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Rail Coach

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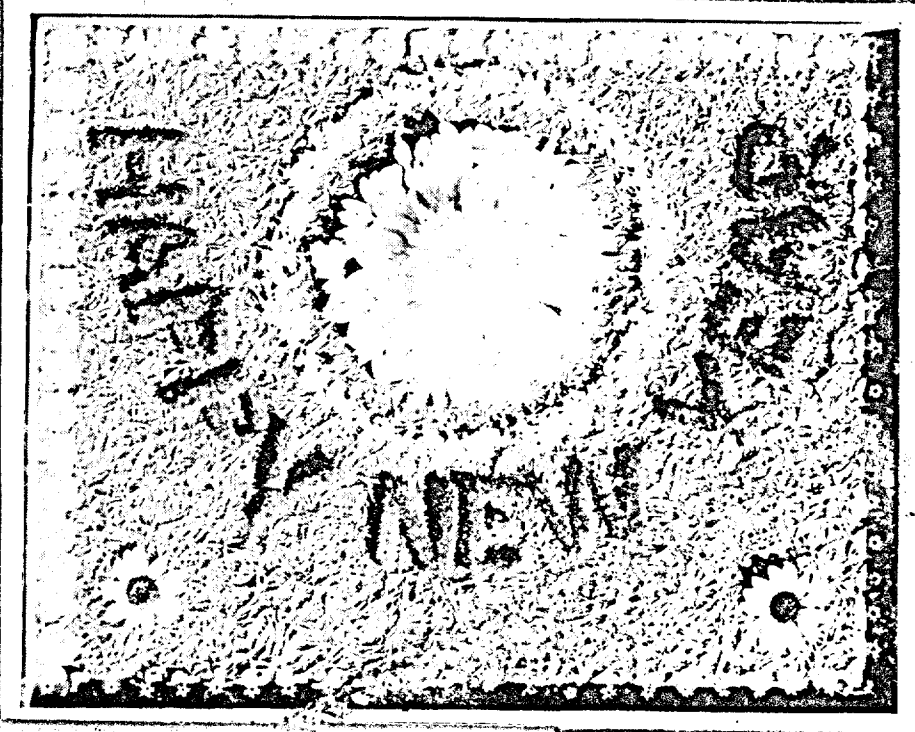
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(INTEGRAL COACH FACTORY MAGAZINE)

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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.

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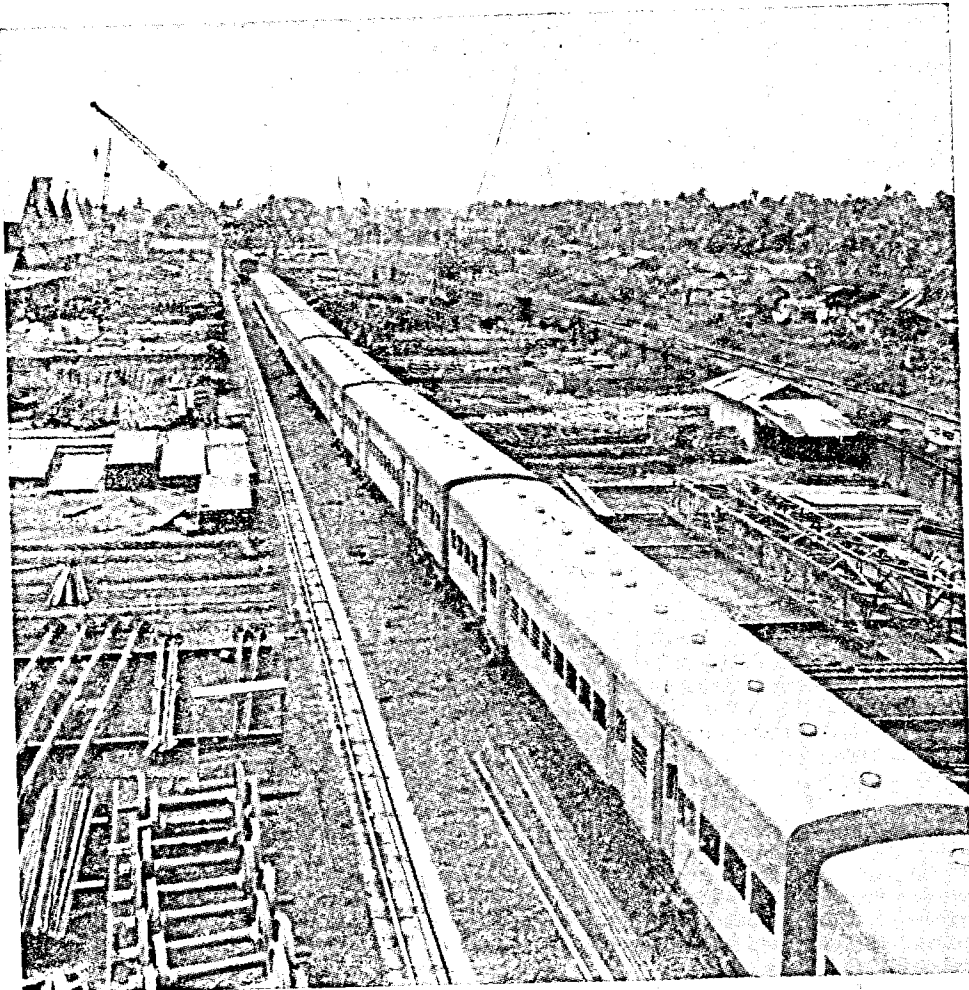
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COVER

*A floral greeting prepared by the I.C.F.  
Garden staff.*



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## GREETINGS

*Today, the year 1957 is drawing to a close, and tomorrow will see the birth of the New Year 1958. It has been a matter of no small satisfaction and pride to us that during 1957, we have been able to achieve significant progress in all directions. Our I.C.F. family is steadily growing in numbers on sound and healthy lines. Our production during the year which has been very considerably in excess of the targets originally set for us by Government, met with the warm appreciation of our Hon'ble Minister for Railways, Shri Jagjivan Ram last October, when he honoured us with a visit to the Factory, and launched out our 200th coach from the Factory.*

*The New Year 1958 holds out a still greater challenge to us. In the course of this year, we should be reaching our peak production target of one coach every 6½ working hours, which according to our original targets we were to attain only in 1959-1960. The intensive phase of Swiss collaboration is over, and it rests on us to fulfil the task assigned to us. Our past performance has filled us with the confidence that, with our united strength we would rise equal to the occasion and more than fulfil our targets.*

*On this occasion, I wish to convey to each and every member of the I.C.F. family my warmest good wishes for a bright and prosperous New Year.*

*K. S. Srinivasan*

MADRAS 23

31-12-1957

Chief Administrative Officer.

## 1958

May the year 1958 be a year of "suggestions".

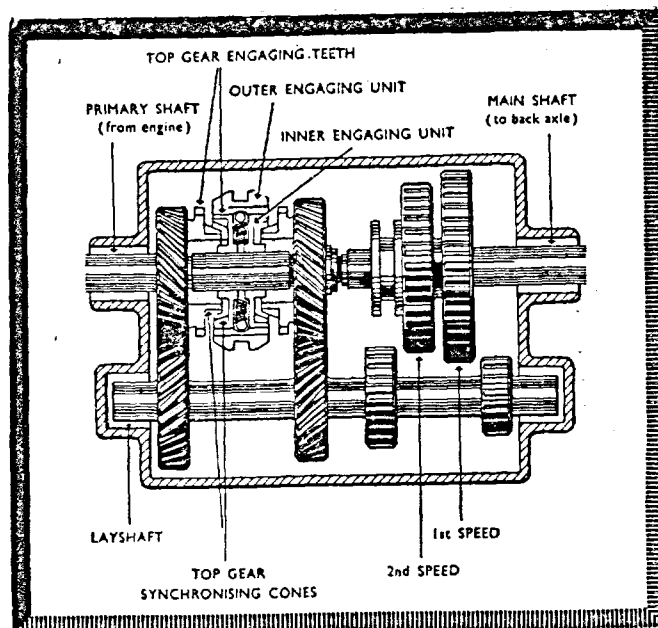
The Chief Administrative Officer in his New Year Message has indicated that the responsibility of the ICF family in 1958 will be much more than it was in 1957, as our cherished goal of attaining peak production stands to be fulfilled this year. He has implied that the ICF should continue to be a living organization and that it should not only have growth, but accelerated growth. Whether the organization will have accelerated growth or not depends largely on our ability to devise ways and means of doing our work quicker and better. This can be achieved only if more and more members of the ICF family apply their minds on improving the methods of working adopted and come up with useful suggestions.

It is well known that the simplest way for anyone to gain recognition and advancement in any profession is to develop a reputation as a person, who has good ideas. Good ideas will occur only if we bear in mind the saying that there is always a better way. Getting an idea is not the end in itself, as many an idea that flashes up in one's mind gets smothered if not recorded and followed up. It should be remembered that a great idea is seldom a sudden flash but invariably is a simple idea patiently and carefully developed. Another point to be borne in mind is not to get disheartened when the first or second suggestion put up is not accepted. The possibility of there being factors, which make the suggestion unworkable and which the proposer may not have even thought of, should be appreciated. We repeat, that every suggestion put up is very carefully scrutinised and all the affecting issues considered in great detail. We trust that the enthusiastic members of the ICF family will have a correct picture of the suggestion scheme and continue to come up with valuable suggestions, undaunted by early reverses, if any.

We have great pleasure in publishing elsewhere in this issue details pertaining to two of the "suggestions", which were lately accepted. Our hearty congratulations to Sarvashri Lalchand Ramraj and Mohanasundaram.

\* \* \* \*

The "Railcoach" appears in a new format from this issue and we trust that our readers will be pleased with the changes effected.



**BOW-WOW !**

**G-R-R-R**

### -OR DOGS IN THE GEARBOX

If you lift the cover off your gearbox you'll see a lot of engaging little dogs—and we don't mean the kind you throw biscuits to, in a benevolent mood. Even when you are doing a steady 35 m.p.h., these are battling round at several thousands of revolutions a minute, so the few pints of oil in your gearbox have a full-size job.

If you don't have the oil changed regularly it's rather like washing your face in the same water for a few months and expecting it not to get dirty! So change of gearbox oil is high on the list of priorities

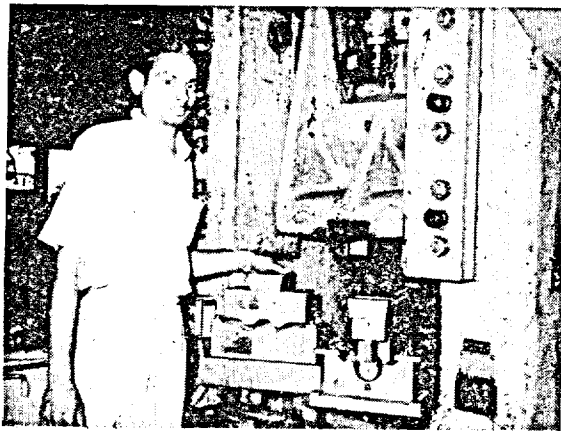
at your nearest Burmah-Shell service station. Apart from our normal replenishing service, your gearbox is drained, thoroughly flushed, and refilled from time to time with the *correct* SHELL Lubricant for your type of car. And this keeps all your dogs happy! SHELLUBRICATION is thorough because it's *planned* lubrication. It's safe because it protects your car—and it saves you money by preserving the working parts and giving them longer life. Let us SHELLUBRICATE your car regularly once a month.



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**BURMAH-SHELL... IN INDIA'S LIFE AND PART OF IT**

## THEY HIT THE HEADLINES IN DECEMBER



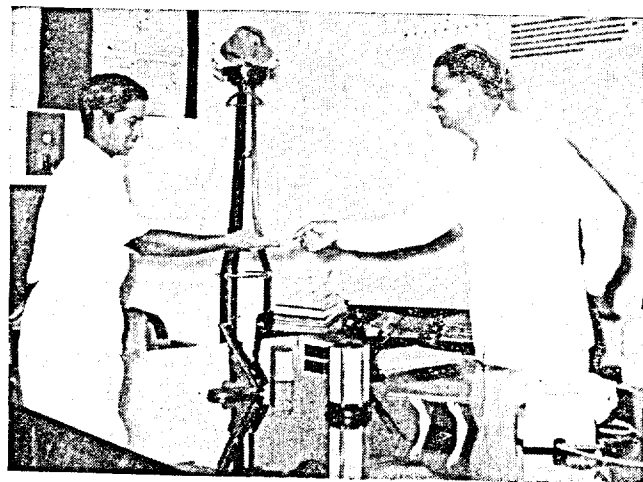
Shri Lalchand Ramraj, Mistry attached to the Forge Shop was given a cash award of Rs. 100 for suggesting a method by which both the trimming operations, in the manufacture of bent couplings can be carried out in one stroke. His suggestion has been accepted, as the material for forming the coupling is to be heated only once, compared to two occasions, formerly, and the entire trimming operation can be done in practically half the time.

