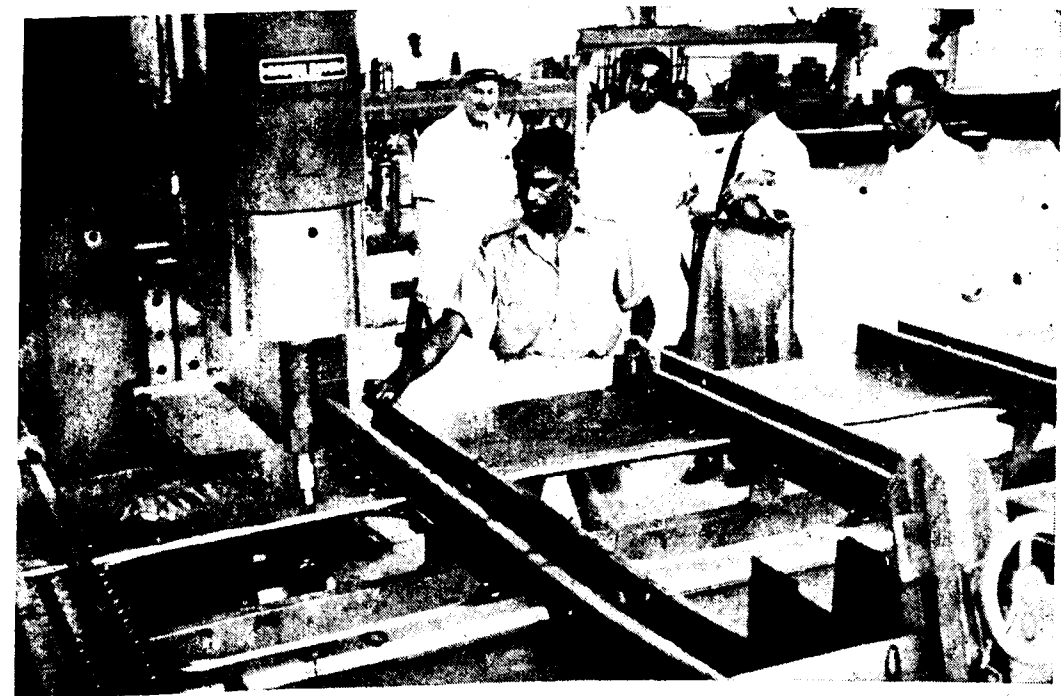
Members of the Regional Railway Users Consultative Committee, Madras, visited the Integral Coach Factory on the 7th September, 1956. They were taken round the Technical Training School and the Workshops.

Shri N. K. Roy, Additional Member (Works) and Shri N.C. Deb, Additional Member (Finance) of the Railway Board visited the Factory on the 15th

September, 1956. On the 16th instant they held discussions with the Chief Administrative Officer and other officers of the Factory over the new furnishing factory for the I.C.F. and other allied matters.

On the 18th September Shri S. V. Krishnamoorthy Rao, Dy. Chairman of the Rajya Sabha visited the Factory. He was received by the Chief Administrative Officer and shown round the staff colony and the workshops. He showed great interest in the details of the working obtaining in the Factory and was impressed with what he saw.

Shri N. K. Roy in our Workshops



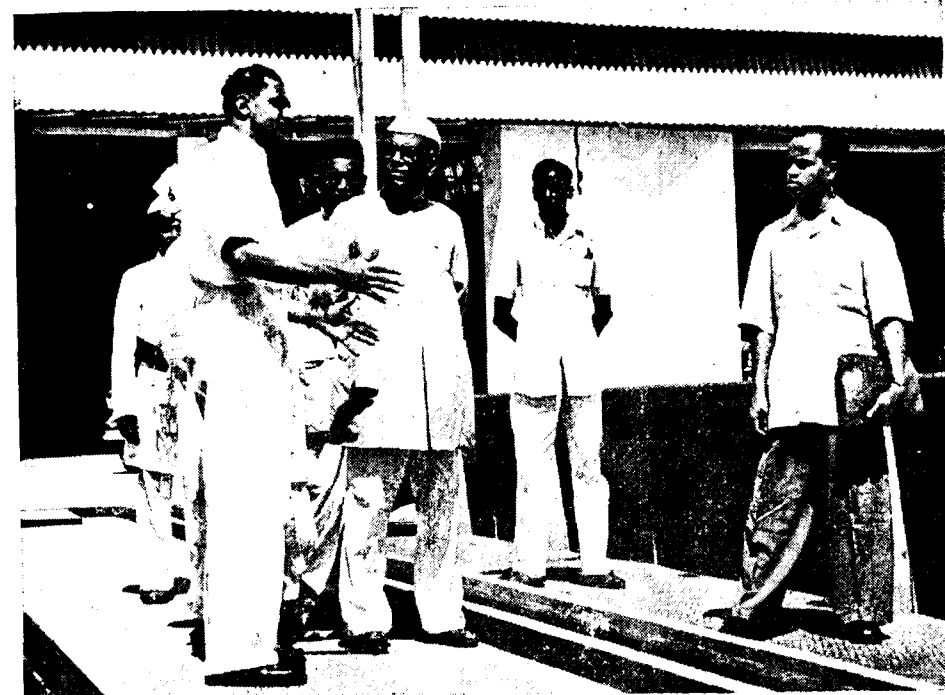


Shri N. C. Deb, Additional Member, Finance

Shri R. S. Thekerikor, Chairman of the Bombay Legislative Council, accompanied the Dy. Chairman.

A party consisting of Presiding Officers of Legislative Bodies in India and their secretaries and families visited the Integral Coach Factory on the afternoon of the 19th September, 1956. They were taken round the factory in

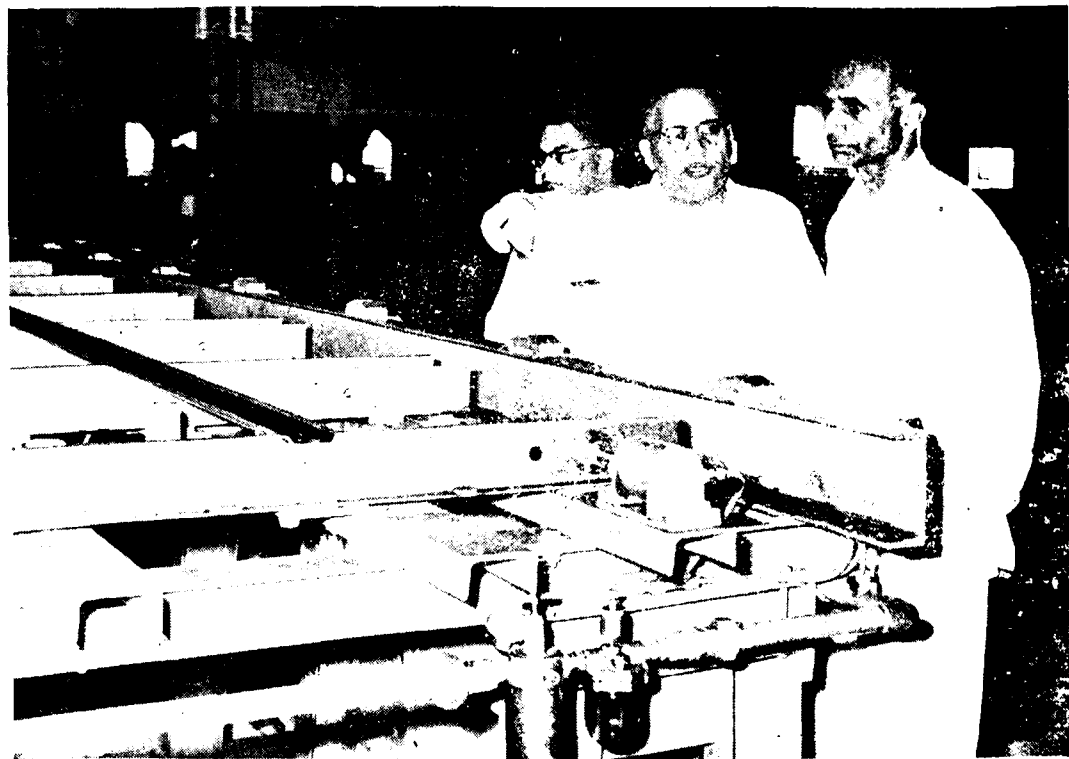
six groups. They evinced keen interest in the various sections of the Factory. At the Workers' Canteen tea had been arranged for the party and the documentary "For Better Travel," showing the progress of the Factory from its inception till the inauguration of production in October 1955 was exhibited to them.



Shri S. V. Krishnamoorthy Rao, Dy. Chairman, Rajya Sabha

Presiding officers of Legislative Bodies in India





Shri J.M. Shrinagesh, General Manager, Hindustan Aircraft Ltd.

Shri M. M. Shah, Minister for Heavy Industries



Shri J.M. Shrinagesh, General Manager of the Hindustan Aircraft (Private) Limited, visited the Integral Coach Factory on the 20th September, 1956, accompanied by four officers of the Hindustan Aircraft. They were shown round the Technical school, the Colony and the shops. Later Shri Shrinagesh had discussions with the Chief Administrative Officer and other officers of the I.C.F.

• Shri M. M. Shah, Minister for Heavy Industries, Government of India, visited the Factory on the 22nd September, 1956.

Mr. Fueschlin, Director, Swiss Car and Elevator Manufacturing Corpo-

ration, Ltd., Schlieren, Zurich, Switzerland, visited the Integral Coach Factory on the 24th September, 1956.

25 members of the Japan Machinery Industrialists' Mission, led by Mr. Shinichi Takasugi, who are on a tour round the country visiting places of industrial importance, visited the factory on the 24th September 1956. They were taken round the Technical School and the Workshops. At the conclusion of their visit, they recorded that they had been much impressed by the magnificent lay-out and the latest equipments used in the Factory. They wished further success to the I.C.F. "as a leader of constructing a new big India."

Japan Machinery Industrialists



Personnel Notes

Our felicitations to

1. Shri R.M. Sambamoorthi, Executive Engineer, posted as Superintendent of Works with effect from 16-8-56 in connection with the Engineering survey for the establishment of the furnishing unit of the I.C.F.

2. Shri M. H. Annaswami Rao, Asst. Engineer, promoted as Executive Engineer with effect from 16-8-56.



Shri S. Ephraim

3. Shri S. Ephraim, Chief Draftsman/Mechanical, promoted as Asst. Mechanical Engineer (Planning) with effect from 18-9-56.

4. Shri D. Sampathkumaran, I.O.W., Buildings, in scale Rs. 260-350, promoted as Senior Surveyor in scale Rs. 360-500 with effect from 20-8-56 in connection with B. G. Furnishing Factory.

5. Shri S. Krishnamurthy, Asst. Master, in scale Rs. 150-225 promoted as Workshop Instructor in scale Rs. 200-300 with effect from 16-8-56.

6. Shri Z.A.C. Sam, Asst. Master, in scale Rs. 150-225 promoted as

Workshop Instructor in scale Rs. 200-300 with effect from 16-8-56.

7. Shri J.B. Bonjour, Retired Foreman, Loco Works, Southern Railway, re-employed as Foreman in scale Rs. 300-400 with effect from 1-9-56.

8. Shri T.V. Panchapakesa Sarma, Retired Chief Draftsman, Southern Railway, re-employed as draftsman in scale Rs. 260-350 with effect from 28-8-56 for survey work for the B.G. Furnishing Factory.

9. Shri N. Ramakrishnan, Retired Chief Train Examiner, Southern Railway, re-employed as Planner and Estimator in scale Rs. 200-300 with effect from 24-8-56.