The picture alongside shows Shri Lalchand Ramraj by the side of the Trimming Press.



Shri Mohanasundaram, Progress-man, was given a cash award of Rs. 50 for his suggestion to use up the off-cuts resulting in the manufacture of window bars, for the manufacture of draft key cotter. The off-cuts, which were not being utilised for any specific purpose, will henceforth be utilised for the manufacture of cottes, leading to a saving in raw material.

The photo alongside shows Shri Mohanasundaram receiving the cheque from the Chief Administrative Officer.



## What's news...and why

### Introduction of electric train service from Howrah

Although the first electric trains to start from Howrah will be composed of electric locomotives and existing coaches, they will soon be replaced by electric multiple unit coaches, imported from West Germany.

The unit consists of three coaches with a motor coach in the centre and two driving trailers, one at each end. The motor coach carries all the power equipment of the unit *i.e.*, two pantographs on the top for drawing energy from the overhead wire, a small compartment to house the control equipment, power equipments mounted on the underframe and a motor on the two 4-wheel bogies under the coach.

The width of the coaches is 12 ft. as compared with 10 ft. of that of the suburban steam trains. Thus these coaches will be able to carry a larger number of passengers. In fact, the carrying capacity of six new coaches will be equal to that of eight existing coaches.

A maximum of four E.M.U. coaches can be joined together. Initially, two such units will be joined to form a six coach train during the peak period. During off-peak period a frequent service will be maintained by a 3-coach unit.

With a total carrying capacity of 580 passengers (seated and standing) an E.M.U. stock can accelerate very rapidly—1.2 miles per hour per second. As it is also capable of quick braking it can attain very high speed between stations. Moreover, only one driver will be required to operate a train even when two or more units are joined together. When it arrives at a terminus all that the driver will have to do is to change ends and the train will be ready to depart on its return journey.

Six new types of sleeper-cum-sitting coaches having a two-tier arrangement have been introduced both on the broad gauge and on the metre gauge on certain selected trains on various railways. Inviting the National Railway Users Council's views regarding the relative merits of the two types of coaches, the Railway Minister observed, "We are anxious

### Sleeper-cum-sitting coaches introduced

## hat's news...and why

### Fuel consumption on Railways to be examined by a Special Committee

to come to an early decision regarding the type of Class III sleeping coach to be accepted as a standard for the future so that more coaches of the accepted type may be constructed, and the facility of sleeping accommodation in Class III introduced on a number of additional trains."

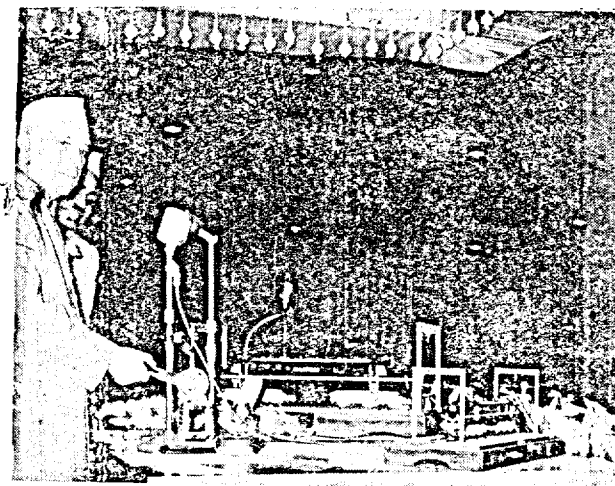
The Railway Board has set up a six-member committee under the chairmanship of Mr. Karnail Singh, Member (Engineering), Railway Board, to examine the increased cost of fuel consumption on the Indian Railways and to plan the railways' requirements of high-grade coal during the next few years.

Other members of the committee are :—Mr. R. Krishnaswamy, Director, Mechanical Engineering ; Director, Transportation (T); Mr. J. W. Whitaker, O.S.D. (Mining Research) C.S.I.R.; Mr. P. M. Nayak, I.C.S., Coal Controller, Calcutta; and Mr. D. P. Mathur, now Senior Deputy General Manager, Central Railway, Bombay (whole time member-secretary).

The terms of reference of the committee will be as follows :

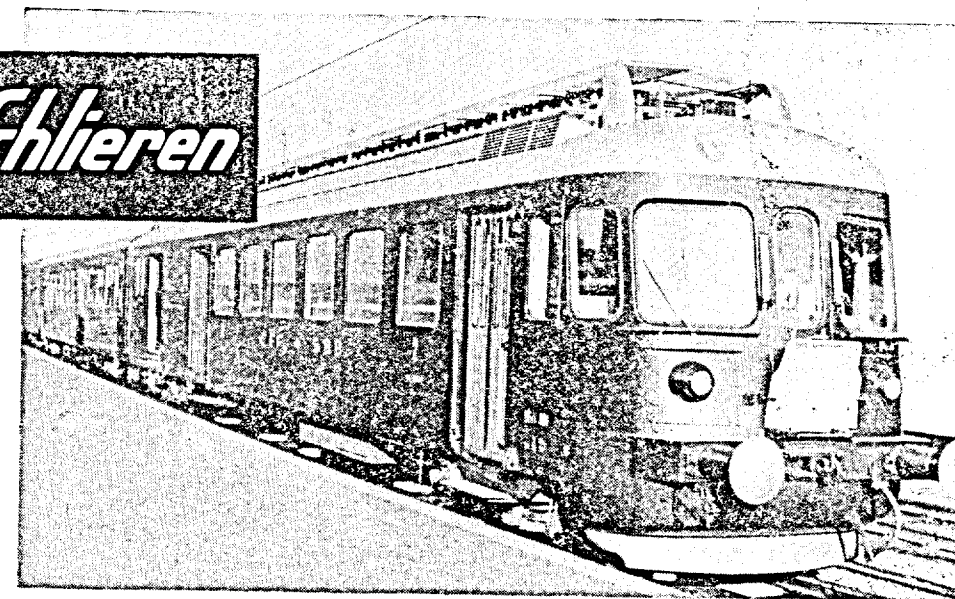
(1) (i) To examine and to report on the factors responsible for increase in railway expenditure on coal, commenting particularly on the extent to which the quality of coal is responsible for increase in consumption and expenditure and for poor performance ; (ii) the expenditure incurred on handling charges, keeping in view the lead and lift involved ; (iii) the comparative merits and demerits of employing departmental or contract labour for coal handling ; (iv) the causes and quantum of wastage and losses of coal in transit, in sheds and otherwise ; and (v) the extent to which the increase in expenditure on coal is due to increase in traffic, coal prices, freight charges on coal, etc.

(2) To examine the railways' future requirements of high-grade coal for steam traction and the prospects of adequate supplies and to recommend measures for meeting any anticipated shortages.



Prime Minister Shri Jawaharlal Nehru inaugurated the Electric Train Service from Howrah  
(Left) Prime Minister pulling the lever to show green signal to the Special Train.  
(Right) A Section of the distinguished gathering at the Howrah Station on December 14, 1957

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## STANDARDS FOR DOCUMENTATION

BY

DR. S. R. RANGANATHAN

(Chairman, I.S.I. Documentation Sectional Committee)

The evolution of the activities of the Indian Standards Institution reflects the genius of India. In India's traditional view, things spiritual are supreme; then come the things mental; and the material factors come last. But spiritual matters are ineffable. Therefore, viewed from the angle of recorded materials or documents, the first place goes to intellectual matters.

As if in conformity with this, I.S.I. established its Documentation Committee even in the first year of its existence—early in 1948—while most of the committees on materials came later. The Documentation Committee is thus nine years old.

### Nine Standards

During this period, it has formulated nine Indian Standards. These concern (1) make-up of periodicals, (2) abbreviations for titles of periodicals, (3) alphabetical arrangement, (4) canons for making abstracts and five standards on the general structure of the preliminary pages of a book. In regard to preliminary pages, India's standards have been taken up by the International Organization for Standardization for ultimate adoption as International standards.

Since Independence, we are naturally having a cloudburst, as it were, of new life. The creative element, which had been dormant during the last few centuries of our cultural exhaustion and coma, is now getting into full bloom. We hear plenty of 'new voices' throughout India. They have begun to produce books on all subjects, at all levels of thought, and in all languages.

In other countries, the style of the preliminary pages of a book had drifted along through four or five centuries until it could reach a helpful stage. I.S.I. is keen that we should by-pass such tedious stages of evolution and start immediately with a helpful standard.

The standard set up by I.S.I. has a precedent even in the books of ancient India. This precedent can be seen if we remember that books were not written but were oral ones in those far off days. In the "Ramayana" of Valmiki, for example, we have a short resume in the first chapter; then follows a more expanded conspectus spread over a few chapters. The modern practice in printing books provides similarly for a contents page to begin with and a conspectus which gives a more detailed view of the contents of the book.

In the days of the "Ramayana" the names of the authors in the book used to be given at the end; but now they are given at the very beginning, in what is now called the title page.

In the past, all the world over only a few authors used to write books. And it was only a few high intellectuals that were literate and could use the books. In those circumstances, it was easy to remember the correct names of all the authors and of all the books.

### More books and authors

But today, books have to be written so as to suit the entire intellectual spectrum. They have also to cover every sector in the universe of knowledge—not merely high philosophy and erudite science but also every art and craft, and every problem in life. Naturally, the number of authors swells year after year.

One has, therefore, to depend on a proper catalogue to know the books available. It happens that many authors share the same name. One has to distinguish them. There is no easier way of distinguishing them except by their years of birth.

Again, the name of an author contains two or three words. It is difficult to know which word is the dominant one, under which one can look up to know his works. The difficulties caused by these problems get greatly intensified since every country is obliged to use books published in almost every other country.

It is in view of this that I.S.I. has set up a very precise but simple standard for indicating on the back of the title-page the correct name of the author, the dominant word in the name, and his year of birth. It is gratifying that this standard set up by India is being welcomed by many countries.

#### Learned periodicals

Another result of the present renaissance is the precipitation of quite a number of learned periodicals. I.S.I. has attempted to bring some uniformity both by its standard on the lay-out of periodicals and by providing a standard for abbreviating the titles of periodicals. In the Madras Convention, definite attempts will be made to work out abbreviations for titles in Indian languages.

The Documentation Committee of I.S.I. feels that we should persuade all our publishers to provide indexes to books. To make this easy, it has a draft standard on making indexes which will soon be under print.

Similarly, it is also evolving a standard for proof-correction, which will be applicable to all the Indian languages. It is endeavouring

to avoid the use of words in English or in any other language in proof-correction, but to use only symbols which can have national as well as international currency.

#### Library Technique

The Documentation Committee works through five sub-committees one of which is concerned with library techniques. Already it is working out a standard for the laying down of library catalogue codes. Each of the thirteen languages of our country should have its own code according to the genius of its own. However, it will be a great help if the greatest common factor for them could be found out and all the various linguistic codes adopt this factor.

The standard for the greatest common factor, which is under preparation, will also indicate certain general rules for the guidance of drafting that part of the catalogue code which is peculiar to a language. There is also the need for having some standard specification for library buildings of various sizes, for library fittings and for library furniture.

There is again the need for establishing standards for the formats of books and for reinforced library binding. Standardization and simplification of the forms, registers and stationery needed in library work, of the repetitive processes in different sectors of library administration, and of library records, their filing, and the time-scheme for their destruction, will lead to a considerable national economy. Photo-copying of documents leads to a crop of standards of its own.

I.S.I. hopes to take up all these and other subjects in due course and thus eliminate wastage of every kind in both the production and the service of books and periodicals to scholars as well as to the common man.

## HOW THE FOREMAN CAN CONTROL COSTS

*(This article is digested from "How the Foreman can control costs" by H. Skerry Hall, College of Commerce and Business Administration, Bureau of Business Management Bulletin No. 301, University of Illinois Bulletin, Urbana, Illinois and reprinted with the kind permission of the United States Technical Co-operation Mission to India—Ed.)*

The scale of living within a nation can rise year after year only when there is a continual increase in the total national income and when that income is widely distributed among individuals. The standard of living will continue to rise only when the *per capita* income is increased by greater productivity.

Productivity cannot be measured by volume alone. The element of cost is involved. True productivity must be measured in terms of units produced per man-hour, per ton of coal, per gallon of fuel, per hide, per acre, and per bale of cotton. Production secured through the wasteful or unreasonable consumption of man-hours or materials adds little to the national income.

Every member of a management team has a major responsibility for finding ways and means for minimizing the cost of those things produced under his supervision. Low-cost, quality products made by highly-paid workers initiate a cycle of high consumption and high employment. The cycle feeds on itself and results in increased national income.