Our Welcome to

1. Sri M. Narayana Menon, *Foreman*

2. Sri M. S. Srinivasan, *Chargeman*

3. Sri D. Santhanam *Workshop Instructor*

4. Sri G. Krishnan *Turner (Tool setting)*

5. Sri K. Srinivasan *Mistry Grade II*

6. Sri M.S. Srikantaiah *Precision Grinder (Tool Grinding)*

7. Sri V. Parthasarathy *Blacksmith*

8. Sri P.T. Selvaraj *Welder*

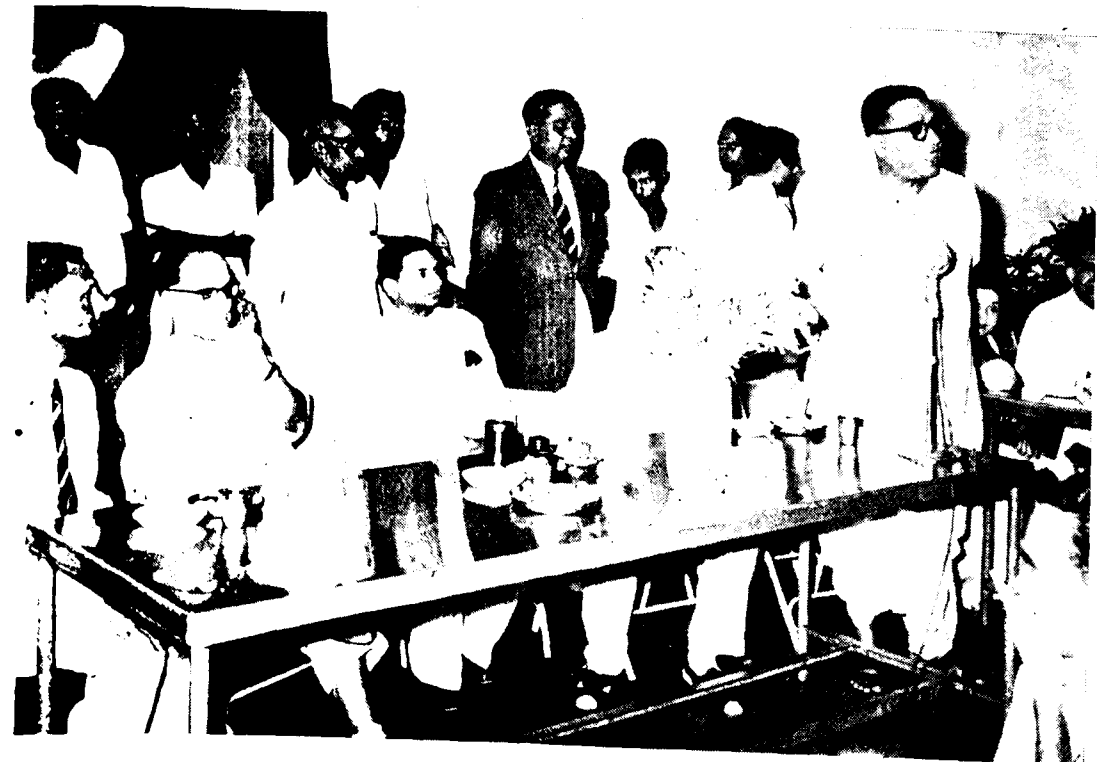
9. Sri Derrick A. Baker *Welder*

10. Sri B.K. Rout *Machinist*

11. Sri N. Viswanathan *Turner (Tool setter)*

12. Sri E.V. Kulasekaran *Elec. Chargeman*

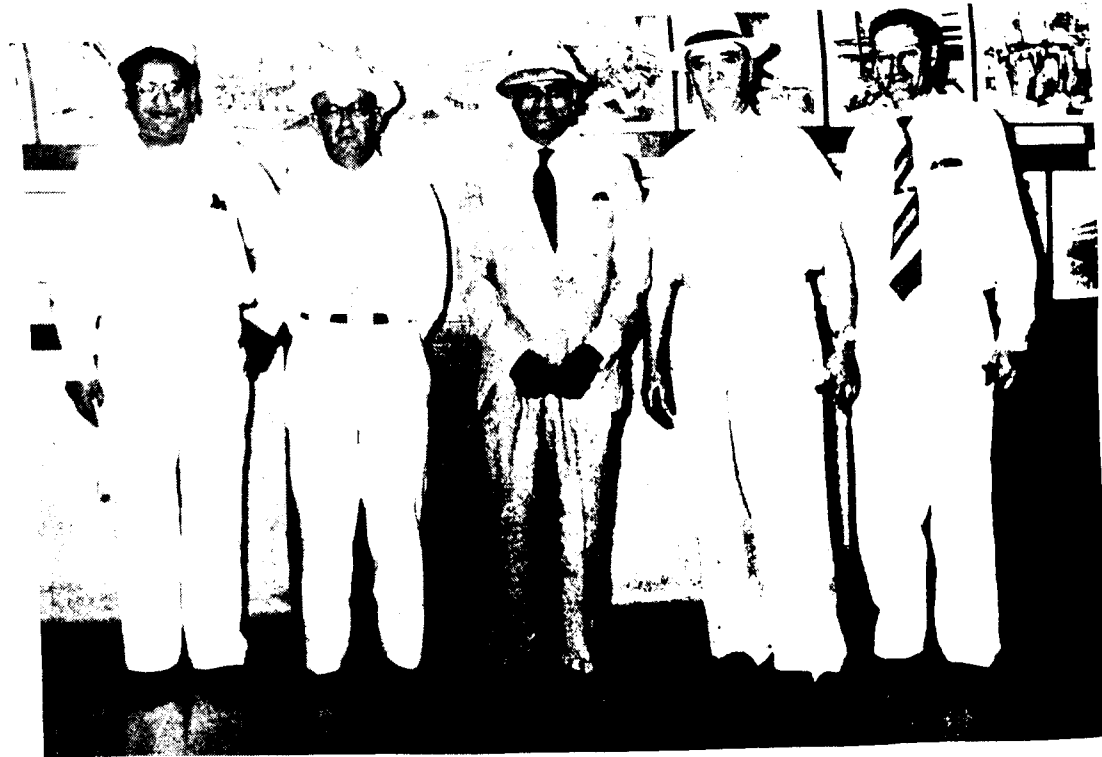
13. Sri T.B. Tolani, *Elec. Chargeman* who reported for duty on 17-9-56 after their completing training in Switzerland.



Mr. S. K. Mukerjee, Speaker of the West Bengal Legislative Assembly speaking at the tea party arranged for the Presiding Officers of Legislative Bodies at the Workers' Canteen

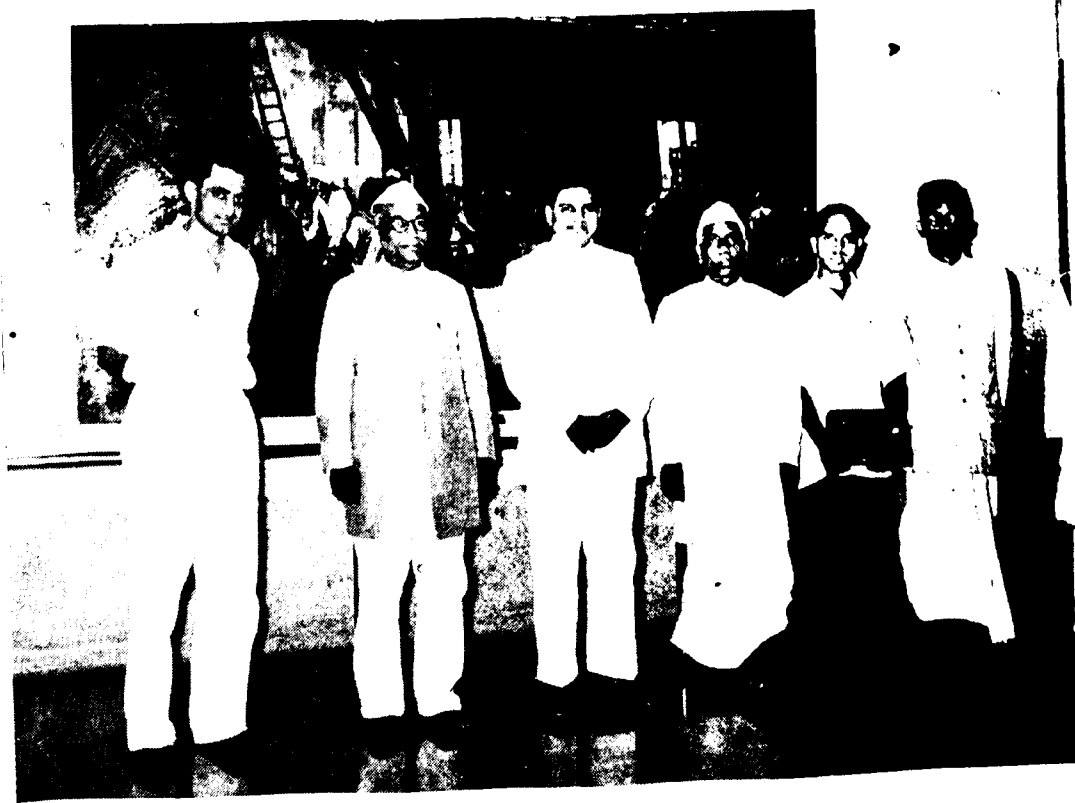
Shri N. K. Roy, Additional Member (Works), having an interesting discussion with our Dy. CME





Mr. Fueschlin, Director of the Swiss Car and Elevator Manufacturing Corporation (second from right) with our Chief in the lobby of the Administrative building

Shri S. V. Krishnamoorthy Rao, Deputy Chairman, Rajya Sabha, with our Chief



Edited and published by K. Santhanam, Principal, Technical Training School, Integral Coach Factory, Madras 23 and Printed by M. G. Daniel, at Thompson & Co. Private Ltd. (Minerva Press), Madras 1



DECEMBER 1956

No. 3

RAILCOACH

Published by the Integral Coach Factory
ISSUED ON THE 15th OF EVERY MONTH

Devoted to all Railway problems, Technical Matters
and other problems of General Interest

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The "Railcoach" circulates among Officers and staff of the Integral Coach Factory, General Managers and other important Officers of all Railways in the country, the Union Minister for Railways and Transport, the Union Deputy Minister for Railways and Transport, the Chairman and Members of the Railway Board etc.

TERMS

1. Blocks or lay-outs are to be supplied by the Advertiser or will be charged for extra.
2. Advertisement materials to reach the Editor before the 1st of every month for the month's issue.
3. Cheques should be drawn in favour of the Editor, "Railcoach", Integral Coach Factory, Perambur, Madras-23.
4. Texts of advertisements are subject to approval by the management.
5. A 5% rebate is allowed for 12 consecutive insertions.

Further particulars from

The Editor

RAILCOACH

Integral Coach Factory, Perambur, Madras 23

OFFICE OF THE REGISTRAR OF POSTS
31 JAN 1957

Movement

IS OUR BUSINESS

Railways are the backbone of the nation's transport. The Central Railway forming part of this vast organization employs over 134 lakhs of persons on its far-flung system. By their co-ordinated efforts it has been possible, during the year 1955-56, to run 343 passenger mainline trains conveying 2,80,000 passengers per day and 576 suburban electric trains in the Bombay area, carrying 4,32,000 passengers per day. In the same year 15.3 million tons of goods were carried over this railway.

By the end of the first five-year plan the Central Railway has been able to increase its passenger train miles by 9.66% and its freight ton miles by more than 43% over the levels prevailing at the commencement of the plan.

During the course of the second five-year plan the Central Railway proposes to spend 125 crores of rupees on development exclusive of money spent on purchase of rolling stock. It will be possible by the end of the second plan to run 30 additional mainline passenger trains and many more suburban trains representing an addition of 15% to the carrying capacity and to increase the loading capacity from about 2,832 broad gauge wagons to almost 4,000 broad gauge goods wagons per day.

The Central Railway is stepping up its capacity to meet the ever increasing demand, in this business of 'movement'.

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RAILCOACH

(INTEGRAL COACH FACTORY MAGAZINE)

EDITORIAL NOTICE

All contributions must be clearly typed and doublespaced on one side of the paper only, and signed, not necessarily for publication, but as a guarantee of good faith.

Manuscripts and photographs, not accepted for publication, will not be returned unless the sender so requires. Intending contributors from outside our Factory, if they intend to get back unaccepted articles and photos, should send a suitably stamped and self-addressed envelope along with the material sent by them.

Contributions should be addressed to the Editor, not by name, and reach him not later than the 25th of every month for consideration for publication in the next month's issue.

The Editor does not assume any responsibility for the accuracy of the news supplied by correspondents or for opinions expressed by contributors. Opinions expressed in the "RAILCOACH" whether editorially or by contributors should be regarded as having no official authority.

Rs. A. P.

Annual Subscription 2 4 0

CONTENTS

December 1956

	PAGE
From the Editor's Desk	5
Ex-Railway Minister's Personal Letter	6
News and Notes	7
Ten Commandments of Good Communication	14
The Anodicoxidation of Aluminium	16
Cinema-cum-Buffet Cars on Railways	18
His Excellency Mr. Chou-En-lai visits I.C.F.	21
Furnishing Annexe to the Integral Coach Factory	26
Co-operative Week Celebrations in I.C.F.	27
Universal Children's Day	32
Visitors to the I.C.F.	34
Bharata Natya Aranjatral of Kumari Ganga	37
Pleasure from Leisure	39
Thought Rambles	43
Eve's Page	44
Short Story	47
Kiddies' Corner	48
Sports Folio	50
Suggestion Rewarded	52
Brain Teasers	53
Please Laugh	54
Our Family	55
Personnel Notes	56

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FROM THE EDITOR'S DESK

This issue will be in the hands of our readers just during Christmas and we take this opportunity of wishing our Christian readers a Merry Christmas and all our readers a very happy and prosperous New-year.

Looking back, it can be said that the year 1956 has been a successful one so far as the factory is concerned. The first production year ended in September 1956 and, as already mentioned, the target of 40 coaches set, was exceeded by 3. It is gratifying to note that a good start has been made in the second year of production and that till date, against the target of 12 coaches for the months of October and November, 16 have been completed and that, against the target of 5 coaches set for December, 3 have already been completed. Let us on the eve of the New-year resolve to maintain the attitude of "doing better than what was planned" and end the year with a record-breaking figure. May the Almighty give us the strength and wisdom to fulfil our resolve.

* * * *

Sometime back the attention of the staff was drawn to the formation of the Inventions and Suggestions Committee and it was made known that suggestions for improving the methods of working were welcome, that each suggestion will be carefully considered and that a suitable reward will be made for each accepted suggestion. It is pleasing to record that there has been a good response from the staff and that suggestions are continuing to come in. We have great pleasure in congratulating Shri P. Sen to whom the credit for the first accepted suggestion goes. We are convinced that there is no dearth of talent in the Integral Coach Factory and that many more will be coming up with useful suggestions. We are also sure that Shri Sen will not rest content with what he has done and will continue his efforts in suggesting ways and means for improving the present method of working. We have no doubt that the importance attached by the administration for useful suggestions will be fully appreciated by all the members of the staff and that they will try to emulate the example of Shri P. Sen.

Ex-Railway Minister's Personal Letter to CAO(R) on The Eve of Relinquishing His Post

Shri Lal Bahadur Shastri, who has relinquished his post as Minister for Railways and Transport in the Union Cabinet, has sent a personal letter to our Chief Administrative Officer on the eve of relinquishing charge of his office. The letter is reproduced below :—

MINISTER FOR TRANSPORT & RAILWAYS
INDIA

NEW DELHI
December 7, 1956.

My dear Shri Sadagopan,

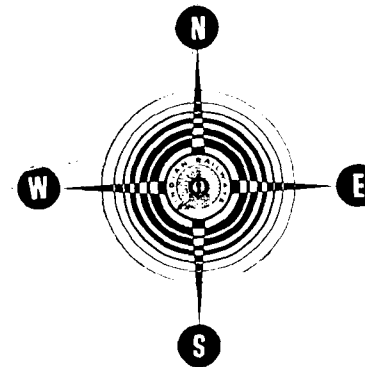
My resignation must have come as a surprise to you. The decision on my part was no doubt sudden but prompted by the best of motives. Accidents are a bad feature of the Railways and any complacency would be dangerous. In fact the problem has to be tackled vigorously and with determination. However I am writing this letter with another purpose altogether. I am happy that I came in direct contact with each and every head of the administration and got an opportunity to know their worth. During the last few years the Railways under your charge have shown drive and executed a large number of purposeful schemes and tackled the difficult problem of transportation with imagination and great perseverance. I know so well how heavy a burden you carry to-day and how fast it would be growing from day to day. The administration or the man at the head, is really tested in so many ways in the midst of strife and storms, but I have every hope that you will never be found wanting. You are men of parts and there is hardly any aspect of the administration you do not tackle. I wish others knew about it as I happen to do. I would humbly suggest that the spirit of service has to take the highest place in every activity of ours in spite of the occasional irksomeness which it might involve.

Relationship with the staff is of the utmost importance. A fair, just and sympathetic deal is so essential which I am sure would evoke the right response. But I do feel also that the Unions of workers have to change their outlook and approach altogether. Work and efficiency will have to be given priority over everything else, otherwise the whole edifice might one day crack. May I through you appeal to all the workers who are in charge of the biggest national undertaking to think over this coolly and take definite steps in this regard? Without their hard and efficient work and fullest co-operation no real progress would really be possible.

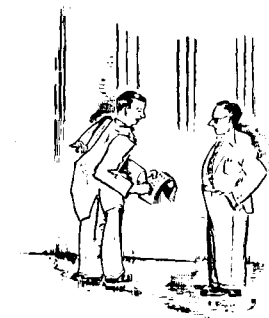
I have to thank you deeply and, through you, other officers for their co-operation which I valued most throughout the tenure of my office and I hope when I go out I carry with me all their good wishes. My sincere and warm greetings to you and all workers and staff!

Yours sincerely,

Lal Bahadur



NEWS AND NOTES



Schooling facilities for Children of Rly. Staff

The Railway Board has appointed a team of four educational advisers for undertaking a country-wide survey of the existing schooling facilities available for the children of railway employees. The survey, among other things, would cover subjects like accommodation, teaching standards, adequacy of staff and equipment, etc. Each of the advisers will have certain States allotted to him for the purpose of the survey. The respective headquarters of the four advisers would be located at Banaras, Allahabad, Madras and Nasirabad (Rajasthan).

The four advisers are Shri Beni Prasad Gupta, retired Principal, Banaras (Orissa, West Bengal, Assam and part of Bihar), Shri Chander Shekar Vajpai, retired Principal, Allahabad (U.P., Delhi, Punjab, Madhya Bharat and part of Bihar), Shri V. T. M. Thirunavukarasu Chettiar, retired Headmaster, Kancheepuram (States of Andhra, Madras, Hyderabad and southern part of Bombay), Shri N. G. Nath, retired Principal, Nasirabad (Ajmer, Rajasthan, Saurashtra, Madhya Pradesh, Bombay excluding southern part).

The provision of educational facilities to the children of railway employees as to other children is primarily the responsibility of the State Governments. However, to meet the special needs of some railway colonies, the railway administrations are at present running

154 schools ranging from primary to high school standard.

Efforts have been made in the past to transfer the existing railway schools to the State Governments concerned, but due to financial or other reasons these Governments have not been able to take these over.

The Railway Board has, therefore, decided to maintain these schools and expand them to the extent necessary. The present survey is being undertaken in order to review the existing facilities and plan improvements for the future.

Locomotives for Tisco

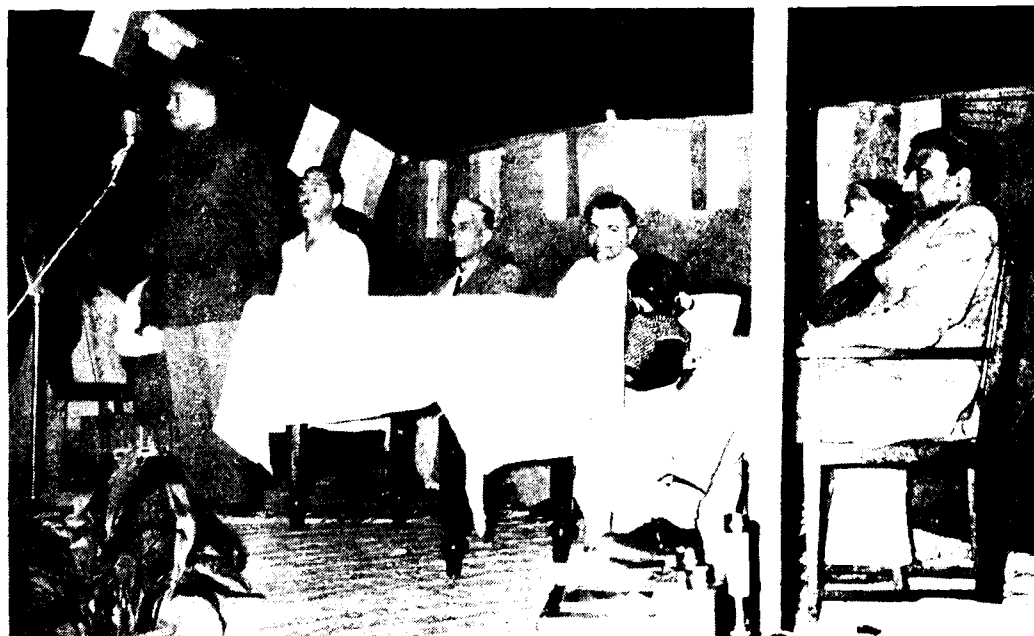
The Tata Iron and Steel Company has placed orders for seven industrial locomotives worth over half-a-million dollars (about Rs. 25 lakhs) from the International General Electric Company.

The locomotives, to be used by TISCO, in their plant extension, will include two of the largest diesel-electric units built by the General Electric, with ratings of 115 tons and 720 horse-power. The other five will comprise four 80-ton diesel-electrics and one 25-ton diesel-electric engine.

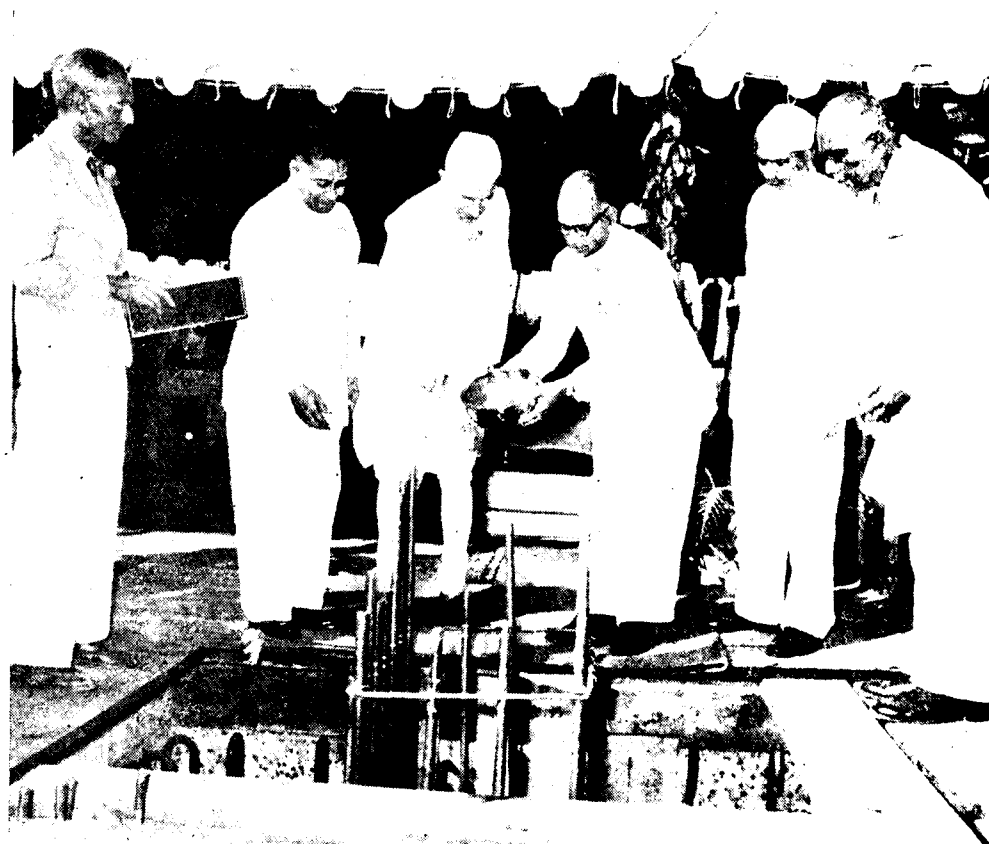
Delivery of these engines will commence from February next to be completed by the end of August 1957.

Fuel Economy on Railways

The Railway Board has decided to set up a



Shri M. Ganapati, G. M., Western Railway, speaking on the occasion of the closing ceremony of Children's camp at Mt. Abu.



Shri Morarji Desai, Chief Minister, Bombay State, laying the foundation stone for the New Churchgate Station Building in Bombay.

fuel economy training centre at Dhanbad, Bihar.

The decision has been taken in pursuance of one of the recommendations of the Railway Fuel Economy Enquiry Committee, which had suggested that a central training institute should be set up to give short courses of intensive training to loco and fuel inspectors in maintenance and operation of locomotives.

The railways are India's largest single consumer of coal, accounting for roughly 33 per cent of the total production. As their annual coal bill runs into about Rs. 39 crores, the advantages of any economy achieved in the consumption of coal through better training of staff are obvious.

Concession Return Tickets

The Railway Board has instructed the different railways in the country not to issue in future concession return tickets to passengers travelling to and from local "melas" and fairs even if such concessions are found to be commercially justified by the railways. The Board has taken this decision in view of the expected increase in the normal passenger traffic during the Second Five-Year Plan period.

Incentive Bonus Scheme on Railways

The Railway Ministry is contemplating to extend the incentive bonus scheme. A special officer has been deputed to go into the question. The scheme is working satisfactorily in the Chittaranjan Locomotive Works.

Beggar Nuisance on Railways

The Railway Board has decided to intensify the anti-beggar campaign on the railways to reduce inconvenience to passengers.

The Board have asked the railways to strengthen and intensify the activities of the special Anti-Beggar Squads of the Railway Protection Force on all the railways, so that the beggars would be removed from railway premises.

Side by side, the present publicity campaign urging the travelling public not to encourage begging in the station premises will continue.

In the 12 months ending June last year, Anti-Beggar Squads apprehended nearly 1,800,000 beggars on railway premises. Over 25,000 beggars found travelling on trains without tickets were either charged fares or fined. Over 37,000 were prosecuted and more than 10,000 imprisoned.

Children's Camp at Mount Abu

The Third Children's Camp organised by the Western Railway was declared open by Shri S. S. Ramasubban, Senior Deputy General Manager, Western Railway, on the 23rd October 1956 at Mount Abu. The Camp was held for a week from the 23rd October to the 29th October 1956. About 125 boys of Railway staff attended the camp. Mount Abu was selected as the venue of this 'get-together' both for its scenic beauty and its salubrious climate. During the duration of the Camp, the children were housed in the old Alwar Palace at Mount Abu.

A full and interesting programme was drawn up for the children. At Mount Abu, the children were taken to Dilwara temples, Sunset Point, Nakhi Lake and other places of interest. On one of the days, an interesting programme of sports was arranged, and the children participated in them with keen enthusiasm.

A camp fire and a Variety Entertainment Programme were presented by the children on 28th October 1956.

New Churchgate Station Building

The foundation of the new Churchgate Station building in Bombay was laid by Shri Morarji R. Desai, Chief Minister of Bombay, on Wednesday the 31st October 1956 at Churchgate station. A distinguished gathering of dignitaries and high officials was present at the ceremony.

The old Churchgate station with its two terminal lines was found to be inadequate to meet with the phenomenal increase in suburban traffic of recent years. The remodeling of Churchgate station has been undertaken with a view to providing a larger station building with extra terminal facilities of three lines with six platform faces against the former two lines with three platform faces at the old station. Each line will have two platform faces which will facilitate en-training and de-training of passengers.

In addition, it is also proposed to instal a modern type of route relay interlocking system of signalling which will enable the railway to

cope better with peak-hour traffic. This arrangement will provide for two simultaneous route setting for up and down movements. Two successive routes can be set at a time beforehand which would facilitate the running of a very fast service. This improvement will assist in running safely a larger number of trains. This system, the first of its kind in India, has already been installed and commissioned into use at the temporary Churchgate station.

The new Churchgate station will be a modern seven storeyed building (104 feet in height) with all up-to-date passenger facilities. The new station building will cover a much



Shri G. W. P. Mihill, Station Superintendent, Bombay Central, with the Railway Board's Trophy



Shri Lal Bahadur Shastri addressing men of the Railway Protection Force at Lillooah

larger plinth area and will provide for the requirements of the large increase in traffic which is being handled at this station.

The project for the provision of additional lines and platforms is estimated to cost about Rs. 65 lakhs and the office building will cost another Rs. 65 lakhs.

Best kept Station on Western Railway

Shri M. Ganapati, General Manager, Western Railway, presented the Railway Board's Trophy for the 'Best Kept station' on the Western Railway during the year 1955 to Shri G. W. P. Mihill, Station Superintendent, Bombay Central Station, on the 19th November 1956.

Shri M. Ganapati, in his address, congratulated Shri Mihill, Station Superintendent, for winning the much coveted Railway Board's Trophy and paid a tribute to the station staff who had worked hard to achieve the high standard of cleanliness. Shri Ganapati also

paid a tribute to the travelling public who had helped to keep the station clean.

Railway Minister at Lillooah

Shri Lal Bahadur Shastri, the Union Minister for Railways and Transport addressed the men of the RPF and RPP of the Eastern and South Eastern Railways at a combined parade on the Parade Ground, Lillooah, on November 11, 1956, while he visited Calcutta in connection with the AICC Session.

He was shown round the Railway Workshops and later attended a ceremonial parade of the RPF and the RPP of the Eastern and South Eastern Railways.

The Railway Minister said that he had been greatly impressed with the rapid and steady progress made by the Railway Protection Force during the last two years. He felt proud of the standard of efficiency attained and the smartness of the members taking part in the parade. Shri Shastri said that he wanted to



Children enjoying the Johna Falls near Ranchi during their camp

take this opportunity to allay the suspicion in the minds of some who thought that the Railway Protection Force was a parallel organisation to the State Police. That, Shri Shastri pointed out, was not true. The task and responsibility of the Force were within a limited sphere. They were to protect the properties of the railways and the goods of the people booked through the railways, during transit and storage. The Minister hoped that the Protection Force would be equal to its responsibility and fit into its proper place during the coming expansion and extension of the Railways in India.

Addressing the men of the Force, Shri Shastri said, "You are the custodians of the Railway's properties. Remember that yours is a job which requires high morale, integrity and strength of character. Keep your

standard high and be proud of the Force you belong to; I can assure you that the day is not far off when you will find yourself vested with statutory authority."

Earlier, welcoming the Railway Minister, Shri S. Sarangapani, General Manager, Eastern Railway paid compliments to the Railway Minister as one who was responsible for the reorganisation of the Department, the main object of which was to shape the Railway Protection Force into a disciplined and efficient body of men who could be depended upon to protect railway properties and properties committed to the custody of the railways.

Before coming to the Parade Ground, Shri Lal Bahadur Shastri paid a visit to the Carriage and Wagon Shops, Lillooah, where he was shown round the different Shops, by Lt. Col. A. N. Mukherjee, Deputy Chief Mechanical

Engineer, Eastern Railway, Lillooah. The General Managers of the two Calcutta Railways along with the Chief Mechanical Engineer, Eastern Railway, accompanied the Minister on his inspection rounds. Shri Shastri also visited the Basic Training School and the Workmen's Canteen outside the Workshops.

Children's Camp at Ranchi

Set in sylvan surroundings, the Holiday Homes at Ranchi provided a unique opportunity to children from all the four corners of the South Eastern Railway to meet at a camp from October 27 to October 30. Organised for the first time by the Railway, the camp was attended by children coming from distant places. These boys from different states, speaking different languages formed themselves into a well-knit camp team and thoroughly enjoyed their stay during this period, filling up their time usefully by visiting places of interest in and around Ranchi, including the Ranchi Hill, Ranchi Lake, Hundroo and Johna Falls, the Lac Research Institute, and the Military Dairy Farm, attending film shows, participating in variety entertainments staged by themselves

and the children of Railway employees at Ranchi and attending other functions including educative lectures given by Railway officials.

The boys were escorted by Shri H.H. Banerjee, Deputy General Manager (Personnel); from Howrah to Ranchi and back.

Shri N. C. Kapoor, General Manager, South Eastern Railway joined the camp on October 29.

The Camp Fire which was the most significant function for the third day, Monday, October 29, was attended by high Government officials and the elite of the town. Shri Kapoor lit the Camp fire and in an instructive speech, acquainted the children with the organisation of the Indian Railways, and the South Eastern Railway in particular, and tendered sound advice for their advancement in life. At the end of the function, Shri Kapoor distributed prizes.

Practically the entire expenditure of the Camp was met by the South Eastern Railway Administration from the Staff Benefit Fund, except for a nominal charge of Rs. 5 per camper contributed by their guardians.

Ten Commandments of Good Communication

(This article is digested from the January 1956 issue of THE FOREMAN'S DIGEST and reprinted with the kind permission of the United States Technical Co-operation Mission in India—EDITOR.)

Communication is a vital management tool which encompasses all human behaviour that results in an exchange of meaning. How well you manage depends upon how well you communicate. The following suggestions are designed to help you improve your skills as a manager by improving your skills of communication with superiors, subordinates, and associates.

1. *Seek to clarify your ideas before communicating :*

The more systematically we analyse the problem or idea to be communicated, the clearer it becomes. This is the first step toward effective communication. Good planning must consider the goals and attitudes of those who will receive the communication and those who will be affected by it.