*The role of management:*—An industry must, in general, pay the going unit price for all materials and services purchased. The industry has little or no control over the unit price it must pay for anything it buys. It must pay the same price as its competitors for a given quantity and quality of things or services.

Competition, the customer's willingness and ability to pay, and in some cases, governmental regulation, put an effective ceiling on the prices that any industry can get for its product or services.

Management's only control necessary to produce a quality product to be sold competitively at a profit is through the effective utilization of the services and materials it buys at the other fellow's price. Therefore, production management's major task is to make the most effective use of plant, man-hours, materials and supplies.

In general the situations in which improvements can be made costwise and the methods by which the improvements can be achieved are the same for the foreman, the division superintendent, and the plant manager. The difference is that the foreman is closer to many situations and often is in a better position to exercise direct control if given proper support and encouragement by top management.

Often a foreman is unaware of the dollar magnitude of the expenditures which must be controlled by him and the other members of the management team. Because he works with *requisitions* for materials, personnel and supplies; and with *shop orders*, *time cards* etc., he tends to forget that he is spending money or authorizing the expenditure of *dollars*.

It is helpful for a foreman to know in a general way what total dollar expenditures are made to keep his plant running for a year. It helps him get a perspective on the magnitude of the money values he must help to control, and actual data of this kind should be released to the foreman and other members of the management team.

The situations having opportunities for control by the foreman are many. The exact nature of these situations and proper controls

varies with each industry and in each department in the industry. There are, however, some general techniques that top management and foremen have found helpful and which, with some minor modifications, can be applied under many circumstances.

**Departmental cost records :—**To improve unit costs in his department, the foreman needs detailed cost information and records on his performance to assist him in identifying specific inefficiencies and opportunities for improvement.

The more detail shown in departmental cost records the greater value to the foreman, provided the records deal with items over which he can exercise some control. A report merely indicating the unit cost of items produced is not nearly as helpful to the foreman as a detailed breakdown showing such cost items as direct labour, indirect labour, spoilage, supplies, small tools, overtime and shift bonuses, waiting time, call-in-time, make-up-to-average earnings, paid holidays and other fringe benefits, defective material, instruction, and setup time.

Reports for the foreman's use should present current data, and they should be in his hands early in the period following the period reported on. The reports should be so designed as to be easily understood by the foreman.

Furnishing a foreman with cost records for his department will not automatically result in lower unit costs. The payoff will occur only if the foreman takes action. Foremen should be helped to understand the reports, be encouraged and assisted in planning the action the reports indicate to be desirable or necessary. This is definitely a responsibility of top management.

**Control of direct labour costs :—**Whether or not formal standards have been established as to what constitutes a fair day's work, there is an amount of productivity per day or per hour which should result from the efforts of each direct labour employee. The foreman by experience, observation, or time study data

should know with considerable exactness what this productivity is and whether or not it is being accomplished. If any employee is regularly failing to do a fair day's work the foreman should know it and find out why. Unless each direct employee does do a fair day's work the unit cost for direct labour will be higher than it should be.

Often the low producer can improve his productivity if given training, help, or encouragement by his foreman. The productivity of many employees is sub-standard simply because they were not thoroughly or properly trained when assigned to the job. Thorough and effective training, helpful supervision, and a clear understanding of a production goal are effective methods of getting a fair day's work and minimizing the cost of direct labour.

**Training :—**Training is a tool for minimizing many departmental costs, particularly direct labour costs. The new employee should receive effective instruction, and be brought to a high productive ability in the shortest possible time. Ineffective or half-hearted efforts to train a new employee will always result in higher costs. The foreman should himself be qualified to instruct, or have a skilled assistant to instruct new workers or old workers transferred to new tasks.

Instruction in the shop and on the job consists of (1) making sure the employee understands exactly *what* he has to do and *how* to do it, and (2) friendly, close, helpful supervision while he develops the *habit* of doing the job exactly as it was explained and demonstrated to him. An important step has been taken towards building morale when the new worker has been given helpful instruction and friendly treatment. Good morale is essential to productivity and low costs.

**Methods improvement and workplace layout :—**The key to increased productivity and lower unit costs for direct labour is to make it easier for the employee to do his job. With improved

workplace arrangements, better tools and fixtures, and proper motion sequence, an employee often can increase his output very materially without increasing his expenditure of physical effort.

The foreman should constantly study the workplace of each employee in his group to see how the set up can be made more convenient for the operator—how hand handling of materials can be minimized, the tools arranged more conveniently, the holding of parts by hand eliminated and "smooth" rhythmic motions substituted for awkward or erratic motions.

The foreman should constantly have in mind the simple basic "Principles of Workplace

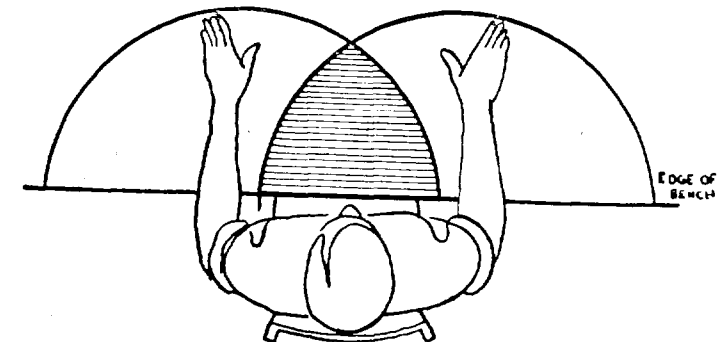
Layout." Fundamentally, for the most economical use of operator's time and energy :

A. The worker's task should involve no non-productive movements of his hands or other parts of his body.

B. The worker should employ only movements which require the least time and result in minimum fatigue.

If these principles are fully employed the work-place must provide such conditions that :

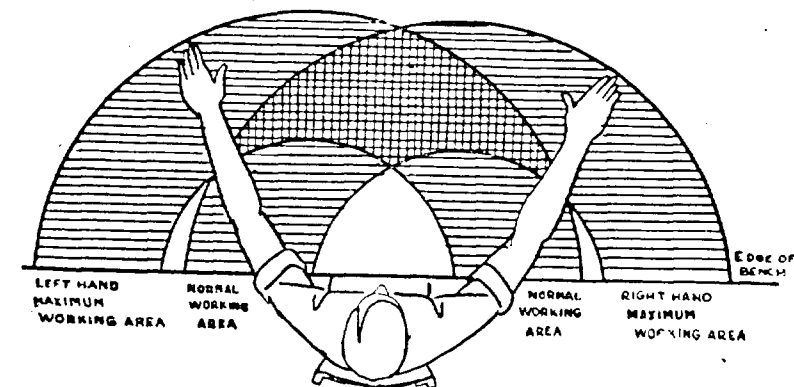
1. All hand and tool operations will be performed in the "normal working area" all operations requiring the use of both hands at the same point will be performed within the two-hand working area.



The normal working area of the surface of a bench, desk, or table is that area in which work may be done with the least expenditure of time and effort. As illustrated below, this is the area in which work may be performed with only finger, wrist, and elbow movements. It is limited to two overlapping semi-circles. The left hand semi-circle is the area in which work may be done with only left finger, wrist, and elbow movements. The right hand semi-

circle outlines a similar area for right finger, wrist, and elbow movements. The shaded overlapping area of the diagram indicates the only portion of the bench, desk, or table top where two-hand work may be done without shoulder or back movements.

2. A worker should not have to regularly use his hands for any purpose outside his "maximum working area."



The maximum working area of the surface of a bench, table, or desk is that area, surrounding the normal working area, in which hand work can be done by employing shoulder movements without back or hip movement. As illustrated, this area is composed of two curved strips or areas which overlap one another. Any work done beyond this area requires a relatively slow posture-disturbing, fatiguing, twisting of the back or movements about the hip joints.

3. There should be a fixed location for each tool or device used and for each material or part worked on, and each item should be kept in a position assigned to it within the maximum working area.

4. Tools should be pre-positioned whenever possible, always placed for convenient grasp or pick-up and minimum transportation for securing and returning them to place. Tools may be suspended from overhead on flexible springs to avoid the necessity of the operator picking them up and laying them down.

5. Tools, parts and materials should be so located as to permit rhythmic motions in the sequence of their use.

6. Conveyors chutes, or trays should be used to place materials or parts in a convenient position close to point of use.

7. Trays used for small parts should be of the "till" or some other special type whenever it will facilitate picking up the part. All parts trays should be located within the "maximum working area."

8. The most frequently used materials, parts and tools should be in the most convenient

positions for the worker, thus minimizing the total time and effort for transportation.

9. Control levers, buttons etc., should be located close to and in front of the worker.

10. Finished work disposed of by hand should be moved the shortest possible distance. If the same hand is used for disposal and picking up the next part, the point of disposal should be close to or in the path of travel to the point where the next piece is picked up.

11. All tools and materials that can be held or moved mechanically should be so held or moved.

(a) Devices or fixtures for holding or clamping work should be provided wherever possible to free the worker's hands for useful activity and productive motions. Such devices may be operated by compressed air, hydraulic ram, or motor, or by a quick-action foot or hand-operated clamp.

(b) Whenever possible finished work should be disposed of mechanically by use of ejectors, gravity chutes, etc.

12. Proper ventilation and protection from uncomfortable temperatures should be provided, especially when fumes or temperature extremes are present in the operation.

13. When work is done on a table or bench the height should be such that the individual worker can work comfortably while maintaining a proper posture.

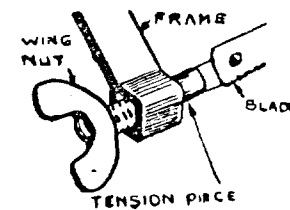
(Continued on Page 49)

## May We Help You

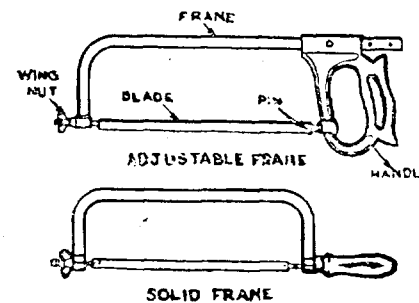
### FITTER TRADE—HACKSAW

Hacksaw is used for cutting bar stock, tubing, thick sheet metal stock, etc. There are two types of hacksaws, the Hand Hacksaw and the Power Saw. It is considered good practice to use the Hand Hacksaw for sawing small size bar stocks and the Power Saw for heavier work.

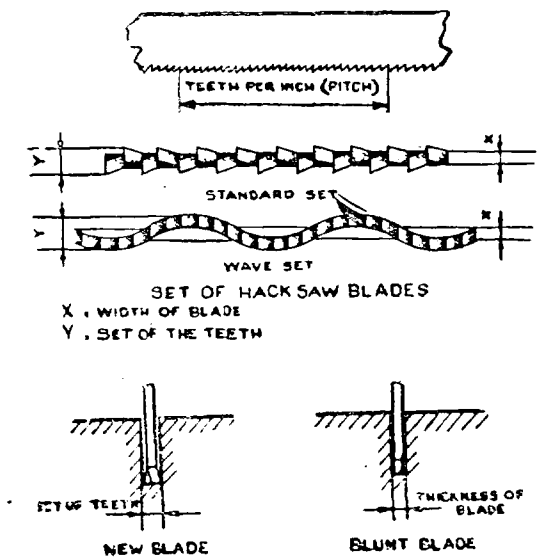
The hacksaw consists of a metal frame and a blade. At one end of the frame there is a fixed pin and at the other end a threaded piece with a wing nut for securing the blade firmly and 'tensioning' it, suitable for the cutting operation.



Hand hacksaws are available in two types, one with solid frame (fixed frame) and the other with adjustable frame. The adjustable frame permits use of blades in lengths varying from 6" to 12". In the case of adjustable hacksaw, the frame is in 2 pieces with different arrangements, such as provision of slots or pins, for setting the frame to suit the length of blade used. The solid frame hacksaws, which are more rigid, are also available in different sizes to take different lengths of blades.



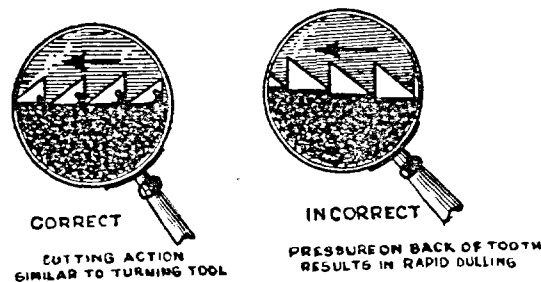
Hacksaw blades are made from high grade carbon tool steel, tungsten alloy steel and high speed steels. Blades are available in two types, viz., all hard and flexible. In the case of all hard blades, the entire blade is hardened whereas in the case of flexible blades only the portion where the teeth are cut is hardened. Blades are generally .025" thick and 1/2" wide. In selecting a blade for a particular job, the important point to be considered is the teeth per inch otherwise known as pitch. Blades are manufactured with teeth ranging from 14 to 32 per inch. The more the number of teeth per inch the finer is the cut of the saw blade. Coarse blades are used with advantage on broad surfaces and for cutting soft metal such as brass, aluminium, etc. Fine blades are used on thin metals and on steels.