2. *Examine the true purpose of each communication :*

Before you communicate, ask yourself what you really want to accomplish with your message—obtain information, initiate action, change another person's attitude? Identify your most important goal and then adapt your language, tone, and total approach to serve that specific objective. Don't try to accomplish too much with each communication.

3. *Consider the total physical and human setting whenever you communicate :*

Meaning and intent are conveyed by more than words alone. The manager must be sensitive to the total setting in which he communicates. Consider, for example, your sense

of (1) timing, the circumstances under which you make an announcement or render a decision; (2) the physical setting, whether you communicate in private, for example or otherwise; (3) the social climate that pervades work relationships within the company or a department and sets the tone of its communications, (4) custom and past practice—the degree to which your communication conforms to, or departs from, the expectations of your audience.

4. *Consult with others, where appropriate, in planning communications :*

Frequently it is desirable or necessary to seek the participation of others in planning a communication or developing the facts on which to base it. Such consultation often helps to lend additional insight and objectivity to your message. Moreover, those who have helped you plan your communication will give it their active support.

5. *Be mindful, while you communicate, of the overtones as well as the basic content of your message :*

Your tone of voice, your expression, your apparent receptiveness to the responses of others—all have tremendous impact on those you wish to reach. Frequently overlooked, these subtleties of communication often affect a listener's reaction to a message even more than its basic content. Similarly, your choice of language—particularly your awareness of the fine shades of meaning and emotion in the words you use—predetermines in large part the reactions of your listeners.

6. *Take the opportunity, when it arises, to convey something of help or value to the receiver :*

Consideration of the other person's interests and needs—the habit of trying to look at things from his point of view—will frequently point up opportunities to convey something of immediate benefit or long-range value to him. People on the job are most responsive to the manager whose messages take their own interests into account.

7. *Follow up your communication :*

Our best efforts at communication may be wasted, and we may never know whether we have succeeded in expressing our true meaning and intent, if we do not follow up to see how well we have put our message across. This you can do by asking questions, by encouraging the receiver to express his reactions, by follow-up contacts, by subsequent review of performance.

8. *Communicate for tomorrow as well as to-day :*

While communications may be aimed primarily at meeting the demands of an immediate situation, they must be planned with the past in mind if they are to maintain consistency in the receiver's view ; but, most important of all, they must be consistent with long-range interest and goals. For example, it is not easy to communicate frankly on such matters as poor performance or the shortcomings of a

loyal subordinate—but postponing disagreeable communications makes them more difficult in the long run and is actually unfair to your subordinates and your company.

9. *Be sure your actions support your communications :*

The most persuasive kind of communication is not what you say but what you do. When a man's actions or attitudes contradict his words, we tend to discount what he has said. For every manager this means that good supervisory practices—such as clear assignment of responsibility and authority, fair rewards for effort, and sound policy enforcement—serve to communicate more than all the gifts of oratory.

10. *Seek not only to be understood but to understand—be a good listener :*

When we start talking we often cease to listen in that larger sense of being attuned to the other person's unspoken reactions and attitudes. Even more serious is the fact that we are all guilty, at times, of inattentiveness when others are attempting to communicate to us. Listening is one of the most important, most difficult—and most neglected—skills in communication. It demands that we concentrate not only on the explicit meanings another person is expressing, but on the implicit meanings, unspoken words, and undertones that may be far more significant. Thus we must learn to listen with the inner ear if we are to know the inner man.

The Anodic Oxidation of Aluminium

BY

O. SOUTER

1. GENERAL

(A) Types of anodising oxidation

As a result of the anode or electrolytic oxidation in connection with a suitable electrolyte and necessary current, aluminium is transformed from the surface inwards into aluminium oxide or aluminium hydroxide $Al(OH)_3$. The necessary oxygen for the process is taken from water through electrically decomposing the water to its elements in the electrolyte cell, and is deposited on the anode (positive electrode). The hydrogen is deposited on the cathode (negative electrode); here it rises in the form of bubbles and disperses. As can be derived from the title anode oxidation, the aluminium to be treated is placed as an anode in the bath, i.e., at the positive pole of the current. Alternating current can be used as a substitute for direct current, but only half of the diagram wave acts positively in the process. This can be overcome by placing the aluminium to be treated at both poles (with 3-phase current at the 3 poles) and so the current is fully used without waste.

(B) Oxidizing methods

The many oxidizing systems differ principally in the type of electrolyte used. The most popular system used is diluted organic acids or acid mixtures accompanied by salts or other materials. The electrolytes mostly used are sulphuric acid, chromic acid and oxalic acid; the system of anodising is named after the acid used.

The most popular method used today is the sulphuric acid method derived from researches in America, using direct current. This is

generally known as the direct current-sulphuric acid method or in short DS method.

The advantages are: cheap electrolyte (commercial sulphuric acid of 10 to 30% concentration), low electric consumption 1.5 to 2 Kwh/sqm., simple manipulation and supervision. Different oxide films can be achieved by varying the conditions in the processing. Further information on this subject follows later.

The chromic acid method was the work of the Englishmen, Bengouth and Stuart. The process is often named after them. According to the inventors, the method of procedure is as follows: The voltage should be progressively raised from 0 to 40 during 15 minutes and kept at that peak for 35 minutes. Then, step up the voltage to 50 in the next 5 minutes and hold it there for another 5 minutes. The current should not exceed 1 Ampere/sq.dm. The electric current used is 3 to 4 KWh/Sqm.

The oxalic acid method, also called the DX or DXH method, when using direct current, or the AX method when using alternating current, or the AX-DX method when first using alternating and then direct current. The oxalic acid as electrolyte is used with a concentration from 2 to 12%. Often salts as chromate, sulfate, permanganate are added.

The Ematal method (patent 182415, dated 8-1-1935). Here titanate oxide, for example, is bound with the oxide film to give it a white colour with good covering qualities through which light does not penetrate. Oxalic acid is used advantageously in combination with a titanate salt as Titanate-potassium-oxalate. The

oxidation takes 20 to 30 minutes at 35°C with 30 volts and 1.5 Amperes/sq.dm.

(C) Character of the oxidated film

The character of the film obtained by anodising aluminium and its alloys depends to a great extent on the oxidation method used. It is also affected by oxidation conditions and not least by the heat treating or rolling, etc. The type of material used also has its effects.

(a) Colour shade and presentation

Although aluminium oxide is white or almost without colour, the oxide film can be of very different shades in colour. The shades are effected by any foreign matter in the aluminium itself as well as by the different buildups of the films. Very thin films show interference colouring (rainbow colours) and here generally it can be assumed that the oxide film is not good or insufficient.

The D. S. system usually gives the brightest films and is colourless without exception on pure aluminium as well as on anticorodal and avional when these materials are heat treated. On cast anticorodal with 5% silicon, the film becomes grey owing to the silicon.

The appearance of the oxide layers is considerably effected by the *mechanical treatment* to the surface beforehand. Grit blasting always results in giving a grey colour after oxidation. If this is to be avoided, the material must be pickled beforehand; also when surfaces are dull polished pickling is necessary if smudges and streaks are to be avoided after oxidation. Highly polished articles retain their mirrorlike surfaces only when they are of pure aluminium. On all other aluminium materials the mirror polished surface gives way to a silky shine after oxidation.

(b) Thickness of layer (film)

Considerable variation can be achieved in the film thickness as this depends primarily on the amount of current used and of course on

the time given. From practice it can be said that 1 Ampere h/sq.dm. gives a thickness of 15—18 mikrons of a millimeter. Owing to the counteraction of the bath, this layer is reduced when left in the bath longer than necessary. For most cases 10 to 15 mikrons are sufficient.

(c) Hardness of the oxide film

Considerable deviations are to be found in the hardness of the oxide film. It is possible to obtain a film as hard as carborundum, i.e., harder than glass. This largely depends on the aluminium used. The hardest films can be obtained on pure aluminium and here the hardest films are obtained with the D.S. system. Again it must be said that oxidation or bath conditions effect the hardness.

(d) Corrosion resisting qualities

The oxide film protects the metal against injury from many elements that would badly corrode the naked material. However, after leaving the bath, the oxide skin is not as yet perfect, but emerges with countless numbers of microscopic pores. These have to be sealed before the film can boast its high corrosion resisting qualities. Sodium hydroxide or Na OH and other alkalines as well as acids remove the oxide film.

(e) Porosity and paint taking qualities

As long as the pores have not been sealed, the film has varying capacity for holding liquids. This capacity varies according to the conditions of the oxidating process. In this way organic points of different colours can be applied or organic pigment paints, known for their fine colouring qualities, can be married to the oxide film.

(f) Isolation qualities

When dry, the oxide film gained in an electrolytic process has a high resistance to electrical current. D. S. or D. X. systems give films that can isolate more than 500 volts.

(To be continued)

Cinema-cum-Buffer Cars on Railways

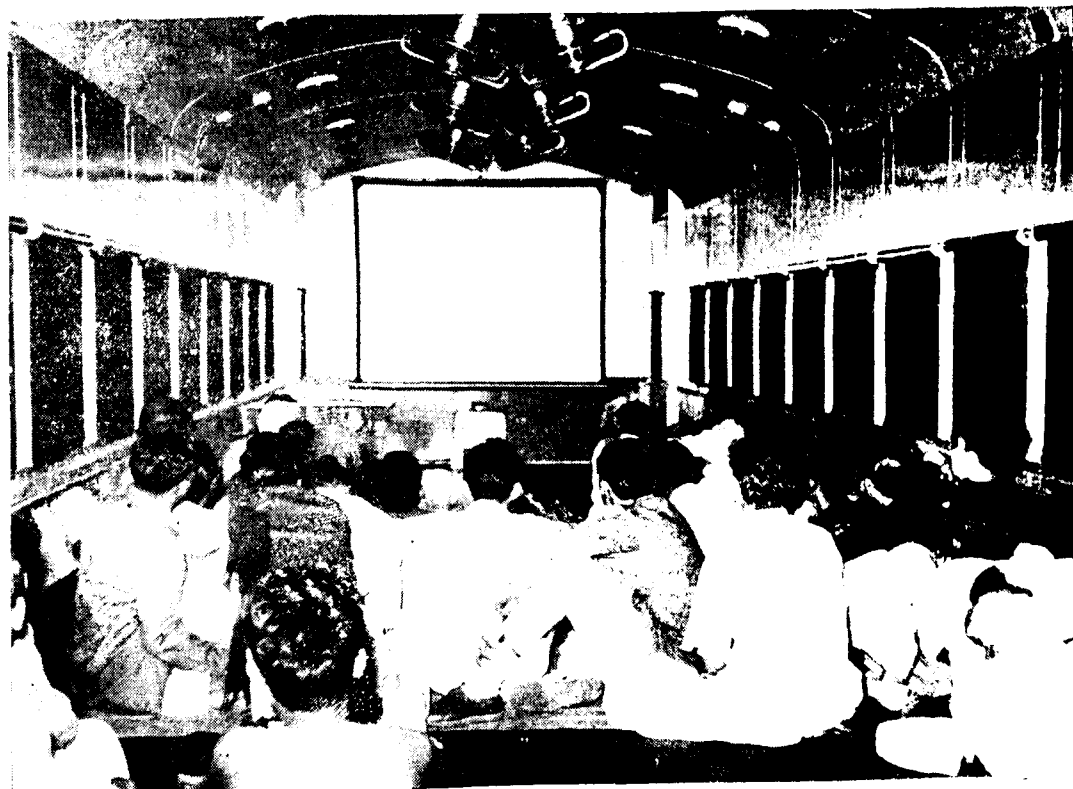
On November 15, 1956, a Cinema-cum-Buffer Car made its maiden run on the 69 Up Howrah-Delhi Janata Express train, marking the entry into regular service of 'Cinema-on-rails' for the first time in India. The Cinema-cum-Buffer Car ran between Jhajha and Kanpur, a distance of over 400 miles. The car has since been plying between Jhajha and Kanpur on the Howrah-Delhi Janata Express trains on certain specified days every week. Admission is by payment of a nominal fee of two annas per passenger per show.

This latest innovation in one of the country's popular trains is yet another stage in the process of evolution in amenities intended for the largest body of rail-users in the country.

To make travel more enjoyable, the passengers have the dual purpose Cinema-cum-Buffer Car which attempts to compound education and entertainment with utility.

The cinema rail-car takes the social education campaign on the railways a step further. The campaign aims at promoting a more intelligent use of rail amenities and a better appreciation of the all-round developments in the country. Documentary films on India's Five-Year Plans, cultural subjects, various aspects of railway operation and social education are screened in the Car. The results of this experiment will be watched for some time and the experiment may be extended to other routes in the light of experience gained on the Eastern Railway.

Passengers waiting for the cinema show in the Cinema-cum-Buffer Car



The Railway Minister inside the Cinema-cum-Buffer Car

The Cinema-cum-Buffer Car is an integral coach built by Schlieren, a Swiss firm associated with the Integral Coach Factory of the Ministry of Railways. The inside finish and furnishing has been done by the Eastern Railway's Lillooah Workshop. To minimise vibrations, the underframe and the coach have been welded together into an integral unit.

Special features of this car are the louvres and glass windows of light aluminium frame with better sealing against dust. Doors have special hinges with ball bearing arrangement and a protection guide to guard against jamming. The underframe is of pressed section and is all-welded.

The interior of the coach has several sections. One is the main hall which serves as the auditorium where films are shown. This is

converted into a buffet lounge when the shows are not on. The other is divided into compartments, with a corridor running alongside. These compartments are used as the projection room, manager's office, generator room, stores, etc. In the main hall, there are four side doors for the exit and entrance of the passengers. There are 24 windows fitted with louvres, glass, and a rolling screen inside in every window.

Interior side panelling is done in plywood. The pleasing look about the interior has been secured by the use of bright aluminium moulding, running in full length of the hall on the sides and ceiling, which tends to reduce the inside height of the body. The main hall is painted with light brown up to waist, above waist up to cant rail with light buff. The ceiling is painted white. The outside colour

of the coach is gulf red. 'Exit' is marked over the door-ways from inside.

Fire extinguishers and fire buckets have been provided in the Cinema Car to meet emergencies. There is an exhaust fan in the projection room and ventilators have been equally spaced in the roof.

The car is fitted with the latest model 622 Bell and Howell 16 mm optical sound projector. The fitting is such that the projector can be installed firmly and securely and operated when the train is running. The projection is smooth in spite of the vibration due to the operation

of the generator and the oscillation caused by the running train. There is a monitor loud-speaker for controlling the volume and tone of sound.

As its name implies, the dual purpose car provides cinema and buffet service alternately. The snack bar opens for the passengers when the cinema shows are not operating. Tea, coffee and snacks are sold to the passengers across the counter at moderate prices.

Tickets for the cinema shows are sold only to passengers holding Railway journey tickets or passes. Sixty passengers are admitted at a time.

His Excellency Mr. Chou-En-lai Visits Integral Coach Factory

December 6, 1956 was a memorable day for the Integral Coach Factory, Madras, because on that day His Excellency Mr. Chou-En-lai, Prime Minister of the People's Republic of China, visited the works and was very pleased with this Indian venture.

His Excellency was accompanied by Marshal Ho Lung, the Vice-Premier of China, Mrs. and Mr. R. K. Nerhu, Ambassador of India in China, Shri M. Bhaktavatsalam, Madras Minister, and interpreters. On arrival at the Administrative Office, His Excellency and party were received by the Chief Administrative

Officer, Shri K. Sadagopan. A guard of honour presented by the Railway Protection Force was inspected by His Excellency. The National Anthems of China and India were played by the Southern Railway Protection Force Band.

After the review of the parade, the Chief Administrative Officer explained to the Prime Minister and party the history of the Integral Coach Factory and details about production targets, design of coaches built, etc.

His Excellency accompanied by the Chief Administrative Officer, the Vice-Premier and

The Prime Minister of China inside the Workshops



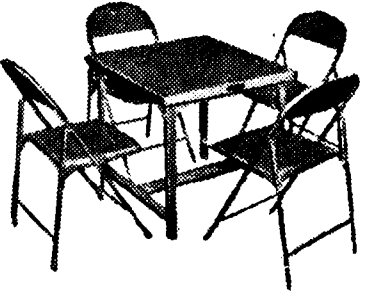


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An apprentice presenting a bouquet to the Chinese Prime Minister at the Basic Training Centre

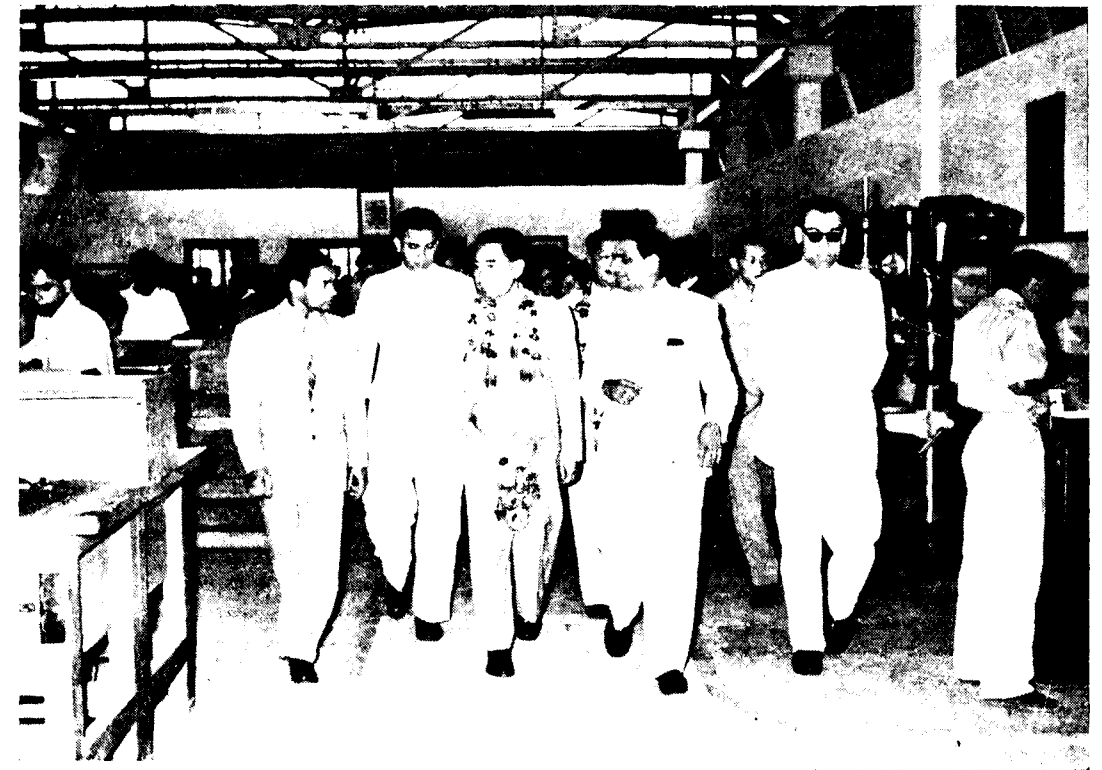
party then left for a round inside the various shops of the Factory. The Prime Minister of China was greatly interested in the various details relating to the assembly of coaches and evinced keen interest in the amenities provided to the workers.

Later His Excellency and party visited the Basic Training Centre of the Technical Training School and other sections of the School. The interest evinced by His Excellency was apparent in the keen interest he evinced in the boys

under training at the Centre and other details about the school.

From the school His Excellency and party proceeded to the Staff Colony where an array of children greeted them with Chinese and Indian National Flags and presented a bouquet to the Prime Minister.

On returning to the Administrative Office, His Excellency and party had tea at the Meeting Room with the Officers of the Factory. Over tea His Excellency made detailed enqui



The Chinese Prime Minister at the Technical Training School
Children of the Workers Colony gathered to welcome the Chinese Prime Minister



ries about the production plan in the Factory etc. His Excellency was also pleased to record in the Visitors' Book his impressions in Chinese which, when translated, read as follows :—

“It is worthwhile for the Chinese to come and learn in this modernised Coach Factory. The Factory is well-built and well-organised. Its technology and the training given are very good. It is worthwhile for the Orient to take pride in the Factory.”

The Chinese Prime Minister addressing the workers of the Factory



Finally the party came down to the lobby of the Administrative Office building opposite to the lawns where a large number of workers had gathered themselves to offer an ovation to the Prime Minister of China. The Chief Administrative Officer Shri K. Sadagopan, in a short speech said that it was a red-letter day in the annals of the Factory and that the visit of the Prime Minister of China and the Vice-Premier was a source of inspiration and encouragement to the workers of the Factory. The Indian People had fraternal interest in the people of their great neighbour, China. The Chief Administrative Officer offered the best wishes of the Integral Coach Factory workers to the brother workers in China and hoped that China which had already taken a notable place in the comity of nations would have a still brighter and more glorious future.

The Chief Administrative Officer then presented His Excellency a silver model of the Integral Coach manufactured in the Factory, as a memento of His Excellency's visit to the Factory.

His Excellency, Mr. Chou-En-lai, addressing the assembled workers expressed his happiness at the opportunity afforded to him to visit the factory. He had made up his mind to send people from China to learn here. “Just a while ago,” the Chinese Premier said, “we went round this factory and we could see for ourselves how well-built and well-organised it is. The technical training given to the workers is very good. We may say that all the Orientals including the Chinese can take pride in such a factory.” He expressed appreciation of the fact that Swiss engineers helped Indian workers to build the factory.

The National Anthems of China and India were played before the Chinese Premier and Vice-Premier left the factory amidst full-throated ovation from the workers :—



The Chinese Prime Minister bidding farewell in the traditional Indian fashion at the conclusion of his visit

“Pancha Shil Zindabad, Bharat Chini
Mythry Zindabad, Pancha Shil Samar-

thak Pradhan Manthry Chou-En-lai
Zindabad.”

Furnishing Annexe to the Integral Coach Factory

The Ministry of Railways, Railway Board, have sanctioned the construction of a Furnishing Unit as an adjunct to the Integral Coach Factory, in order to undertake the complete furnishing of the integral Broad Gauge coach shells now being produced in the Factory. The Integral Coach Factory will be able to turn out 350 Broad Gauge coaches per year, ready for service on line.

The Integral Coach Factory is, at present, designed for producing 350 Broad Gauge coach shells only and will attain its full production in the year 1959-60, much ahead of the original schedule. The shells now produced in the Integral Coach Factory, are to be furnished on the Central and Southern Railway Workshops. Pending the completion of the Furnishing Unit and the full furnishing work being undertaken there, arrangements have also been made to commence a gradually increasing furnishing work with some temporary facilities. The

Furnishing Unit is expected to be brought into production in 1960-61. A gradually decreasing number of shells will be furnished by the Railways while an increasing number would be furnished by the Integral Coach Factory until the full work is undertaken in the Furnishing Unit in 1960-61. This will, therefore, release the capacity available on the Railways to be utilised for coach building and for repair and maintenance of coaching stock which are badly needed to meet the increasing demands of the Second Five-Year Plan. When the Furnishing Unit is completed, the Integral Coach Factory will employ over 6,000 staff of all categories and will give an outturn of 350 coaches per annum.

Additional staff quarters are also being planned numbering about 200 to house the essential staff of the Furnishing Unit. The layout of the Staff Quarters will be similar to the present I.C.F. Staff Colony, with all amenities.

Co-operative Week Celebrations In Integral Coach Factory

In connection with the All India Co-operative Week observed throughout the country, two meetings were organised by the Integral Coach Factory Employees Co-operative Stores.

At the first meeting which was held on the 6th November 1956, at the Technical Training School, Rao Sahib S. Muthukrishnan, M. A., President of the T.U.C.S., Madras, spoke at length on the ethics of Co-operation as a human activity. The function was presided over by our Chief Administrative Officer Shri K. Sadagopan.

Shri Muthukrishnan said :—

“I do not belong to the Co-operative Department proper. But my profession had been teaching the various arts in the Training Colleges in the Madras State since 1909 to 1945. But I developed an intensive interest in two aspects of the co-operative movement in

general and have been connected in some kind of co-operative movement or other from 1951. The special interest I had was in two directions—one was co-operative farming which I have been working on for the last 15 years in a village in Tanjore District. This is one subject in which I am deeply interested and the other one is consumer co-operation. This interest I developed early in 1948 after I came into the T.U.C.S. as a Director. On this subject I have a few ideas which I have visualised in my mind as a result of the working of the T.U.C.S. for the last 8 years and as a result of the study of the co-operative movement in Great Britain, America and other Western countries and above all as a result of coming into close contact with the late Prof. Hanumanthayya.

“I wish to say a few words about my second subject, consumer co-operation and consumer

Rao Sahib S. Muthukrishnan speaking



interest. The first point to be taken up is the consumer problem. Is there any problem for the consumer? Generally people say there is a problem for the producers in that they have to find a market for their production. In western countries, before the industrial revolution, the consumers' problem was not felt as an acute one. But after the industrial revolution, large-scale industries were introduced and the labourers were at the mercy of the industrial magnates.

"In India the consumers' problem was not at all felt some 150 years ago when 2 to 3 per cent of the population were living in towns. Most of the villages were self-sufficient in regard to consumer goods and services required by the inhabitants of the village and the disparity between the rich and the poor was not so much in evidence in those days. But, now we see the disparity between the richer class and the poorer class.

"The consumers' problem has become more and more acute as civilisation advanced. There is no problem to-day, whether it is social, economical, political or spiritual that can be localised. Everything has become country-wide, depending upon any event in the financial, political or the economical fields which take place in America or the Suez Canal, and have repercussions throughout the world. That is the world-wide effect. The consumer problem also has become a world problem at one end but it is also a local problem."

Rao Bahadur Muthukrishnan then gave some details about the Triplicane Urban Co-operative Society which was a premier organisation in South-East Asia.

Concluding his speech Shri Muthukrishnan said:—"The Co-operative movement has three definite aims. The first is the economic aim, the second is the social aim and the third is the spiritual or the ethical aim.

"The Co-operative movement is a purely voluntary organisation. Just like a democratic

Government is government by the people and for the people, the consumers' organisation is organised for the people by the representatives of the people. But the representatives are required to shoulder responsibilities in a big organisation with integrity of character and capacity."

Shri K. Sadagopan, Chief Administrative Officer, in his presidential remarks, said:—

"This week all over the country we are celebrating the co-operative week and, in the fitness of things we, in the Integral Coach Factory, also want to celebrate in a humble way this co-operative week.

"We have listened with great interest to the address Rao Bahadur Muthukrishnan, President of the T.U.C.S., delivered to us. We have been extremely fortunate in getting him to talk to us this evening on this subject. He has considerable wealth of experience behind him.

"Co-operation is really democracy in the economic field. If you want to be members of a Co-operative society you will have to take some responsibility in selecting the people who should run the society. Co-operation has many forms. There have been, from 1904, Co-operative societies, what are known as Co-operative credit societies. Co-operative credit societies, by and large, can succeed. There were also non-credit societies known as consumer co-operatives. I myself have had to do something with a co-operative store as a Railway Officer. Running a co-operative stores is not a joke. It is a very difficult thing. You must select people who have a high standard of integrity, people who have enthusiasm for giving off their best, without any consideration for self, for the members of the Society. Unless they are animated by such faiths and ideas, these co-operative consumer societies, in my opinion, are sure to fail. In India the co-operative movement has not succeeded on any great scale. The number of people we cover is



Shri K. Sadagopan, Chief Administrative Officer, addressing

a drop in the ocean and if at all we have succeeded, it may be said to be in the field of co-operative banking. But as I said the most difficult field is consumer co-operation.

"We have started a co-operative stores and are running a canteen or two. So it is of the utmost importance that you should choose representatives of the right type. We have to go to the rescue of consumers, not only members but also non-members, during, times of scarcity or during times when essential commodities are cornered or disappear. It is on such occasions that the co-operative consumer societies have rendered signal service."

Concluding his speech Shri Sadagopan said: "We are a small family compared to the T.U.C.S. We have a stores run on proper lines and

my only wish and prayer at this moment is that the share-holders of this Society will have the patience and imagination and the judgment to select proper people and a proper executive to run their societies. If you practice co-operation in this field, I may venture to say, it will develop in all of you a brotherly feeling that all of us are real members of the Integral Coach Factory family. This feeling will indeed find an expression in production and thereby the Integral Coach Factory will rise from strength to strength and build for itself a unique position in the industrial field in India."

The second meeting arranged was held on the 7th November 1956 at the Workers' Canteen under the presidentship of Shri R. Rajagopalan, Dy. C.M.E./OSD. Shri K. Nachinarkiniasivam, President of the Madras

Co-operative Milk Supply Union, gave an illuminating lecture on the merits of co-operation as a means of solving all human problems.

Shri A. Venugopala Menon, Assistant Labour Welfare Inspector, welcomed the gathering and gave a short resume of the co-operative activities of the Integral Coach Factory employees. Shri K. Nachinarkiniasivam then addressed the gathering.

At the outset Shri Sivam thanked the organisers of the meeting for having given him an opportunity to address them. He said that the Madras State was in the forefront in the co-operative movement in the country. The most important activity on the co-operative side indulged in Madras State was in connection with the supply of milk to a large number of consumers in the city.

Co-operation, according to Shri Sivam, was an all-pervasive movement embracing all kinds of human activity. It was essentially a natural phenomenon in human life. It was rather an inward urge to get together and solve all kinds of social problems. Shri Sivam said that the Indian Constitution visualised an ultimate co-operative Commonwealth for the country as the ideal to be achieved.

Co-operation as a movement in the world first started in Germany where a few people started a small association for solving their common day-to-day problems. India was a largely agricultural country and naturally rural indebtedness was a great malaise. To come over their difficulties in respect of finding money for their daily needs, villagers in various parts of the land organised themselves into small co-operative units. Shri Sivam said that the order of rural indebtedness was Rs. 400 crores in India.

Speaking about the inception of the co-operative movement in India Shri Sivam said that co-operation as a social instrument was started in the year 1904. Co-operative banking

was an important branch which helped a lot in solving rural indebtedness. A net-work of co-operative unions in villages and Central banks at district head-quarters were the essential feature of co-operative banking.

Shri Sivam continued that Madras State was in the forefront in developing co-operation. He referred to the Triplicane Urban Co-operative Society which was a highly successful venture catering to the necessities of a large number of consumers in the city. Though the prices of some commodities sold by a co-operative institution seemed to be a little higher than the prevailing market rates, in the ultimate analysis, the benefits of the surplus accumulated in the course of a year were distributed to all the constituents, thus bringing an advantage to members of a co-operative endeavour. In short the essence of co-operation was the no-profit motive, unity among the members, and spirit of service.