The set of a saw means the bending to one side or the other of the teeth of a saw. This is resorted to for the following reasons:—

- (1) To enable the blade not only to cut the metal along the depth but also cut along the sides preparing a path wide enough for it to travel.

- (2) To produce a slot wider than the blade, to prevent the blade binding in the slot. Thus the blade is able to move freely in the slot. The effort required for sawing and the wear and tear on the blade are reduced.



The general practice is to bend the teeth alternately, *i.e.*, one tooth is turned to the right and next to the left and so on. This is known as standard set. The object of setting a saw is for making the slot, made by the saw during the cutting operation, to be slightly wider than the thickness of the blade. When the slot is wider than the thickness of the blade, the blade does not rub against the sides of the slot.

A double alternate set, also known as wave set is used in fine tooth saws.

There is a third kind of set, known as raker set in which one tooth is bent to the left, the next one left straight as it is and the third one bent to the right and so on. Blades with such a set are also in common use.

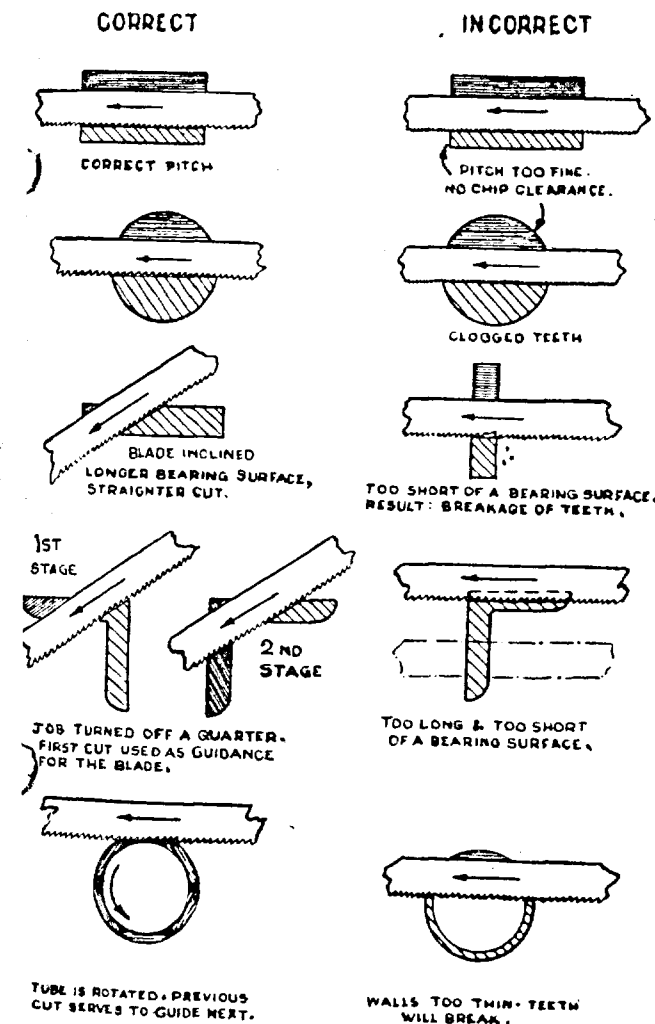
Wherever a smooth cut is not important, for sawing machine steel, cold rolled steel and structural steel lengths having thick sections, a blade with 14 teeth per inch is advantageous, as then free and fast cutting is possible. An 18" pitch blade is suitable for sawing solid stock including materials like cast iron, high speed steel, etc. This pitch is recommended for general use where a smooth cut surface is required.

### Hacksawing operation

Sawing can be a tiring operation, but with the correct stance and intelligent use of the saw, the energy used up can be considerably reduced. A convenient stance for hacksawing will be to stand squarely in front of the vice with the left foot forward, as in the case of filing, with the body swaying backward and forward during sawing. Care should be taken to see that one does not stand on top of the work, but at some distance back. The saw is to be carefully "lined up" for the cut before sawing. During the sawing operation the body should move slightly forward first, and then the momentum of the body transferred to the arms, as they move outwards making the cutting stroke. On the return stroke the pressure is released so that the saw slides back, barely in contact with the material, the body returning to the original position.

### Procedure to be followed in using a hacksaw

1. Before starting a cut satisfy whether the pitch of the blade is correct and the teeth are facing away from the handle, as the cutting action is only in the forward stroke.
2. Check and adjust the blade tension.
3. Secure the work in a vice or with clamps.
4. While cutting along a scribed line it is advisable to saw just outside the line.
5. It is good practice to file a V-shaped nick at the starting point, before starting the operation. This facilitates the saw biting into the work and also cutting straight.
6. When cutting thin sheet metal the saw is to be held at an angle so that at least 2 teeth are cutting into the work, as otherwise the blade is likely to jump out of position and individual teeth are likely to be broken.



7. Start the cut with a light, steady, forward stroke.
8. At the end of the stroke, relieve the pressure and draw the blade straight back. No pressure is to be applied on the return stroke.
9. After the first few strokes make each stroke as long as the hacksaw frame will permit.
10. After the cut is started use long steady strokes and do not speed up. A comfortable speed will be between 40 to 50 strokes per minute.

11. While nearing the end of the cut slow down a bit so that the saw can be controlled better when the stock is sawn through.
12. After finishing the operation, clean the chips from the blade and remove the blade from the frame.

### Hints on hacksawing

1. Hold the work fairly close to the vice to avoid springing and chatter.
2. Small pieces will break off early when the saw cut is two-thirds through.
3. Hold the work securely, as otherwise it may loosen under the pressure of the cut resulting in the breakage of the blade.
4. Check whether blade is well secured in the frame and it is true and parallel. A properly secured blade will give a musical twang when lightly struck with the finger.
5. Guard against the tendency to cut too fast with the hacksaw. 40 to 50 strokes per minute is a good average.
6. The amount of pressure to be applied varies with the kind of material, width of cut and condition of the blade.
7. Care should be exercised as the finish of the cut is approached to prevent teeth from digging in and breaking.
8. If a saw blade breaks, when the cut is only partly finished, cutting can be carried on with an old and worn out blade. If a new blade is to be used then a fresh start should be made.
9. Keep the saw cut straight, as if the cut "runs" the blade is likely to break. If a cut starts to run then it is advisable to start all over again at a different location.
10. Never use oil as a hacksaw lubricant.

## ***MARCH OF SCIENCE***

### **STEADY PROGRESS MADE IN U. S. ATOMS-FOR-PEACE PROGRAMME**

Steady progress was made in the United States during 1957 in expanding the development of the peaceful uses of atomic energy in the fields of power, medicine, industry, agriculture and research.

At the same time, co-operation with other countries was increased in an effort to aid them in developing their own atoms-for-peace programmes.

#### **Power Reactors**

One of the most important events of the year was the initial starting of the atomic furnace at the Shippingport, Pennsylvania, electric power plant. A chain reaction was started in the plant's reactor on December 2.

In addition to the Shippingport plant, four other power reactors were put into operation during 1957 under the U.S. Atomic Energy Commission's experimental power reactor programme.

Apart from the A.E.C. programme, private United States electric power companies went actively ahead with the building and planning of nuclear electric power plants. A 5,000 kilo-watt plant was completed at Vallecitos, California, by the General Electric Company, and other private firms began construction on there more plants in the states of Illinois, New York and Michigan.

Plants were announced during the year for the construction of ten or more nuclear electric power plants by utility companies. The Atomic Energy Commission will assist in financing some of these plants.

W. Kenneth Davis, director of the A.E.C.'s reactor development programme, has predicted that in 20 years nuclear plants in the United States should be producing about 133 million kilo-watts of electric power. This is about the same capacity as the total electric generating capacity in the United States at the present time.

During 1957, U.S. companies worked on plans with eight other countries for the building of nuclear electric power plants—Belgium, Brazil, Cuba, Dominican Republic, Italy, Mexico, the Philippines and Peru.

#### **Research and Test reactors**

A number of new research reactors were put into operation in the United States during 1957, and plans were made for the installation of others in the near future. The number of research reactors already in operation, being built or planned now totals nearly 50.

Construction of research reactors in other countries was also advanced during the year. United States companies completed construction of research reactors in Brazil, Denmark, the Federal Republic of Germany, the Netherlands and Japan.

In addition, the 1955 Geneva Conference exhibit research reactor is now in operation as part of the Swiss nuclear research centre, and 18 other research reactors are being built or designed in the United States for delivery to other countries.

In the United States, the Atomic Energy Commission put into operation late in the year an engineering test reactor described as the

"world's most powerful instrument for the development of nuclear power." The reactor provides the highest neutron flux—the number of nuclear fissions occurring per second—of any known reactor. Located at the A.E.C.'s National Reactor Testing Station in Idaho, the reactor will test materials used in reactors and other nuclear devices.

#### **Food preservation**

Extensive research and development work was carried on during 1957 to perfect the design of a reactor for use in preserving fresh foods by means of nuclear irradiation.

At the same time, the U.S. Army Quartermaster Corps proceeded with construction of its Ionizing Radiation Centre at Lathrop, California, where the reactor is to be installed. The centre, first of its kind ever to be built for food irradiation, is expected to be in operation by the end of 1958.

#### **Nuclear propulsion for ships**

Several important advances were made during the year in the field of nuclear ship propulsion.

Arrangements were made in April for the design and construction of the nuclear propulsion plant for the first nuclear-powered merchant ship. This ship, to be named the *Savannah*, will use an atomic reactor to create heat and steam for turbine operation.

In October plans were announced for building a second merchant ship to be propelled by a nuclear gas turbine power plant.

These ships, according to the Atomic Energy Commission, are considered the fore-runners of "eventual privately-owned and operated American nuclear-powered merchant marine."

#### **Nuclear Planes and Rockets**

During 1957 the A.E.C. continued its developmental work on reactors and power plants for

aircraft. Reactor experiments on nuclear operation of turbojet engines were carried out at the National Reactor Testing Station, and additional research and development laboratories and testing facilities were built. In addition, a test airplane carrying the world's first known airborne reactor was put into service.

Several U.S. aircraft manufacturing companies are doing development work on atomic planes, and continued progress has been reported.

In addition to advancing the development of atomic planes, the Atomic Energy Commission authorised studies of the application of nuclear power to rocket engines. The commission announced in December, 1957, that static testing of nuclear rocket propulsion would begin in late 1958.

#### **Radioisotopes**

The U.S. Atomic Energy Commission continued to make numerous shipments of radioisotopes to other countries during 1957 for use in medicine, agricultural research and basic research. More than 50 countries have received these materials from the United States since September 1949, when overseas shipments were started.

Radioisotope users in the United States increased from about 3,600 to well over 4,000 during 1957, including hospitals, clinics, physicians, research laboratories and industrial concerns.

In medicine the use of radioisotopes continued to expand, both in the United States and other countries. More than 1,200 medical institutions in the United States are now using these valuable materials, and many hundreds of physicians and medical research centres in other countries.

In the field of agricultural research the Atomic Energy Commission continued its work to

create large-yielding and disease-resistant food plants by the use of nuclear radiation, to improve fertilisers and their use, and to control insects.

### SCIENTISTS SHOW STUDENTS HOW THEY SET STANDARDS FOR INDUSTRY

More than 50 American scientists each year take time from their work at the National Bureau of Standards in Washington to explain some of the mysteries of science to secondary school students in and near the nation's capital.

This year, the Bureau's scientists outdid themselves in simplifying the bewildering work that goes on at the 68-acre national testing laboratories so that the 6,000 science-minded students could see things about which they had some comprehension, yet would still be challenged intellectually.

The programme of exhibits and studies took each group of students one full day and left them awed at the enormity of what they had seen.

A lecture presided over by Dr. Allen V. Astin, Director of the Bureau, gave the students some idea of what was to follow. The work of the Bureau is to measure things and set standards, he explained. While the Bureau's work involves a myriad experiments using everyday articles well known to the layman, it is not its function to create or test new products, but rather to set standards by which many things can be measured, Dr. Astin said.

Once the students understood that all they were to see during the day related in some way to determining standards regardless of how spectacular the demonstration, they were divided into small groups lead by experts trained in interpreting scientific phenomena.

Since the Bureau is concerned with setting standards to check the accuracy of the many heavy compression machines used in industrial plants and in university and governmental research laboratories, the students first were

shown the Bureau's largest piece of equipment. It was a press capable of exerting a force of 10 million pounds measure—comparable to the weight of a stack of farm tractors 3 miles high. Although it could crush a locomotive, the students watched it test a grating designed to withstand the shock of an airplane landing.