Shri Sivam then spoke about the co-operative movement with which he was concerned. He said that 180 small milk supply unions were members of the Madras Milk Supply Association. Apart from agriculture, the villagers had to depend upon other means of earning their livelihood. Cattle farming was an important subsidiary work and the establishment of a co-operative association in Madras encouraged villagers in the neighbourhood to take to cattle farming. Lorries were sent to the various villages to collect milk after testing their purity. About 10,000 measures of milk were daily supplied to the consumers in the city. This kind of co-operative movement in the field of milk supply ensured not only purity of the product but also cheapness, which was an essential thing for the poor and middle class consumers. About 700 villages in Chingleput District benefited because of their association in this co-operative movement.

Shri Sivam continued that every human activity could thus be performed successfully



Shri Nachinarkiniasivam speaking at the Co-operative Meeting at the Workers' Canteen

through Co-operation. Ultimately it would help the annihilation of class differences. People were gradually coming to understand the benefits of co-operation in all fields of human activity. Shri Sivam then referred to the very popular consumers' movement in Britain and the popularity of co-operation in Denmark. The co-operative week was celebrated throughout the world by 105 countries.

Shri Sivam concluded his speech, urging the employees of the Integral Coach Factory to realise the benefits of co-operation.

Shri R. Rajagopalan, in his presidential remarks, appealed to the gathering to deeply contemplate over the advice given by Shri Sivam in his brief speech. He said that co-operation was essentially a second nature for all human beings, bringing forth a spirit of happily sharing good and bad. It was necessary that the spirit of co-operation should be understood in its proper perspective.

Shri Ramakrishnan of the XEN's Office proposed a vote of thanks and the meeting came to a close.

Universal Children's Day

BY
S. G. IYER

In deference to the wishes of the Prime Minister of India and in accordance with the directive issued by the Madras State Educational Department, Universal Children's Day was celebrated by the children of the I.C.F. Colony School on 14-11-56, the birthday of Shri Jawaharlal Nehru, in a fitting manner.

The celebrations were planned such that all children would be able to take an active part in them, develop fraternal feelings and enjoy the day to the fullest extent.

At 7-30 hours in the morning all the school going children of the staff colony, dressed in colourful costumes and bedecked with flags and

flowers, assembled in the I.C.F. Children's Park. They then went round in procession along all the roads of the colony, to the accompaniment of a band, and finally reached the Colony School at 8-30 hours.

The Deputy Inspector of Schools, Mylapore Range, who is the inspecting officer for the Colony School, attended the celebrations by invitation. A packet of sweets was distributed to each child of the school by the Deputy Inspector of Schools. There was a competition in paper work for students of Standards I and II and clay modelling for students of Standard III. Pupils of Standards IV and V numbering about

The I.C.F. Colony School children celebrated children's day with great eclat



35 were taken on a visit to the I.C.F. by two of the teachers.

The evening celebrations were held at the I.C.F. Institute hall under the presidentship of Shri K. M. Arunachalam, Headmaster of the Singaram Pillai High School, Villivakkam. The Institute hall was tastefully decorated for the occasion. After prayer, the President assisted by Shri L. Balakrishnan and Shri K. S. Pattabiraman, inspected the entries, for the morning competitions, which were on display in the verandah of the Institute. This was followed by a Fancy Dress competition amongst the students of Standards IV and V. The prize winners in the Fancy Dress competition in the order of merit were "Sooth Sayer" portrayed by Shri S. Krishnamurthy of Standard V, "The Teacher's Widow" portrayed by Shri J. Nagarajan of Standard V and "Gipsy" portrayed by Miss Premavathi of IV Standard.

In a short speech welcoming the President, Shri S. G. Iyer, Manager of the School, introduced Shri K. M. Arunachalam as an endearing neighbour, who gives educational asylum to the students of the I.C.F. Colony School on completion of their elementary education.

Shri Arunachalam explained in a lucid speech the significance of the day and its happy association with the Prime Minister of India. He laid particular emphasis on the need to develop the children's mind in the academic, social, cultural and aesthetic spheres and appealed for the close co-operation of the parents and the teachers in achieving them.

After a vote of thanks by T. K. Srinivasan, Assistant Manager of the School, a few recrea-

tional and educational films, particularly of interest to children were screened. The function came to a close with the singing of the National Anthem.

PRIZE WINNERS

PAPER MODEL :

I STANDARD

I PRIZE : K. Charles Jayaraj

II PRIZE : Theresa

II STANDARD

I PRIZE : Gowri

II PRIZE : S. Alamelu

CLAY MODEL :

III STANDARD

I PRIZE : Ramanujulu
Samuel

II PRIZE : Venkatesan

Visitors to the I.C.F.

During the month under review there were very few distinguished visitors to the Factory.

Mr. W. J. Rustom of M/s. J. Stone & Co., called on us on the 6th of November 1956. Mr. L. L. Boyd, Managing Director, The United Steel Cos., India, Ltd., and Mr. C. F. Ryan visited the Factory on the 20th November.

The Hon'ble Mr. Y. K. Lule, Minister for Rural Development in Uganda, accompanied by his permanent Secretary, Mr. M. A. Maybury, visited the Factory on the 22nd instant. The Hon'ble Minister was received and shown round the workshops and the Technical Training School. The Hon'ble Minister was very favourably impressed by the "first-class layout of this important undertaking" and Mr. Maybury remarked that "it had been an ins-

piring experience to witness the work going on" in the Factory.

The Hon'ble Shri Motiram Bora, Minister for Finance, Revenue, Relief and Rehabilitation, Government of Assam and party visited our Factory on the 26th instant. In the absence of Shri K. Sadagopan, CAO (R), he was received by Shri K. Swarup, the Dy. Chief Mechanical Engineer, and shown round the workshops, the Technical Training School and the Staff Colony. At the conclusion of the visit the Hon'ble Minister was pleased to express that it "was a unique experience" for him to go round the works.

Mr. Duncan Burn of the "Times" of London, Mrs. Barbara Wright of Bedford College, London, Mr. J. Macartney-Filgate of

Shri Y.K. Lule, Minister in Uganda (Second from left)



Shri Motiram Bora, Minister in Assam State (Third from left)

High Power Delegation of Economists and Financial Commentators



the Lazard Bros., London and Mr. Paul Bureau of the "New Chronicle," London, Members of a High Power Delegation of Economists and Financial Commentators from the United Kingdom and Mrs. Macartney-Filgate visited the Integral Coach Factory on

the 30th November 1956. At the conclusion of the visit Mr. Duncan Burn of the "Times of London" recorded in the Visitors' Book that ours was "an outstanding instance of a well laid-out modern Engineering works making a most advanced design of product."

Bharata Natya Arangetral of Kumari Ganga

The Bharata Natya Arangetral of Kumari Ganga, talented daughter of Shri S. G. Iyer, Assistant Engineer, Integral Coach Factory, took place on Sunday the 4th November, 1956 in the immediate presence of Shri Kothamangalam Subbu and under the distinguished presidentship of Shri K. Sadagopan, our Chief Administrative Officer, at the St. Mary's Hall, Armenian Street, Madras. A select gathering including officers of the I.C.F. and important public personalities witnessed the function.

The artiste who is under ten years of age, has undergone a course of training in Bharata Natya under Shri Pathagudy Ramaswamy, an able dance-trainer. She has youth and form, two of the essential things for an amateur in the field of Bharata Natya to come up quickly.

The performance lasted full three hours, containing all the traditional stages of a Bharata Natya performance. During the interlude, Shri S. G. Iyer welcomed the guests and the audience and gave brief details of how, what was started as a sort of exercise for a girl of poor stature, had turned out to be the blossoming of a fine art. Shri K. Sadagopan referred to the aptitude possessed by Kumari Ganga for the art of which she was an exponent, and how it had been developed in a graceful and attractive manner by her teacher. Shri Kothamangalam Subbu, in an eloquent speech, congratulated the girl on the harmonious blending of a sense of *Laya* and of a clarity of *Bhava* and *Abhinaya* which she exhibited, and said that these were the keynotes of Bharata Natya. He felt that the performance of the girl was pure and unblemished in the traditional style and that it should be exhibited in the presence of eminent artistes like Shrimati

Rukmani Arundale and Shrimati Balasaraswathi who had dedicated their lives to the art. In conclusion Shri Subbu congratulated the master, Shri Ramaswamy, on the excellent training imparted by him.

The artiste was presented with a gold medal by the College of Indian Music where she is learning vocal music. She was garlanded by representatives of a number of Sabhas in Madras and was the recipient of presents and bouquets from friends and well-wishers.

* * *

I had an opportunity to witness the performance and have been impressed in my own way by the little lady's exposition. The quickness of her feet and the elegance with which she

Kumari Ganga



used her limbs to interpret the themes portrayed by the musicians were inspiring. She will have a good future, and what with Shri S. G. Iyer's

Shri Sadagopan blessed the girl



efforts, she will improve her ability as she grows up and become a model Bharata Natyam Artiste. The *Sahdam* piece was particularly enthralling in that the girl exhibited a variety of facial expression in tune with the changing moods of the song.

Bharata Natya, like other fine arts of the East, has a deeper significance than ordinary entertainment. It is considered as a means towards godhead. The music of Tyagaraja is a standing example of God having been realised through an art.

The compositions, almost all of them in Tamil were most of the *Sringara* type. Of course the intention behind them ought to have an esoteric significance, but, as all should have experienced, the "slippery blisses" are only apparent to an ordinary *rasika*! So far as the higher arts are concerned I am not a democrat because by experience I have learnt that an artiste flowers one amidst a million, endowed with Godly potentialities.

Kumari Ganga's exposition of Bharata Natya was superb and I wish her an illustrious future.

CRITIC



Your Vegetable Garden

BY

M. V. B. MENON, F.R.H.S.

Vegetables form an essential part of our diet. They provide vitamins and other body-building minerals such as Calcium, Iron, Phosphorous, etc., to keep the body in good condition. If one is able to live on largely fresh and green vegetables, the rice contents of the diet can be reduced, and thus help to ease the food problem in the country. It has been realised that India must grow more food to feed the ever-increasing population. Vigorous attempts have been made during the last ten years after Independence to produce more food.

A garden whether of flowers, vegetables or fruits is generally very pleasing. Apart from the benefits obtained from the produce, there is a certain amount of delight in gardening; brought about by the loveliness of the flowers with their fine fragrance varying from season to season and the invigorating freshness of the vegetables and fruits.

When a vegetable garden is being considered, it must be placed in relation to the general

use of the home grounds. The magnitude of the intended vegetable garden will depend to a great extent upon the space available. It is better to start with a small home garden and maintain it well, for a small plot properly cultivated can give good yield. The question is not, how large a vegetable garden one can have, but how much one can get the best out of the soil. The vegetable plot must be separate from the ornamental garden and if possible fenced off by a good hedge. Generally the vegetable plot is located in the small house in a back-yard near the kitchen.

Vegetables are grouped into two classes :—

1. Tropical. 2. Temperate and sub-tropical. The former is best suited to average and low elevations and grown in summer and rainy seasons. The latter is best suited to colder climates in Hill Stations 3,000 ft. or more above sea level. Some of these, however, can be grown at sea level in the colder months, and they are therefore known as cold season vegetables. The selection of varieties of vegetables

for cultivation in a home garden depends upon :—

- 1. The favourites of the family.
- 2. Those that have been found successful in the past years.
- 3. Those that are growing in and around the house.

The ideal soil for the successful growing of vegetables is well drained loose loam, rich in organic matter which will retain moisture and promote abundant root growth. However, the physical conditions of the soil can be improved by the application of clay and organic matter to sandy soils and sand compost and green manure to clayey soils. Primarily, the land should be thoroughly dug up to a depth of 1 to 1½ ft., grass roots, stones, weeds, etc., removed and the area levelled. Then the plot can be laid out into plots of convenient size. Well rotted cattle manure or well decomposed town compost are to be applied and worked in to bring the soil into a proper condition. The bed should be then levelled and ridges and furrows made at suitable distance—say 2 ft. to 2½ ft. Tomatoes, brinjals, Ladies' fingers grow well on ridges ; gourds and melons in pits 6 to 8 ft. apart ; and root crops in broad ridges. For a plot of 100 sq. ft. area, about 50 to 75 lbs. of well rotted cattle manure is required to bring it into usable condition. Seeds or seedlings are sown in separate beds, i.e., planted in the ridges or pits. Then the plot is watered everyday until the seeds germinate or seedlings establish themselves in the soil, depending upon the retentivity of the soil of moisture. The weak seedlings should be rejected out and only the robust ones retained. After 2 or 3 weeks a mixture of ground-nut cake, super-phosphate, ammonium sulphate and potash in small quantities or a ready vegetable mixture which is available in the market is to be applied. The application of fertilizers should be done care-

fully in small quantities and at regular intervals when the plants grow, if they are to be earthed up and trained in supporters. Gourds in particular are to be trained first on props and then allowed to grow on pandals.

The following are some of the popular varieties :—

- 1. *Beans* :—There are a number of varieties in this group, French-beans, cluster-beans, broad-beans, sourd-beans, etc. Seeds are to be sown 6 to 9 inches apart. The best season is from July to November.
- 2. *Gourds* :—Pumpkin — ash pumpkin — bottle gourds, snake gourd, bitter gourd, etc. Soil is to be prepared as narrated and pits 1 to 1½ ft. diameter and 6 to 8 ft. apart are to be dug. The pits are to be filled with manured soil. It will be necessary to sow at least 5 or 6 seeds to realise at least 3 healthy seedlings. After 2 or 3 weeks a small dose of vegetable fertilizer is to be hoed in. These respond to heavy manuring and copious watering. Almost all of these will grow between July and August.
- 3. *Ladies' finger* :—Seeds are sown in ridges 1 to 2 ft. apart. There are several types: long, green, red, tall, dwarf, etc. When the plant is about 2 weeks, small quantities of vegetable mixture are to be added, soil loosened and mixed up well.
- 4. *Brinjals and Chillies* :—Seedlings are to be separately raised and to be transplanted when 35 to 45 days old. These can be cultivated throughout the year.
- 5. *Tomato* :—A good loam is the best suited soil for tomato. Seedlings are planted 1 to 1½ ft. apart in ridges. After the seedlings are established in the ridges, a small quantity of vegetable fertilizer is added and soil loosened up. Stake the plants and trail them on supporters.

Garden calendar for the months of January and February :—

	Flowers	Cultivation	Vegetables
January :	Few seeds can be sown in this month, such as Sun-flower, Gaillardia, Salvia, Farinacea (in the middle of the month). Cuttings of all shrubs to be taken for the next season. Gerbeas can be sown direct from flowers. Layerings of Verbena can be done in this month.	Liquid manuring for flowering plants and milching the soil once in 10 days.	Sow gourds of different varieties (Bitter gourd, Ash gourd, Bottle-gourd, Radish, Carrot, Chillies)
February :	In this month generally no annual seeds can be sown but Gailardia and Salvia can be sown in clayey soils if not sown in the middle of January.	Same as in January.	Sweet Corn, Cowpea, Gourds, Beans, Chillies.

Southern Railway VISIT SOUTH INDIA AND SEE

BADAMI	Famous for Jain excavations and cave temples of the 6th Century A.D.
BIJAPUR	For the Gol Gumbaz, a perfect whispering gallery and the second largest dome in the world.
CHIDAMBARAM	The famous temple dedicated to Sri Nataraja or Siva in His aspect as the Cosmic Dancer.
COURTALLAM (Via Tenkasi)	Well-known for its waterfalls. A famous bathing place and health resort.
HUMPI (Vijayanagar)	Marvellous ruins of the old capital of the Never-to-be-forgotten Hindu Empire, Vijayanagar.
KODAIKANAL	The charming hill station near Madura.
MADURA	Capital of the Ancient Pandya Kings, noted for its great Meenakshi Temple.
MYSORE	The city of lights. The enchanting Brindavan Gardens are only ten miles from Mysore.
OOTACAMUND	The queen of hill stations in India.
RAMESWARAM	For a holy bath and its famous temple.
TIRUPATI	The seat of the Lord Venkateswara or Balaji. Here every day is a festival day.
TRICHINOPOLY	Noted for its shrines at Srirangam and Tiruvanaikaval.
TRIVANDRUM	For its famous art gallery, museum and zoo.

MADRAS

Chief Commercial Superintendent

Thought Rambles

The Bird and the Fish

BY

S. R. SRINIVASA RAGHAVAN

Some days ago my attention was by chance drawn by a parrot which had its nest on one of the trees in my backyard. I stood for a while and observed the nest. There were two young ones to the parrot which it was feeding with great furore. I immediately began to contemplate over bird sounds. I have heard a lot of voices of these winged things, varied in their tones, during the mating season. The Tamil classics have celebrated these sounds in rhythmic poetry.

The parrot's nest in my backyard reminded me of Sylvia Lynd's "Return of the Goldfinches." In fifteen stanzas of sublime song Mrs. Lynd portrays the thoughts that bubble in her mind alternately, giving expression to them in terse and sweet English. How wonderful is her query to the bird whether the stripey shawl worn by her seemed pleasant in the eyes of the goldfinch! The climax is reached in the poem when the sublimest height is attained in the following stanza :

" Sweet birds, I pray, be not severe,
Do not deplore our presence here,
We cannot all be goldfinches
In such a world as this."

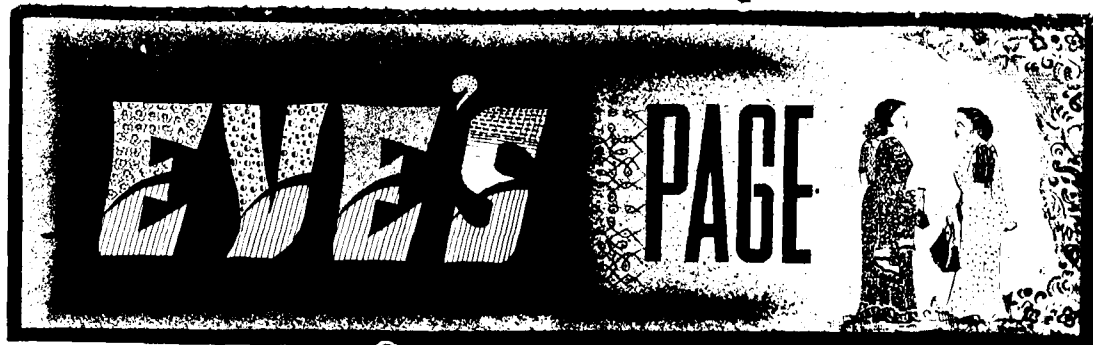
The tenderness and grandeur of Sylvia Lynd's mind is seen when she begs of the bird to understand that her family only wanted to live

with the bird in the garden. Thoughts of the morrow press the poetess and she is anxious to explain to the bird the character of her posterity :

" And when in other shining summers
Our place is taken by new comers,
We'll leave them with the house and hill
The goldfinches' good will."

I remember a film which I saw in my college days which portrayed the love of a cat for a fine fish that was kept in a glass pot. The lady of the house was sure that the cat would like to swallow the fish. She was careful enough, even while dosing on her easy-chair, to safely protect the pot by stretching her legs on both sides of it. But the cat did not want to eat the fish; it only wanted to kiss the "sea-nymph!" Finally, when the lady was fast asleep, the cat was able to jump to the table and have a wonderful lip embrace!

Such things remind a thoughtful man of the oneness of the universe and its created beings. The beauty and variety around us amaze and awe any sensitive being. The Suez Canal crisis and the Korean war seem to weigh very little in a world where such all-embracing love is possible. After all it is a short span of three score years and ten that we are going to live and why not love and let love men and things around us?



Rock-a-bye-baby

By

Mrs. SOWMYA RAMASWAMY

If putting a baby to sleep were as simple as singing Rock-a-bye-baby, how simple life would be! But life is not as simple as all that. Just take this one job of putting a baby to sleep.

We had just moved into a new flat. For a few days we had a busy time, what with settling down, arranging the things, and with the baby peevish too. At last, I thought we would have a quiet time, and that baby would sleep well too. But oh no! I soon found out how wrong I was.

Being newly constructed flats, there was still a lot of work to be done around, and this naturally resulted in a lot of noise. There were men re-laying the gravel path, digging the lawn, planting saplings, doing some carpentry work, and a hundred other odd jobs. The men carried gravel in a wheel-barrow, which had iron wheels. Now these iron wheels were anything but round in shape and when they moved made enough noise to wake a whole town up. Moreover, the barrow was a very small one, and could hold very little gravel at a time. This entailed in the men pushing it to and fro a number of times. I felt I could carry as much gravel as the wheel-barrow contained in a buc-

ket, with none of the accompanying noise, but there it was!

And then the men digging! At first I thought they were digging—for they had come armed with spades. But they were somehow managing to make a lot of noise without digging up any earth. On closer inspection, I found that they were only making the edge of the lawn and the gravel path neat. They were scraping the surface of the earth to remove the grass where it grew unevenly. If you do not know how much noise this makes, just listen to a person scraping a gravel path with a spade. With all this noise, baby hardly slept for five minutes together. After rocking the cradle for what it seemed to me hours at the time, I had at last put baby to sleep one day. I felt as if I had achieved something great, and was myself dozing off. Just then came a terrific noise, with the window panes rattling. I sat up dazed, wondering whether the roof had collapsed, or whether someone had dropped an A-bomb nearby. I soon found out the cause. Some men had just dropped a corrugated iron sheet outside our bed-room window and further emptied a cart-load of stones on top of that.

Before I could pull myself together, baby started screaming. It took me half-an-hour to quieten him down.

There were men pumping water from a well. And how they pumped! It sounded as if a tractor and a saw-mill were in operation at the same time. Luckily, I found that this did not happen daily, but only occasionally.

Then came the inevitable vendors, who announce their presence at the pitch of their voices. They come just when the inmates try to snatch a few moments for an afternoon siesta, and sell everything on earth, from broom-stick to lipstick; from ribbons and pins to hens and geese. They all appear to be gifted with powerful lungs, and when they shout, they really shout. Of course, it is their job to make themselves heard. I was extremely irritated when these people shouted, but at the same time I admired them. I wonder how they could shout like this, every hour of the day, every day in the year. These people seem to know no such thing as a hoarse throat. In the evenings, when I put baby to sleep and feel jubilant thinking there would be no more vendors for the day after dusk, loud comes the cry of "KRESS-NOIL."

The noise produced by the animal population is, of course, always present. There are quite a number of members from the canine world. I found that most of our neighbours possessed dogs—one, two or even three, according to choice and taste. These are brought out twice or thrice a day, according to the doctor's—I beg your pardon—according to the vet's prescription for airing. At these times, there is a hulla-baloo of noise, with several breeds of dogs barking at several different pitches. I found that one of our neighbours had a cat, and was on tenter hooks as to what would happen were the dogs and the cat to

meet. But fortunately, the dogs and the cat seem to be on amicable terms, and perhaps just nod 'good morning' and 'good evening' to each other.

There are a few odd stray dogs, which have fights throughout the night, and, like the Love Dog in the old poem, "Love to sit and bay the moon, to keep fat souls from sleep."

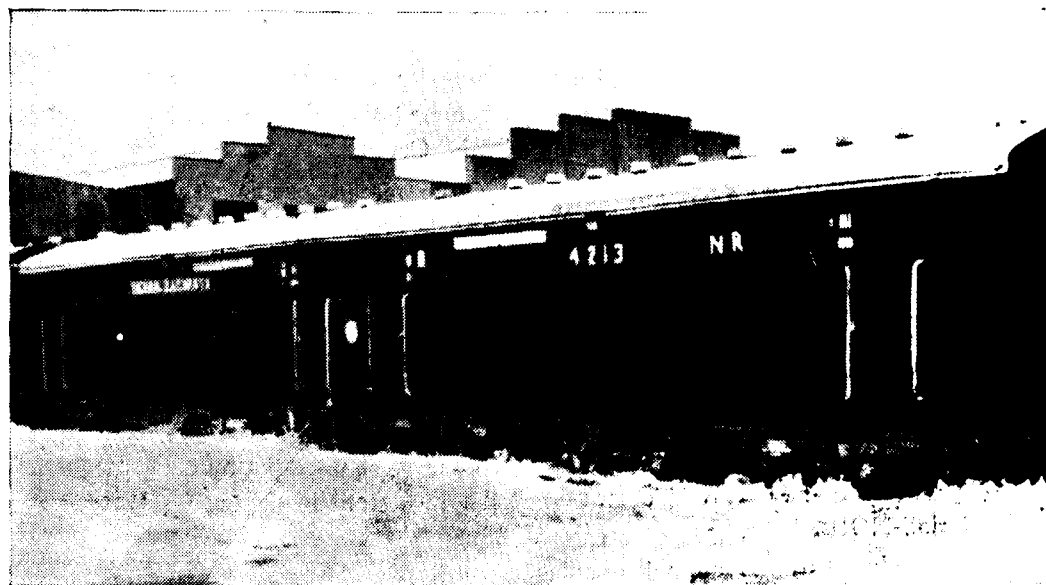
And last, but not least, we have a pack of donkeys—regular, true blooded, four legged ones. These have their own braying sessions. They even keep vigilance at night and speed the course of night with an occasional bray. I wonder whether R. L. Stevenson ever slept when he travelled with his donkey Modestine in the Cevennes.

Quite recently, some men created a lot of noise, laying cow-catchers near all the gates, to prevent the cows from entering the compound, trampling the plants and spoiling the lawn. I am sorry to say that all their efforts seem to have gone in vain. The cows, young and old, brown and white, all stroll nonchalantly over the cow-catchers, without turning a hair. They have to be shoo-ed out by the gardener with a stick or a stone in the old fashioned way.

If, by some heavenly grace, there is none of these noises on some day, a road-engine comes along; or a band comes playing, with a host of the neighbourhood kids trailing behind, as in the story of the Pied Piper of Hamelin. There has been only one day so far, when we did not even have a road engine or a band, but on that day, a man, apparently with sneezing fit, chose, of all places on earth, the space outside our window, and the critical moment I put baby to sleep, to have his sneezes.

And I—in all this medley of noises—go on rocking the cradle and singing "Rock-a-bye-baby," till my arms ache and throat is sore.

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(One of the Coaches a H. A. L. painted with SPARTAN Finishes)

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Short Story:

The Innocent Mask

BY

S. SRINIVASAN

It was one of those gloomy days of the rainy season and the time was at about 11 O' clock in the morning. The atmosphere was rather depressing and I was rushing through my dressing to leave for office. Just then my little daughter aged 5 ran towards me and clinging on to my dress entreated to get her some chocolates on my way home. I patted her on the shoulders and being pay day promised to get her the sweets one box from Mangaram and another from Dhaturam, the two famous shops of our town. She beamed with joy and ran back to her dolls. My wife coming as far as the threshold, cautioned me, with a tone of sarcasm, that I should not indulge in any shopping that day lest I should lose my purse with a full month's salary in it. I laughed at her anxiety and took leave of her.

It was a busy day at the office. I never even had time to count my pay and I thrust into my coat pocket the bulging purse. By the time I completed the day's work the clock had struck 6. I was the last one to leave office. As I came out I noticed that it was drizzling. As the showers were not heavy I decided to brave the weather and go home.

As I had just left the office premises, I beheld a beautiful young girl aged about 20 years with a pile of books on her arms, leaning against the wall below the sunshade and taking refuge from the showers. She wore simple clothes of a student. She had a round face, with dark blue eyes, and looked a picture of innocence. She looked at me and my umbrella pleadingly. I could not help asking if I could be of any help to her. She hesitated at first but

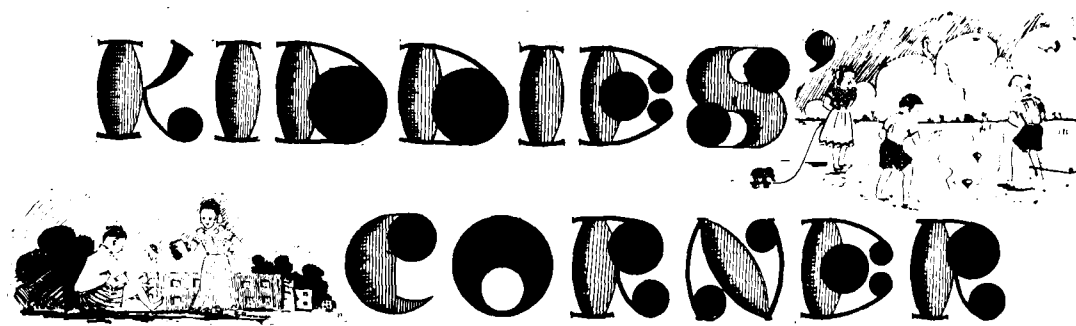
later on enquired where I was going. I told her that I was going as far as Loane Square. She then said that she was put up a couple of blocks past Loane Square, implying that she is accepting my offer. At once I came forward and offered to take her home. She said, with a sort of mischief in her eyes, that I was like a father to her and that it was very kind of me to have made such an offer.

So we both started under one umbrella, she holding her books in both her arms and I holding the handle. The wind grew stronger and it was getting more and more cold. She shifted her books to her right hand and put the other arm around my waist and drew close to me. I did not object to this as I took her only for a child in distress. She practically hung on to me and I could feel her warm breath.

As we approached Loane Square, the drizzle stopped abruptly, perhaps only to break our company. She then said she could go home alone as it was very near and thanked me for the timely assistance rendered. She gave her address and insisted that I should call at their house that week end so that she could repay the kindness shown to her. Though Loane Square was very familiar to me I could not make out where the address she gave me was. In my over-enthusiasm of having been of assistance to such a sweet little thing I almost forgot myself and nodding goodbye went on my way.

As usual I stopped at Mangaram's sweets shop. I bought sweets more than the usual

(Continued on page 49)



The Golden Foot

By

"HARSHA"

Long long ago there lived a king who ruled over a small part of land near the foot of the Himalayas. He was a vassal under Chandragupta Maurya, about whom all of you must know. Chandragupta was a nice emperor, kind towards his people and his vassals. But he was a little strict in the collection of tributes. He would not care about the local situations in the various parts of his empire. Every year the feudal nobles used to trek all the way to the empire's capital and pay their dues to their emperor.

The vassal referred to was past his middle age and still he had no children. After long prayers, the queen conceived and brought forth a beautiful girl. The king was immensely happy and conducted a gala function to which he invited all the wise men of his land and the representatives of his people. He requested the wise old men to confer their blessings on the new-born child. One of the old men blessed the child with long life; another with a beautiful husband; another with a happy future, etc. There was a unique individual who foretold that the girl would have a gold foot from her first birth-day.