A "must" for the youngsters were three items that characterise the Bureau's work in terms of weight, length and time. Kept under glass in a guarded vault were a meter bar and kilo-gram. The expensive objects (90 per cent platinum and 10 per cent iridium) have been the nation's basic standards since 1901, when the Bureau was founded. The third item was a set of 25 monotonously vibrating quartz crystals at the Bureau's Radio Station, which transmits the precise time of day. These three standards, they were told, are the roots of all other measurements in the United States. From them grow a pyramid containing thousands of other standards ranging from exact shades of colour to the age of a fossil chipped from rock.

Radioactive cobalt is too dangerous to handle, but the students gingerly looked down through 12 feet of water at a container of the material as it emitted rays on various pieces of plastic material. A browned, badly distorted plastic bottle was proof of over-exposure, while a strong well-formed bottle showed beneficial results of proper degrees of exposure.

A solar furnace, in which a flat mirror catches the sun's rays and sends them to a parabolic (concave) mirror in a shelter, stirred youthful imagination when guides told them that temperatures as high as 6,300 degrees Fahrenheit, two-thirds the heat of the sun's surface, may be used by scientists as they seek to establish standards for jet engines and nuclear power plants.

Flames are increasingly important in modern industry, the students learned. They are used to drive automobiles, jet engines, rockets,

missiles and satellites. To measure intensity of flames under unusual conditions, the scientists established laboratory conditions that simulate pressures at 100,000 feet. At still higher altitudes, reached only by rockets, the molecules are broken down by the sun into atoms. The students saw oxygen atoms, made experimentally and mixed with acetylene, burn with great heat at a simulated altitude of 200,000 feet, giving off a green glow.

At still other laboratories, the students saw an ultrasonic machine tool that cuts the hardest

substances, such as diamonds, by sound vibrations not even audible to the human ear, and delicate instruments that can measure dimensions up to 1/100,000th of an inch.

Finally, to assure their parents that their monthly electricity bill is no more than it should be, they saw the ultimate authority on the matter—the Bureau's standard watt-hour meter against which all electric utility companies in the United States can check their master meters for accuracy.

## Steel Craft

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## Shop Safety

(Reproduced from the journal entitled "Accidents how they happen and how to prevent them" (Volume 32) published for the Factory Department, Ministry of Labour and National Service by Her Majesty's Stationery Office, London—Ed.)

The possibility of being involved in an accident is very much like catching a cold—the risk is always with us.

To some extent, no matter what the season, all of us take precautions against colds. We dress sensibly, eat wisely and generally maintain our resistance to cold germs. During epidemic, we avoid crowding together as much as possible and we always stifle those sneezes that spread diseases.

In our outdoor life, we similarly guard against accidents; we carefully step off kerbs and use pedestrian crossings where provided. In our industrial life, however, where accidents are more likely to occur, we are not always so careful. Often we invariably but mistakenly think that accidents are associated only with the more vicious looking machines and the dangerous processes. Consequently, instead of being careful all the time, we often behave in a manner that asks for trouble—when we really come to think about it, perhaps too late.

Item 8 in this issue of *Accidents* illustrates only too well how a man's sight was permanently impaired by blowing out a dusty milk bottle with compressed air from a nozzle. It is an unusual accident perhaps, but it happened. Treat equipment with contempt and you court an accident.

### COMPRESSED AIR

#### 8. Burst milk bottle

An incident involving two workmen which ended in one man's sight being permanently impaired was no doubt the result of ignorance provoked by an example of bad practice.

One man, whilst engaged in the dangerous practice of blowing dust from his clothes by means of a blast of compressed air from a nozzle, was asked by the other to blow out dust from a used milk bottle. The nozzle was applied to the mouth of the bottle and almost immediately the latter burst into fragments.

It is imperative that workmen be instructed about the dangers attendant upon the use of compressed air and the strictest supervision and control over compressed air equipment is necessary to ensure that incorrect and unauthorised use of such apparatus does not arise.

A jet of air at high pressure can have devastating effects and there have been cases where the air stream, or some substance propelled by it, has penetrated a person's body with the most serious consequences.

#### 11. Leakage of gas from a welding torch

The H.M. Chief Inspector of Factories Annual Report for 1953, mention was made, on pp. 132 and 133, of the type of accident where gas from a welding torch enters a confined space in the work and subsequently explodes. The example given there was of an explosion of an oxygen/acetylene mixture in a piston 13½ ins. in diameter by 7 ins. long: that explosion, notwithstanding the small volume of gas involved, was sufficiently violent to injure two men badly (one of them lost an arm).

In a recent accident, there was an explosion in a much larger volume, 16 ft. by 16 ins. diameter, and this was sufficient to shatter the welder's hand and cause him to fall to his death. The gas (propane) came from a welding torch that had been left on top of a job (in

the fresh air) overnight. The main supply of propane had been turned off after work finished, but not before enough had leaked, via the torch, into the job, to form an explosive mixture.

Most people are aware that to leave welding torches in obviously confined spaces overnight is very bad practice; there have been many fatalities from this cause. But it is not so well appreciated that similar sorts of accidents can occur in more open surroundings, provided that there is somewhere for the gas to accumulate.

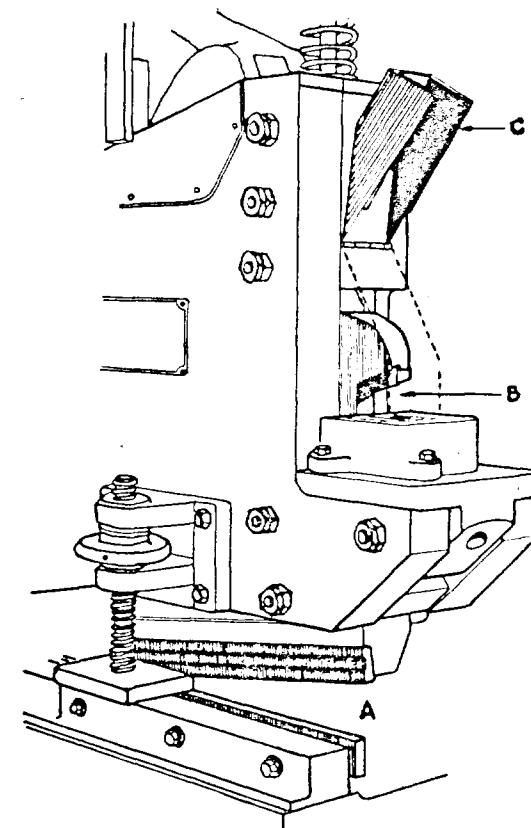
It seems that the wisest course is to disconnect the torch's hoses at the supply bottles whenever the torch is taken out of use for other than a short period: merely turning off the valves at the bottles has been shown, by accidents that have happened, to be inadequate.

#### 16. Finger severed by notching blade

Part of a combined punching, shearing and plate slitting machine is illustrated below. The plate slitting blade is at (A) and the notching blade is at (B). A hinged cover guard (C) was provided for the notching blade, so that this latter could be covered when not in use. The machine was operated through a clutch having a hand lever control.

The man in charge of the machine had been using the notching blade, when work was brought to him by another man requiring the use of the slitting blade. This man placed the work in position and the operator bending down to "sight" the line on the work, instructed the other man to engage the clutch. The operator failed to notice that he had rested his hand, to steady himself, on the fixed notching blade. The upper blade descended and severed part of his index finger.

The accident arose primarily because the operator failed to replace the notching blade guard after using that part of the machine. On a machine of this type a guard should be provided for each cutting part, each of these guards being so interlocked as to ensure that either blade can only be made accessible for use if the other blade is guarded.



#### 17. Burst abrasive wheel

Small portable high speed grinders revolving at speeds up to 100,000 r.p.m. are now available for fine operations such as die finishing. It is of the greatest importance, in view of these high speeds, that only mounted points or other tools which have been supplied or are specified by the makers for any particular machine should be used. Experience has shown that a worker may be tempted, by the prospect of being able to do a job faster, to use a point or wheel larger than that specified and, if he should do so, a burst wheel may result, with possible serious injury to himself and others. Accident reports suggest that men tend to discount the danger from wheels run at excessive speeds on these small tools because of their small size and low horse power.

In a recent case, a small portable grinder with a speed of 52,000 r.p.m. was kept in a die sinking shop for the purpose of finishing. The running speed of the machine, together with an instruction that mounted points exceeding three-quarter inch diameter were not to be used, was clearly stated on the box. One morning a die sinker asked to use the tool. He took the tool from the box, removed the three-quarter inch diameter mounted point already fitted and replaced it by a  $3\frac{1}{4}$  inch diameter wheel which he had already mounted on a spindle. A workmate who was watching the proceedings commented that he "did not like the look of it" but the die sinker took no notice and started up the machine. Almost immediately the wheel disintegrated with excessive violence, and the unfortunate man was struck by flying fragments, one of which severed an artery. He died shortly afterwards.

Two points are worthy of note about this occurrence. First, the instruction as to the maximum size of the point to be used was disregarded and, secondly the management seemed content to allow anybody to use the tool.

Other similar accidents have occurred, and it must be emphasized that where these high speed machines are in use, the makers' instruction with regard to the limitation of the size of the point and wheels to be used must be rigorously observed, and steps taken to ensure that all persons using the machines understand the importance of the instruction.

\* \* \*

## ***It is for your good!***

**It is not safe to walk  
Across the Rails as a  
Short cut. It may cost  
Your Life. Make use of  
Over-bridges to get across.**

**If you travel light you will  
Feel comfortable and make your  
Fellow Passengers also feel  
The same.**

**Station Surroundings will  
Remain clean if all unwanted  
Things are thrown into Rubbish  
Bins provided for the purpose.**

**Do not risk your life by  
Travelling on the Foot Boards.  
It is not only dangerous but  
Also an offence under the  
Indian Railways Act.**

**Beggars and Hawkers besides  
Indulging in ticketless  
Travel add to overcrowding.  
Discourage them as best you  
Can.**

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## **NEWS FROM SWITZERLAND**

*(Published through the kind courtesy of the Consulate-General for Switzerland in Bombay)*

### **1958 Swiss Industries Fair**

The 42nd Swiss Industries Fair will be held in Basle from the 12th to the 22nd of April, 1958. More than 2300 exhibitors will take part in it, spread over seventeen trade groups. There will be a particularly well organised display, with an appeal to all the markets of the world, of goods produced by the machine and metallurgical industries, the machine-tool industry and that specialising in tools for the metal-working industry, the electrical industry and the watch-making and textile industries. The interest felt abroad for the Swiss National Fair is clearly demonstrated by the fact that no fewer than 30,000 foreign visitors came to the Fair in 1957. Next year, the exhibition space will be increased still further, as a new machine hall is at present in the course of construction, which will bring the total exhibition space to some 1,400,000 square feet.

### **An International Exhibition on water purification in Switzerland**

An International Exhibition relating to the purification of water and of used water is to take place at Basle, in the buildings of the Swiss Industries Fair, from the 25th January to the 2nd February, 1958. The intention of this Exhibition is to show the representatives of the public services and of the industries, as well as the public in general, what has already been achieved and what can still be done in the field of water purification. It is a well-known fact that the industrial development and the growth of the population in urban centres is rendering ever more difficult the problems connected with the purification of polluted waters and of the supply of drinking water.

### **Europe's highest Television Station soon completed**

*St. Gall, Switzerland.*—Europe's loftiest television transmitter is nearing completion. It will be perched at an elevation of 7000 ft. above

sea-level, on top of Eastern Switzerland's scenic landmark, Mount Saentis. According to latest reports it will be ready for trial telecasts within the next few weeks. Two more TV. stations are under construction in the Italian-speaking part of Switzerland. One of them, located at Monte Ceneri, is expected to start operating by next spring, despite the technical difficulties to be overcome in this mountainous area. The other one, now being built on the Monte San Salvatore, will be put into service in the autumn of 1958. In the near future French-speaking Switzerland, too, will get a second big TV. Station which will serve this part of the country from the Mt. Gibriloux in Canton Fribourg.

### **Swiss Alpine Highways efficiently protected against Avalanches**

*Berne, Switzerland.*—The threat of avalanches so far has brought traffic on many Swiss Alpine roads to a standstill during the winter months until well after the Easter holidays, and the re-opening in time for the summer season has cost enormous sums each spring. The Loetschen Valley road, in the Canton of Valais, has been particularly exposed to avalanches which have completely snow-blocked it each winter. Last summer engineers started constructing a 530 ft. long concrete tunnel which is to protect the road against snow and earth slides. This tunnel, which is 30 ft. wide and 20 ft. high, is now partly completed and will be covered with a layer of dirt and rocks to make it fit harmoniously into the Alpine landscape. The scenic Lukmanier road, which links the Grisons to Ticino Canton, is also being adapted to modern requirements. In addition to its widening to 27 ft. on its entire course, it will be provided with several shelter galleries against avalanches and rock slides thus becoming not only the most important by-pass of the St. Gotthard highway but also one of the few trans-Alpine roads kept open to motor-traffic all year round.