The king was at first happy to hear the prediction, but later he became a little thoughtful.

A gold foot was all right so far as the golden part of it went, but, as a foot, it seemed a little extraordinary. The king felt that when his daughter attained marriageable age none would marry her because of her crudity in the guise of a golden foot.

Time went by and the first birth-day was fast approaching. The king did not desire that other people should see the golden foot of his daughter. So, he made her wear shoes always, even while sleeping. It was a little uncomfortable for the child but it had to undergo the ordeal of wearing shoes nevertheless.

Years rolled by and the girl flowered into a beautiful maiden with well-formed limbs and a smiling mien. Her beauty was so attractive that kings in the neighbouring lands sought her hand in wedlock. Somehow the king postponed the marriage. The young lady continued to conceal her foot under the cover of her shoes.

In the meanwhile, a great famine ravaged the land and people were starving for a morsel of food. So they could not pay their taxes to their king and, naturally, the king could not pay his tributes to the emperor. Soon the emperor rushed down with his army to the

king's place to demand tribute. The king showed to the emperor the plight of his people under the famine. But the emperor would not hear. Somebody thought about the young lady who was the king's daughter and surmised that the temper of the emperor, could be softened by the appearance of the lady before him. So the lady was brought and the emperor was immensely pleased with her beauty. He surveyed her from head to foot and was surprised to find that one of her feet was concealed under a shoe. The emperor felt that it was extraordinary and desired that the shoe be removed. The king interfered and said that the shoe could not be removed and it had to be there. The emperor got angry and ordered that the tributes should be paid to him however poor the people be. And the emperor went away.

The king began to hate his daughter because of this incident and drove her out of the palace, removing the shoe that was on her foot. Lo! he found, that after all, the foot was not golden. But he did not care; he sent her away.

The lady, with her head sunk in shame, walked to the temple to appeal to God about the calamities that occurred to her. While she walked, coins of gold began to flow in heaps out of her foot all along the road. The people

were all surprised and pleased. They swept all the coins together and ran to the king with their taxes, voluntarily doubled. The king was awe-struck and asked the people how it all happened. The people narrated the story and the king came down from the palace to the temple where his daughter was praying and embraced her.

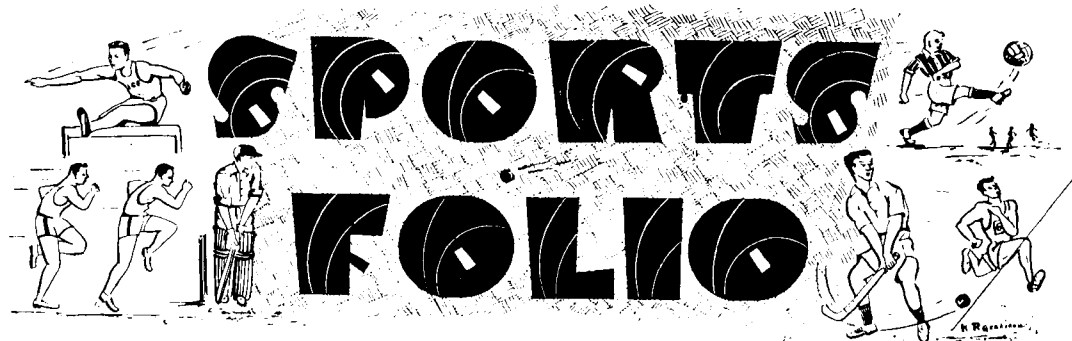
After all, the king thought, the golden foot was not a foot of gold but a foot that gave gold coins. So the country was rich and the people began to praise the lady who was the daughter of the king. The king paid his tributes to the emperor.

THE INNOCENT MASK

(Continued from page 47)

quota and lo! when I put my hand in my pocket the purse was not there. My purse had gone. A hard fact struck me and yet I could not believe it. Of course, one way I was happy as it had gone to a pretty-looking crook.

The next day the clerk at my bank could not understand why I was drawing a month's salary, on the second day of the month, instead of depositing a part thereof. Poor Chap!



Physical Exercises—First Series

BY

A. D. PARTHASARATHY

The first series of exercises are given below with clear explanations and their respective results on the human machinery. The exercises may be done at any time according to the convenience of the candidates without any detriment to the normal physical conditions. The exercises should be done an hour before a heavy breakfast, lunch or dinner. Soon after finishing the exercises, the body should be well covered with warm clothes, so as to reduce its heat gradually. Otherwise we will be victims to diseases. They should be started steadily and gradually, the speed being regulated according to the condition of the individual. You have to start with a couple of times and gradually add on as days pass by.

Each individual should weigh the body, measure the height and note them down in his diary before commencing the exercises. The series of exercises should be practised for a period of three months and then one should re-weigh and measure respectively so as to assess the benefits that had accrued through the performance of the exercises.

Neck Exercise

The following exercises are useful for strengthening the neck muscles and they develop

the mobility of the neck and improve the carriage of the head and chest :—

I. Starting position—(Attention)

1. Pressing head forward.
2. Resuming the position.
3. Pressing head backward.
4. Resuming the position.

II. Starting position—(Attention)

1. Pressing head left.
2. Position.
3. Pressing head right.
4. Position.

III. Starting position—(Attention)

1. Turning head smartly to the left.
2. Position.
3. Turning head smartly to the right.
4. Position.

Arm Exercises

The main purpose of arm exercises is to strengthen the muscles of the arms and to exercise the shoulder and elbow joints. The vigorous use of the arms in many of the following exercises promotes the development of the chest, improves its general flexibility and stimulates respiration:—

Starting position—(Attention)

1. Raising arms forward horizontally. (Palms facing downwards)
2. Sinking arms downward to position.

Starting position—(Attention)

1. Raising arms forward and upward.
2. Sinking arms forward and downward.

Starting position—(Attention)

1. Raising arms side-ways horizontally. (Palms facing downwards)
2. Returning to position.

Trunk Exercises

Trunk exercises are useful not only for their strengthening effect on the muscles of the trunk, but also for their hygienic value. They help to keep the thorax mobile and thus assist one to breathe deeply. Further, these exercises have a strong massaging effect on the abdominal organs, and thus stimulate circulation and aid digestion.

I. Starting position—Placing hands on hips 18" apart.

1. Pressing trunk forward.
2. Returning to position.
3. Pressing trunk backward.
4. Returning to position.

II. Starting position—Same as in (I)

1. Pressing trunk left.
2. Returning to position.
3. Pressing trunk right.
4. Position.

III. Starting position—Same as in (I)

1. Pressing trunk left.

2. Pressing trunk right.
3. Pressing trunk forward.
4. Pressing trunk backward.

Do this exercise continuously.

Leg Exercise

Leg exercises bring into action some of the largest muscle groups in the body. They develop the strength of these muscles and at the same time, increase the mobility of the hip, knee and ankle joints. Performed with ease and precision, they give a feeling of elasticity and pleasure and stimulate blood circulation.

I. Starting position—Attention (Placing hands on hips)

1. Raising left knee up (thigh parallel to the ground, right leg ankles to the thigh, toe pointing downward.)
2. Returning to position.
3. Raising right knee up [same as (I)].
4. Position.

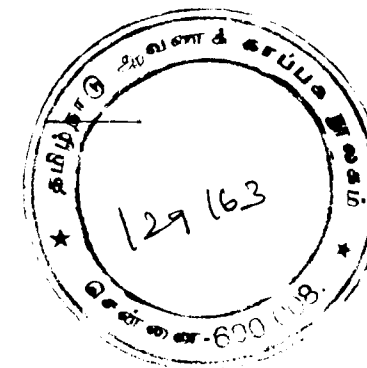
II.

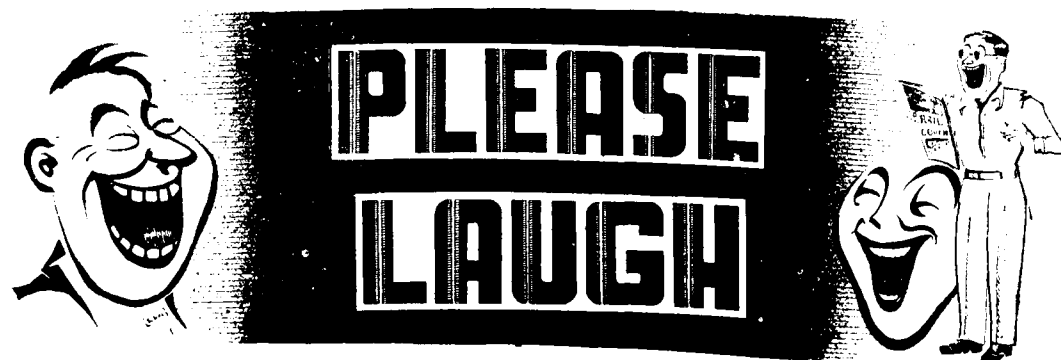
1. Bend the knees to tough position with finger tips on the ground.
2. Stretch the kness and stand with heels raised, arms above the head.

Do this exercise continuously.

III. Starting position—(Attention)

1. Left leg circling.
2. Position.
3. Right leg circling.
4. Position.





1. A newly married girl was telling her parents of her husband, "I am really proud to say that he is very much interested in anthropology even though by profession he is a mechanic."

"But how did you find that," asked the anxious parents.

"Well," said the excited little girl, "I found some papers in his coat pocket marked as 'Flying Queen 6 to 1,' 'Mud Horse 7 to 2' and many such details and when I asked him about these he told me that they were the relics of a lost race."

2. On his first day of work as a Fireman on a locomotive, the new recruit worked hard in shovelling coal for about an hour continuously and when he looked up at his boss, the driver inquiringly asked him, "I say, have you by any chance worked in the Fire Department?"

"Why, no," replied the recruit apparently in confusion. "You seem to be better in putting out the fire than making one" said the boss coolly.

3. An artist apparently impressed with the beauty of a countryside scenery went to a

village storeman and enquired whether he could get a camel hair brush.

The local storekeeper looked up with blankness in his eyes and modestly replied, "Well Sir, we do not stock these as we don't have camels around in the country. Should you urgently need, I shall get you one used for brushing up horses."

4. The proud father was permitted by the nurse to hold his new son for the first time and he exclaimed, "So, this is the little chap who is to carry on my name! Quite a responsibility, isn't it nurse?"

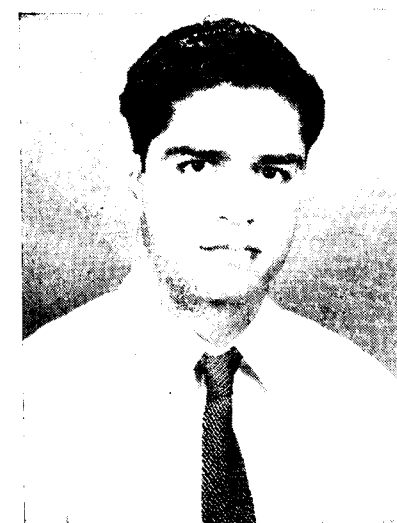
Smiling, the nurse drew a long breath and said, "It certainly is, Mr. Pazhani Sivagurunathaswamy Mudaliar."

5. On one of the battlefields in Kashmir, two South Indian army men in a foxhole suddenly found themselves in the middle of a barrage from the enemy's big guns.

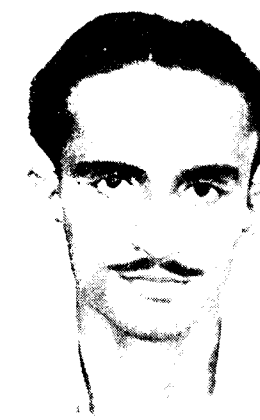
"Let us get away from this," said one of them. The other man however said, "Wait, I dropped my false teeth."

"The heck with your false teeth," shouted the first, "What do you think they are throwing at us—Khara Pakodas?"

OUR FAMILY



Chargeman TIRUMALAI RAMASWAMY VENKATESWARAN, who was one amongst the first batch of apprentices to join the Technical Training School, has shown that for the interested type of person there is ample scope for coming up in the Integral Coach Factory. He hails from Palghat and possesses a diploma in Mechanical Engineering. He joined the Integral Coach Factory as a Machinist in March 1954 and topped the list of successful apprentices on completion of the basic training. He was selected as an Improver Chargeman by the Railway Service Commission and was posted in that capacity in August 1955. On completion of his training he was posted as a Chargeman in the Machine Shop from 10-5-56.



Smart looking KANDATHIL EAPEN MATHEW earned a name for himself in the erection of the electrical machinery in the Main Receiving Station and the 10 sub-stations in the factory. Born in Trivandrum in 1930, after early education in Trivandrum he joined the C.N.T. Institute, Madras and obtained a diploma in Electrical Engineering. He served in the Mysore Government Electricity Department for over 2 years and joined the Electrical Department of the Integral Coach Factory in September 1954. Though he joined as an Electrical Fitter, better things were in store for him and he rose to the rank of Mistry, Grade II in February 1955 and Mistry, Grade I in November 1955.

He is a keen sportsman and has represented the C.N.T. Institute, Madras, in both Hockey and Foot-ball.

Personnel Notes

Our Felicitations To :

(1) Shri K. S. Rengachari, Office Superintendant, Dy. C.O. S's Office promoted as Assistant Controller of Stores/Furnishing (Class II) with effect from 15-11-56.

(2) Shri V. Swaminathan, Chief Clerk in scale Rs. 200—300, Dy. C.O.S's office promoted as Assistant Office Superintendant in scale Rs. 260—350 with effect from 18-10-56.

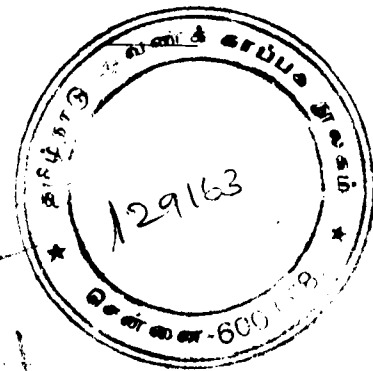
(3) Shri N. Bose, Chargeman 'B' grade in scale Rs. 200—300 working in 'D' shop (No. 15) promoted as Chargeman (Electro-plater) 'A' grade in scale Rs. 260—350 with effect from 22-10-56.

Our Welcome To :

(1) Shri U. A. Kamath, Mechanical Engineer (S.S.) returned from Switzerland after deputation and posted as M.E./M.A. with effect from 10-11-56.

(2) Shri R. C. Tandan, Mechanical Engineer, (S.S.) transferred from the Northern Railway and posted as Mechanical Engineer (Furnishing) (S.S.) with effect from 10-11-56.

(3) Shri N. L. Kumar appointed as Hostel Superintendant in scale Rs. 200—300 with effect from 15-10-56.



A life size portrait of Mahatma Gandhi was unveiled on Ayudha Puja Day this year in the Stores Depot by Shri Sadagopan.



Shri K. Sadagopan, Chief Administrative Officer receiving Prasadam after Puja on Ayudha Puja Day



The Chinese Prime Minister signing our Visitors' Book.

Shri Ananthasayanam Iyengar, Speaker of the Lok Sabha in his office.

—Photo by Shri Dilli Babu



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