## SLAVES OF THE CLOCK

BY

T. S. JAYARAMAN

December can be more appropriately called the month of conferences. There are music conferences, Writers' conference, conference of Educationists, conference for the uplift of women etc. If one observes carefully it will be apparent that only a few forming a negligible percentage of the populace attend the whole show. The import of these conferences and the messages they are purported to convey do not reach even the literate population—leave alone the vast masses, for whose benefit the talks and speeches are given in the conferences. Only a very insignificant number of the population read newspapers for filling the pages of which these conferences are very helpful and useful indeed!

The illiterate and the uneducated who form the bulk of the population are not touched by these conferences. For the upper intellectual classes the conferences and the messages they convey are not new and therefore are not interesting. For the educated middle classes of the present day, their standard is so shallow and their interest in anything so superficial that the vast majority of them is not in the least attracted or impressed by these scholarly conferences where advices are given so freely. Why? It is due to the frightful decrease in the 'spare time' available to most of them.

No doubt the present-day workers in a factory or office put in less number of hours than their predecessors. But the "leisure" they so get is consumed in the pursuit of amusements, in fulfilling social obligations of ephemeral nature and in activities suited for persons not favourably disposed for any severe intellectual-toil. These in combination have so reduced the "Spare time" that there is very little left for real enjoyment of an intellectual character. Life of the average man of the modern times is all so portioned out that he has to move from engagement to engagement—the tea parties and the

dinner parties, the picture houses and so on—all by the clock. Even the research worker in the laboratory must start and stop this work by the clock! In truth the minute-hand rules us. It disturbs us in bed, at meals, in conversation, at play and even in our work. In fact we are slaves of the clock.

We have no time for real thinking. It is only real thinking that can help to raise the standard and produce original work. No wonder the present generation is not so original in literature or art as were their predecessors.

A Nehru or a Rajaji or a Raman cannot constitute the Nation and compensate for the low intellectual and spiritual level just as a solitary tree, however luxurious in growth, cannot make up for a grove. Until there is an India in which every man is a Nehru or a Rajaji or a Raman; until the heart and mind of the people is changed in tune with the noble traditions of our great country, noted for its pursuit of Truth, we cannot reach the heights of fame for knowledge and culture, flowing from clear and right thinking, which was the attraction of our country in the days of our great sages and of Nalanda and the Tamil Sangam civilization.

We can achieve this objective only by changing the present system of our education—general and vocational. The brain of an average man or woman now-a-days is like a Handbook; for it contains a number of facts but little thought. Our education and our system of evaluating those in schools and in colleges only help to produce a warehouse with a collection of assorted material. Our aim should be to cultivate the manufacturing faculty, the creative power of the brain, the power to so place facts together as to produce a new thought and not the cramming of notes and the codes however convenient the latter might be, for giving out Diplomas and Degrees.

## EVE'S PAGE

BY

Miss R. KANAKAVALLI

### MODERN GIRLS—THEIR ATTITUDE

Perhaps one of the most difficult and unsolved problem for a man is to understand a modern girl's mind. Men have never completely fathomed women's thoughts and the modern girl poses a complicated tangled problem. Decades ago when women had very few rights and knew little outside the limits of their four walls, the problem was simple enough. But in the world of to-day things have changed considerably. The tables have turned at long last. Women have been given many facilities and encouragement for their brilliancy to blossom. They have equal rights with men. The girls of to-day are radically different from their predecessors. Years ago the "*summum-bonum*" of a girl's life would be to marry as early as possible and look after a rapidly increasing household. Most girls were married between the ages of 8-12. But look at the shape of things to-day. A modern girl would not even dream of marriage at that age. The two cannot be compared at all.

Fundamentally, modern girls are better off, for they receive a good education. We have hundreds of women graduates every year. Hence in keeping with education goes free thinking and a will to shape their own future. Gone are the days when a girl would docilly submit to her elder's decision on matters affecting her personally. There is an innate stubbornness and self-wilfulness in the girl of to-day. She wants to be absolutely independent and the very first thing she visualises after her graduation is the prospect of a good job. And

it is not very difficult for a qualified girl to get a job these days. But it is far more difficult for her to convince her folks at home that there is nothing wrong in working. Here she has to face a stone wall and it is very difficult for her to crumble it.

We are a conservative lot and the idea of a young girl working for a livelihood instead of getting married and settling down seems absolutely blasphemous. But why can't these people look at things from the girl's point of view? Her parents have given her a good education and it is enough for her to stand on her own legs. Nothing on earth gives her so much self-reliance and confidence in her own worth, as when she puts forth her ability and earns. A girl's father might be very rich, capable of giving her a handsome pocket-money, but this does not give her the same happiness which she is likely to get when she works and earns money by her labour.

I do admit that women are born home-makers and ultimately they should get married and settle down. But what is wrong if marriage is postponed and the girl is given some time between the end of her academic career and the commencement of her household one? If not for anything else, at least for the sake of that self-confidence which a working girl alone can acquire and which will make her capable of standing up against all trials and tribulations of life, I think it is highly advisable that a girl who wants to work should be allowed to do so.

Women now have entered into practically every field of work and they do shine well. The secret of their success is that they apply themselves whole heartedly to any work they undertake—whether cooking a simple meal or doing a surgical operation. Women have an innate tenderness, sweetness and grace which makes them specially suited for working as nurses, secretaries, receptionists, etc.

Florence Nightingale has exemplified, for all time to come, the tremendous power and ability that women have in the field of nursing. Nothing is more welcome to an invalid than a sweet bright face ready with a smile and cheery word to comfort and cheer them. Nurses are in short patience incarnate and they are absolutely indispensable. Unmindful of her own comfort, ready to sacrifice her time, energy and all for the sake of the patients, lightening the doctor's work to the minimum, Nurses, I must say are a real asset and a boon to mankind. Her quick efficiency, her delightful poise and calm assurance go a long way in making a sick man optimistic.

Air-hostesses have practically as difficult a job as the nurses and that is one of the professions for which women are ideally suited. More often than not the air-hostesses have to deal with fastidious passengers and the manner in which they carry out their delicate task is indeed worthy of admiration.

As statesmen women have evoked praise and admiration. Smt. Vijayalakshmi Pandit has won the admiration and respect of all. With her majestic bearing and grace she has created a high opinion of Indian womanhood.

Even in research women have blossomed forth because of their patience and perseverance, the two most essential requisites of a research scholar. An average girl takes her M.A. or M.Sc. degree at the age of about twenty-one and she can take up research work immediately. She will be given a fairly decent stipend too! At the end of about 2-3 years she can hope to become Doctor of Philosophy and would have flashed her little torchlight in seeking for the great "Truth of Science."

But let me not be misunderstood. I do not mean to say that girls should not enter into holy wedlock but should take to work unmindful of other considerations. I am only putting forth a plea (I am sure all my young friends over the wide world will agree with me) that if girls desire to work they should be allowed to do so. Marriage can come later.

"When all is done, human life is at the greatest and best, but like a forward child, that must be played with and humoured a little to keep it quiet till it falls asleep and then the care is over. Likewise why not humour the whims of modern girls a little by allowing them to work and enjoy, thus making life a great ball-room rather than a battlefield?"

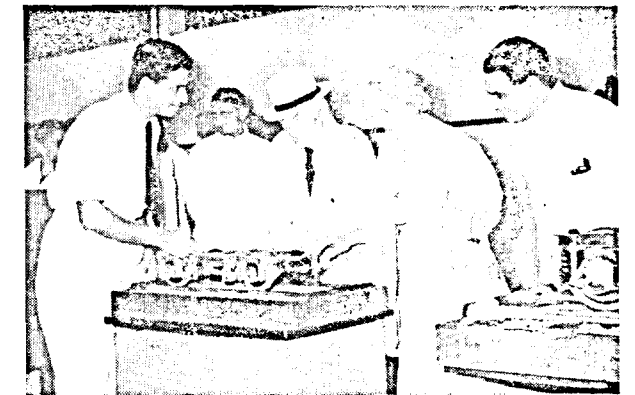
## VISITORS TO THE I.C.F.



The distinguished visitors being received by Shri K. Sadagopan.....in the Technical Training School

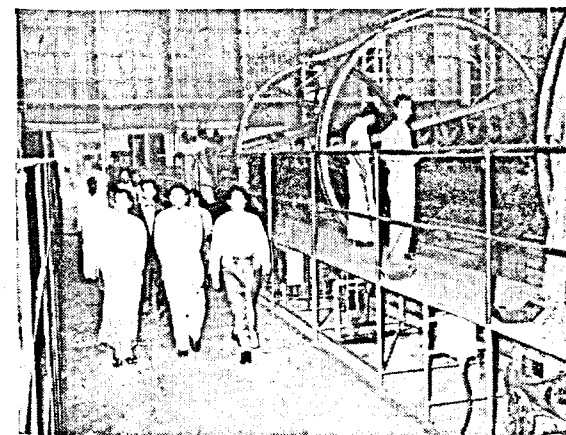
The International Press Delegation which toured the country early this month visited our Factory on the 2nd December, 1957. At the conclusion of their visit they remarked that the factory was a superb achievement and it was efficient and instructive. They considered it was a privilege to have seen the New India being born under such auspices.

Lord and Lady Pethick Lawrence visited the factory on the 12th December, 1957. They were taken round the various shops. At the conclusion of their visit they recorded that the



factory was a most wonderful and valuable enterprise.

The Honourable Mr. Same Duwe Sinwanaung, Minister for Rehabilitation, Relief and National Solidarity, Burma, accompanied by Mrs. Sinwanaung and other officials paid a visit to the factory on the 16th December, 1957. The party were shown round the Technical Training School and the various shops. The Honourable Minister observed that he was deeply impressed with the work done in the factory and felt that such achievements of industrial development would surely bring great success to India.



Burmese Minister with his entourage in the Factory



Members of the Public Accounts Committee in our lobby.

# SCOUTING IS OUTING

BY

**D. VEDAGIRI**

*Rover Scout Leader (Bharath Group)*

"With your pack on your back and a staff in your hand or with your steel steed between your knees, you can jolly well go wherever you please, taking with you your little canvas home, your blanket or your cooking pot and *FREEDOM*, out in *GOD'S* open air, preferably hiking, i.e., taking tramps about the country and drinking in the glories of the sky and earth and sea : seeing the colour in the woods and fields, scenting the flowers and the hay ; hearing the music of the brooks and birds and the whispering wind, getting to know the animals and their ways, till you feel that you are a comrade with them all and find yourself as a part of the great scheme of Nature."

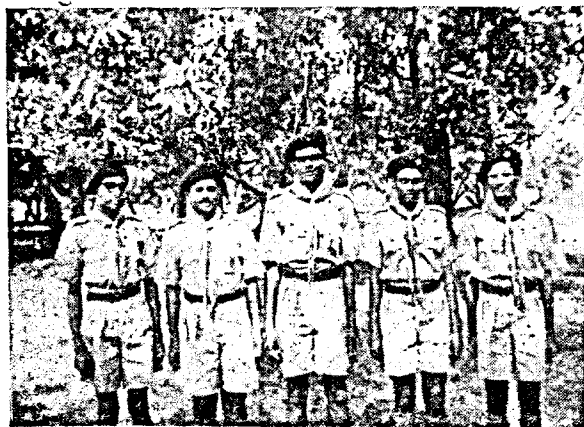
—Lord Baden Powell of Gilwel.

To an outsider, Scouting must at first sight appear a complex matter. If it were only possible to swing the doors of Scouting wide open to him and show him from a vantage point in one immense view the entire panorama

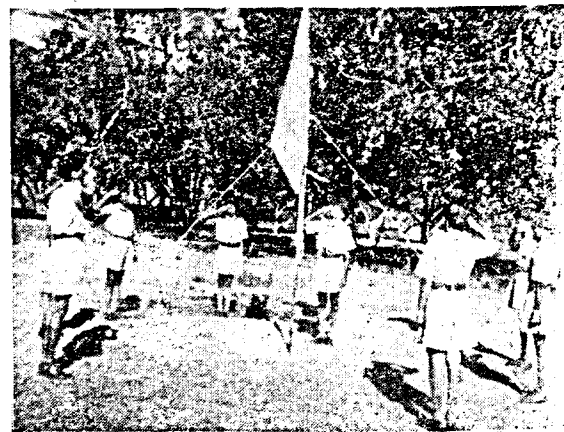
of Scouting, it would be possible for him to know what Scouting is.

Quite recently the Bharathi Scout Group of the I.C.F. District Bharat Scouts & Guides, had their Annual Camp at Padi near Villivakkam. Nine Rovers and two officers participated in the Camp, which lasted for 2½ days, from 13th to 15th December, 1957. They lived in the canvas tents which they carried, cooking their own food, drinking in the pure air of Heaven as suggested by the founder of the Scout movement and had intensive training in the Scoutercrafts, such as Semaphore signalling, First Aid, Pioneering, finding directions in the night with the help of the Constellations etc. The fine items displayed by them in the Camp Fire on the 14th instant made every one roar with laughter.

Messrs N. G. Hoskote, State Commissioner (Scouts), H. C. Krishnappa, State Secretary, and T. Ramdas, Asst. District Commissioner visited the camp and offered valuable suggestions.



Rovers on the road to service.



Flag hoisting.

## MESSAGE TO PARENTS

Your Boy should be a Scout because—

1. *Scouting fills a boy's spare time* with healthy occupations in healthy company.
2. *Scouting gives a boy character* which is essential to success in any career.
3. *Scouting is not a military movement.* We are out to make good individual citizens, not a crowd of imitation soldiers.
4. *Scouting gives a boy opportunities of service* for God and his neighbour. This is the basis of religion.
5. *Scouting makes a boy handy.* His hobbies are useful at home as well as interesting to himself.
6. *Scouting gives a boy a sense of honour and loyalty.* He will not let you down or tell you a lie.
7. *Scouting teaches a boy self-reliance,* so that he can fend for himself and help other people.
8. *Scouting gives a boy health.* Through open-air exercise and self care, he gains a sound mind in a healthy body.
9. *Scouting finds out a boy's natural gifts.* And so helps to find "Square holes for square Pegs" in the choice of career.
10. *Scouting gives a boy happiness* through cheery comradeship and the enjoyment of nature.

11. *Scouting widens a boy's outlook* since its branches in every civilized country are in mutual touch with one another.
12. *Scouting will make a man of your boy* and the sort of man you would wish him to be.

You can help your boy by :—

- (1) Taking an interest in his Scout Work.
- (2) Seeing that he attends all parades and meetings.
- (3) Visiting the troop and getting to know the Scoutmaster and Troop Committee who are taking such an interest in your boy. They are your neighbours.
- (4) Helping him to prepare for his tests and realising the fun yourself.
- (5) Remembering that the Boy Scout Movement has the interest of all boys at heart and is not conducted for personal gain. All Scoutmasters, and Assistant Scoutmasters and Commissioners are unpaid workers.
- (6) Seeing that he remembers his Scout Promise and Law and tries to put them into practice.
- (7) Encouraging your boy, when old enough, to go hiking and to go to Camp.

For particulars apply to—

The Honorary Secretary,  
The S. Rly. Bharath Scouts & Guides,  
I.C.F. District,  
Madras-23.

## BABY SHOW

A Baby Show and Health Exhibition, besides a Children's Fair was held at the I.C.F. Institute on Sunday, the 15th December, 1957, with great eclat, under the Presidentship of Mrs. Clubwala Jadhav, Sheriff of Madras. The function was largely attended by Officers and employees of the I.C.F., with their families, besides a few dignitaries of Madras.

The first item to be gone through was the Baby Show. 54 babies of the employees of the I.C.F. took part in the Show and they were grouped into 3 categories, agewise, first one being upto 6 months, the second between 7 and 12 months, the third between 12 and 24 months. The judges were Dr. Govindarajulu, D.M.O., Southern Railway, Shrimathi Sulochana Pattabiraman and Shrimathi R. K. Tandon. The Baby Show was keenly contested and it was only after considerable deliberations the first and second prize winners in each group could be decided. A First and Second prize were awarded to babies in each group and a consolation prize was awarded to all the babies, who competed. The prizes were given away by Mrs. Clubwala Jadhav.

The Health Exhibition organized with the



Shrimathi Clubwala Jadhav and the distinguished members that attended the show.

support of the Director of Public Health, Madras Government and by a number of leading firms, dealing in items of interest to children, put up was very interesting. M/s. Parry & Co., M/s. Dumex, M/s. Paiz, M/s. Y to Malt Ltd., Villivakkam, etc., took part in the exhibition and they also awarded prizes to the babies, who came out successful in the competition.

The next item of the programme was a Variety Entertainment, which included orchestral music, dance and Fancy Dress competition, etc. The dance recital by Baby Lakshmi Bai was greatly appreciated. The Fancy Dress competition was very interesting and was keenly contested. Special mention has to be made of the musical numbers presented by Shri Govindarajan.

Speaking at the end of the function, Mrs. Clubwala Jadhav said that she greatly appreciated the idea of conducting such Baby Shows, as that will be an incentive for the parents to bring up their children in a healthy manner. She expressed that more and more numbers of the staff should come forward and take part in such shows and exhibitions. She concluded assuring her full support to all such social activities.

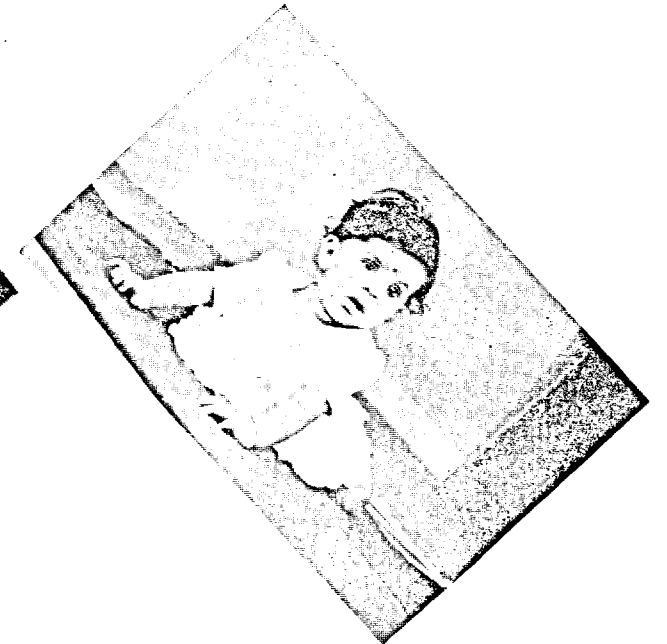
Shri K. Sadagopan in his speech thanked Mrs. Clubwala Jadhav and assured that full advantage will be taken of her assistance to conduct such shows regularly.

Shrimathi Pattammal Sadagopan then gave away the prizes to the winners of the Fancy Dress competition.

Shri N. G. Pillai, Secretary of the Institute proposed a vote of thanks and the function came to a close with the singing of the National Anthem.



Baby Sridhar, son of Shri A. K. Pichumani, Sub. Head, Accounts Department.



Baby Malati, daughter of Shri K. N. Sundaram, Mistry, Electrical Shop.

### Baby Show—Prize Winners



Baby Alamelu, daughter of Shri J. Natarajan, Chief Clerk, Superintendent of Works Office, Furnishing



Baby Balachandar, son of Shri V. Balakrishnan U.D.C. Statutory Audit, I. C. F.

## Baby Show—Prize Winners



Baby Booboon Mukherjee, daughter of Shri M. L. Mukherjee, Foreman.



Baby Mittoo Chatterjee, daughter of Shri S. S. Chatterjee, Chargeman



Shri Govindarajan, provided orchestral music during the Baby Show.



Staff Benefit Fund Committee in Session—Shri P. N. Srinivasan speaking.

## DESIRES AND DISAPPOINTMENTS

BY

M. V. B. S. SARMA

When he was born, he was so inept and dull that the nurse feared whether it was a case of still-born child. After a while, respiration was restored and with a plaintive wailing, Mohan heralded himself into this world, a world which was to him to be an enigma. He became aware of a feeling of expansiveness in contrast to the closed up, huddled existence he had hitherto experienced. Every jolt caused him a gasp and the more he tried to understand the new incomprehensible environment, the more frighteningly mysterious it became, curbing every moment his ever enquiring alert mind.

The early period of his childhood passed and now he was four years old. He tried to take notice of things very minutely. During this period, he kept on chattering freely forging an interminable terminology that it filled his mother with misgivings that he might become a politician of the opposition camp. At the age of three, a staggering number of questions he put to his mother which covered all subjects under the sun. His mother was hard put to answer them; especially his variegated interrogations on biology relating to animal kingdom.

He liked his mother very much. She always filled him with peace. And she was more beautiful in his eyes than the "English Lady" doll he had. His father had an atrociously big figure and it gave him a feeling of anxiety. Whenever mother sat by the side of his father, he had his own fears of her safety. Father looked rough and tough and it was dangerous for mother to believe in him. One day he would rescue her from him. Of that he had no doubt,

The girl who came from the neighbouring house was good to look at. When she grew up she may not measure up to mother's standards. For that matter, he himself would not come up to the level of his father's dimensions. All the same, the girl was good to look at and he wanted to cultivate the habit of liking good things. He could now know that good things gave him joy.

Whenever he tried to approach Rajee, she always repelled his advances. He had to do something about it. Whenever he indicated his determinism to put through the plan, she would reinforce her defence with a terrific shriek. That cowed him down. Why does she exhibit such an inexorable and intolerable touch-me-not-ism? Here was a doll, a beautiful doll at that which refused to join his collections. What an audacity? It annoyed him. It was really an affront and he would certainly do one or two things to put a stop to this elderly nonsense.

An idea struck him. Suppose he gave her the chocolate given by the mother. It was a pang to part with the chocolate. Why should it pain when we part with something? This d—d chocolate was a delicious thing; its sweetness delicately lingering in the mouth. He may have to put an extra requisition on the mother. And he did. That did the trick. From that day Rajee grew warmer and allowed more intimacies. Here was a lesson. To be loved, one had to give; give perhaps abundantly. Then, the love of his fellow creatures is assured. When that stout black dog barked, she came instinctively under his protection. Though his own heart was beating violently, he strained her to his breast, covered her with his person

and closed his eyes asking her to do the same. The sensation was good as long as the barking went and he wished the dog eternally barked.

At times this chit of a girl was obdurately obstinate. It filled him with rage and aroused his pugnacity. One day for obstructing one of his plans, he gave a kick, rather a sound kick on her shins, which kept her crying for half-an-hour. He was terrified at this turn of events. This had to be stopped. His reason deserted him and it was neither here nor there. He scratched his head and did not know how to stop the flood gates of this kittenish outburst. His own experience was that whenever he cried his mother kissed him and that put a seal to further wailing. Why not try the same technique. It was in the executionary process of the technique, his father caught him unawares. "Why do you kiss her on the lips. Don't do that," he shouted. His father's intrusion annoyed him while his ignorance amused him. Well! He had better learn one or two things in managing the girls, he thought.

The boys passed sly remarks about his preferences in companionship. He did not mind. The ignorant always heckle. They were yet to learn what pleasure this friendship in particular gave him.

The rains came. And in torrents. They obstructed all his plans. He could not move out of the house. His mother's prohibition. For his part, he wanted to jump in the water, a feeling which he could not suppress. A smell came from the dry parched land which was suddenly drenched and the smell was funny. So much of water going waste without paper boats being floated on them. For continuously three days he had to keep on fidgeting without seeing Rajee. All pools around, were filled with water. These gave him ideas. What about drowning that inconvenient dog in one of those pools? It remained a mere thought because the dog did not countenance his homicidal intentions; it showed its love for life,

backed by a persistent growling and exhibition of its dental armoury.

He regularly watered the plants in the garden. The water-can was awfully big. It could not be moved when it was full of water. Often he toppled down in his attempts to lift it, pouring water all over the place and all over his body. It was a great fun. Anything objected to, when done, gave him pleasure. It was irony of fate that one man's food was another man's poison and there is no freedom in this world, he lamented. Yes. That was a hard reality. Nobody had any freedom.

"Why are you late today?" his mother asked.

"I was delayed by my officer" was his reply.

If he became an officer, he would not delay persons. Why such a simple thing that father would be afraid to walk alone in darkness, did not occur to the officer? Even he himself, the big Mohan, was mortally afraid of darkness. What about poor father then? It was sickening how these elders themselves, with impunity broke rules which they laid down for others.

With a regularity, he could not understand, some days were dark and some days it was ever sprawling milky whiteness. On moonlit nights his mother and father would bring the cane chairs into the garden relax in them with crossed and hunched legs and keep on talking. He did not know what they had to talk for such long hours. It looked childish to him that they wasted their time instead of doing something worth while which would increase their respectability in this world; something worth while like pinching the kitten, tearing a new book or breaking a flower vase. These people had absolutely no ideas and this bankruptcy in their mental apparatus surprised him. Even as early as 8.00 p.m. mother insisted that he should go to bed. No such insistence for father. Why these double standards? What is it that she sees in that big fellow? He was smitten with a pang of jealousy.

Father too was good at times. How he beamed when he brought the tricycle! But mother was always an enchantress. Whenever mother dressed herself in that red saree, she looked ravishingly beautiful with her white skin, and red lips. He would go timidly to her and snuggle his face into the soft folds of her smooth saree. She would pick him up and shower kisses on him. With laughter in her eyes and satisfaction in her person, she would remonstrate with mock anger that he spoilt her dress.

However dexteriously, he negotiated the corners, he fell down from the cycle and grazed his elbows. But the speed was great fun and it exhilarated him. He wanted to ride over the bushes and thickets. But there were thorns. What shall he do the next day? What plans and programmes? He would show his new acquisition to Rajee that would delight her.

The long tedious yarns of the grand-mother bored him. The stories of the princes were good. Where are those princes now? Granny said the present government which is people's government removed the princes. People! They had no ideas and did not know what was good to them. Why remove princes of all persons, leaving so many dangerous giants scotfree? There was always an old woman in the story. He did not like the idea of old women at all. Perhaps, Granny wanted to ingratiate herself in every story she told. These old women had to be removed even if it came to killing them. He may perhaps have to make an exception in regard to Granny.

One day his mother dressed him up with the usual maternal attention to details, which was highly vexatious to him. He could attend to this task with as much felicity as his father, if not more, but mother would not let him try his hand. Moreover she seemed to enjoy this part of her job. Why rob her pleasure? He was looking very smart now. What with a liberal dose of snow surreptitiously applied to his face in the absence of his mother, he was

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smelling sweet. He wanted to have a look at the mirror. It was too high. Every day the mirror seemed to be out growing him. He pushed a stool to the front of the mirror and climbed. To avoid these small irritations in life, he wanted to grow, grow suddenly to a height that would touch the ceiling. Then he could look at that young girl condescendingly. He felt he had already grown to that size. Would his father's shoes, then fit him? He checked up. They did not.

The gold cap pen was lying tantalisingly on the table. Can it write on the wall? Father would scold him; if not it was worth experimenting. However it was better to play safe. Already he had overwound the time piece and it somehow stopped its tick tick. These are all delicate machines. A clock to be worth its salt should be as robust as his tricycle. He wondered where his mother was going to take him. To the beach where there is lot of water and sands?

On the sands, he had to conceive, plan and build a mighty town-ship. This building is a complicated business, he thought. Roads had to be laid and sewers dug. Bridges had to be built and street lighting provided. Why? This street can afford to have some more taps.

But materials were in short supply. Cut the coat according to cloth. What about a garden for his bungalow? And he should not forget a garage for tricycle. It is really a difficult thing—this planning.

At a distance, some one was coming. Looks familiar—Why it is Rajee and her parents. He would show her his great engineering feat. She has a head to appreciate and a heart to admire. He yelled at the top of his voice. He was a pastmaster at this art. Yes. Louder and louder. To him it was nothing. She heard his voice and began to run. Why not meet her half the way? He too began to run all the time looking back and pointing to the city beautiful which he had built.

Whether it is in the lives of adults or children the unpredictable always happens. Like a huge hissing hydra-hooded serpent a cruel crawling wave came forth with crackling and crumbling foam and in eddies and licked in a twinkle, Mohan's one hour's hard toil and glistening sweat. Tears welled up in his eyes as his girl companion looked at him with understanding and sympathy. What has he done to this callous unchivalrous sea to merit this unkindest cut of all at a time when he wanted to say "This is my finest hour?" It was a question to which he could find no answer.

## FAREWELL TO MR. HANS WITH

A pleasant function was got up on the evening of 21st December 1957 at the Workers' Canteen to bid farewell to Mr. With, the Swiss Foreman of Body Finishing Shop on the eve of his departure from India after completion of his contract with the Integral Coach Factory.

All the staff of the Body Finishing Shop took part in the function and after the Group Photograph, adjourned to the Canteen for refreshments. After tea, farewell addresses in

English and Tamil were read and presented to the Chief Guest along with Souvenirs, as token of our goodwill and friendship.

Mr. With, in his reply thanked one and all for the co-operation he received from the staff during his tenure and exhorted them to continue to work with the same enthusiasm and sincerity.

The function concluded with a vote of thanks by Mr. Harris, Foreman of the Shop.



Mr. Hans With being garlanded by the youngest member of the shop, Shri V. J. Bhimsen Rao

Presentation of the Farewell Address by Shri Sundaram, Painter Brushhand

### Monthly Outturn

|                                                               |     | Target figures |                    | Actual figures |                    |
|---------------------------------------------------------------|-----|----------------|--------------------|----------------|--------------------|
|                                                               |     | K.D. coaches   | Indigenous coaches | K.D. coaches   | Indigenous coaches |
| December 1957                                                 | ... | 8              | 5                  | 5              | 15                 |
| Cumulative total for the first 9 months of the year 1957-1958 | ... | 70             | 49                 | 67             | 86                 |

## Brain teasers

1. There are four different numbers, the sum of which lies between 140 and 150. Writing down the numbers in the ascending order and carrying on the following operation gives an interesting result. The first number multiplied by 3, the second increased by 3, the third decreased by 3 and the fourth divided by 3, all yield the same answer. What are the four different numbers ?

2. On condition that each hand of a clock is pointing to a minute division on the dial, at what time will the minute hand be 11 minute divisions behind the hour hand ?

3. Raju's grandmother died in 1903. Raju died 112 years after his grandmother was born. If their total age is 110 years when was Raju born ?

4. The History Professor and his wife had once been to a picture when the tragedy took place. The Professor incidentally not much interested in the picture fell asleep. He dreamed that he was one of those present in Jalianwala Bagh at the time of the police firing. Just at this time the interval was announced and his wife finding her husband asleep tapped him on his chest in an effort to wake him. The pat was too much for the Professor and he died in keeping with his dream of the firing. When this report was made to the city coroner, holding the inquest, he did not accept the story. Why ?

5. Bhandu wrote to his parents a letter from the scout camp at a village near Ooty. He wrote, "We tramped here yesterday from Ooty. We had quite an enjoyable time and we had all programmes. But I must add that while trying a horse ride yesterday I was thrown off the horse on the right hand side and I unfortunately injured badly one of my limbs." Which of his limbs did Bhandu injure ?

6. Four friends met one evening for a game of bridge. They were Captain Spade, Seargent Heart, Admiral Club and Commodore Die. Five rubbers were played, the scores of which were 1100, 800, 900, 400 and 1700 points. The Captain and the Commodore each won the same amount. The Commodore, however, won more rubbers than the Captain. The Admiral was also a winner but the Seargent was a heavy loser and lost 11 times as much as Admiral won. Who were the partners in each of the five games ?

### Solutions to last month's Brain teasers :

1. Ramu wins the race by 1.6 points.
2. The system of numbering the names in the society is as follows :—

Each letter is given a number in the alphabetical order viz., A for 1, B for 2, etc. The sum of numbers representing the letters stand for the member's number.

Hence,

Quax stands for  $17 + 21 + 1 + 24 = 63$   
Chingbu „  $3 + 8 + 9 + 14 + 7 + 2 + 21 = 64$ .

Gillet „  $7 + 9 + 12 + 12 + 5 + 20 = 65$ .

Bhondu „  $2 + 8 + 15 + 14 + 4 + 21 = 64$ .

Usalal „  $21 + 19 + 1 + 12 + 1 + 12 = 66$ .

3. Father in this family happens to be younger than the mother and is 36 years old. Mother age is 40, Bhoopathy is 9, Kanchana 10 and Pandyan 4.

4. STORE, STARE, TREAD and READY.

5. The individual weights were : 62, 59, 58, 56 and 54 lbs.

6. One ounce.

[Shri K. Venkatraman of West Mambalam in his letter to the Editor on the October Brain Teasers has questioned the answers for problems 1, 2 and 5 published in the November issue.

As the letter makes interesting reading it is published below in original—Ed.)

(i) In the first problem Ram and Chandar are going from Barahpur to Teesanagar. Since they had only one horse each of them rode the horse alternately. First Chandar rode the horse over the first mile and left it at the mile post and started walking over 2nd mail. Ram walked the first mile and rode the horse over the 2nd mile and then walked the 3rd mail. Like this they are going upto Teesanagar (that is destination). As per the answer 18 miles which is published in November edition Chandar is riding this horse over 10th mile instead of Ram as per the sum (that is both of them are riding alternately). How can Chandar ride the horse over 10th mile ?

(ii) Secondly in the 2nd problem it is asked to find which year father was born ? It is given clearly in the problem that father alone is a nineteenth century man in their family. I tried my level best to solve this problem until I came to the conclusion that as per the wording in the sum there can be no father. Though I came to this conclusion I had some hopes that when once the problem is given there will certainly be an answer. So I was on pins and needles to see your November edition counting seconds, minutes and days and finally I got that about few days back. As soon as I got that I rushed into the pages to see the answer. Alas ! What happened ? It is given that father born in the year 1890. Within a twinkling of an eye I was swooned ? It is not mere exaggeration. As per the answer if father born in the year 1890,

then mother's year of birth should be 1899 since it is clearly given in the question that the difference between the ages of the parents is half the sum of the integers. Then if mother born in the year 1899 as per the answer, then how is it possible, that father alone is a 19th century man as per the question ?

(iii) Lastly in the 5th problem as per the answer (350) which is published in November edition if we substitute 3 for I, 5 for C and 0 for F how can the equation be correct.

Here is what our compiler has to say :

**Problem 1.**—The point to remember here is that when they started out Ram and Chandar were together and at the 9th mile post they were together, having completed one cycle. From then on the second cycle starts with Chandar again riding the first mile and so on. This accounts for Chandar riding the horse both over the 9th and 10th mile.

**Problem 2.**—Mother no doubt belongs to 19th century, but surely she is not a 19th century man.

**Problem 5.**—Elementary mathematics teaches us that solutions for problems, as the one given, have to be done in stages in a definite order. If this order is followed, which is indicated below, the solution cannot be anything, but 350.

$$\begin{aligned} 350 &= (50 \times 3) + (500 \div 35) \times (53 + 3) \div \\ &\quad (50/5 - 3) \times 35/5 \div (5 - 3) (5 - 3) \\ &= 150 + \frac{500}{35} \times \frac{56}{7} \times \frac{35}{5} \times \frac{1}{4} \\ &= 350. \end{aligned}$$

(Our thanks are due to Shri K. Venkatraman for the interest he has been taking in our columns and for the trouble taken by him to address us in this connection—Ed.)

## Wit and Whistle

1. The sophisticated young lady proudly once said to her mother, 'Ma, do you know that I advertised last month in the matrimonial column under a different name that I want to make acquaintance with a refined gentleman with an eye to matrimony?'

"But Pamela, how horrible of you!" said the mother evidently in anger and continued, "Did you get any reply?"

"Yes, only one," replied casually the young lady, "From Father."

2. The naval rating well known for his expert smuggling once adopted a novel method for the affair. He stepped out of the ship with a suit case and was instantly stopped by the Customs Officer.

"Would you mind, Sir," requested the Customs Officer, "Opening the little box for inspection?"

"Of course I have to," said the naval rating, "For it contains the ship's cat and if I open it will take me hours to catch her again from the ship."

The Customs Officer was adamant and hence when the rating opened the suit case a cat jumped out and ran back at full speed to ship.

Two hours later the rating appeared again and with the suit case full of stuff and walked stylishly with the Officer smiling at the suit case.

3. Overheard in a Ladies Club :

Mrs. X.—"Do you know Mrs. Y, I read the other day in a magazine, that ostrich cannot see anything but can digest everything."

Mrs. Y.—"Oh dear, what an ideal husband!"

4. Husband : "Isn't it about time baby called me daddy?"

Wife : "I've decided not to let him know who you are until the little darling gets a little stronger."

5. Ashok : Now, darling, tell me how you first came to know of your love for me.

Leela : Oh, suddenly I noticed that I became angry when everybody called you an idiot.

## OUR FAMILY



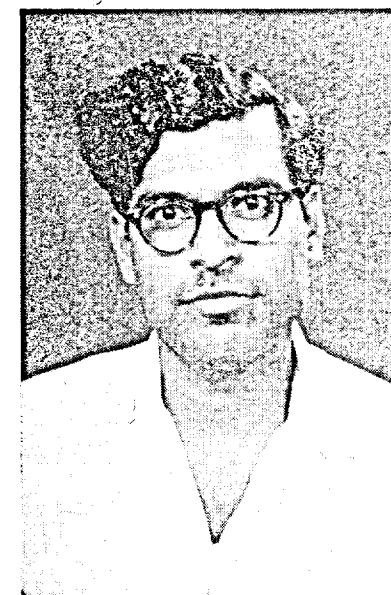
Our popular Welfare Inspector (Sports), SHRI CHENGAMA NAIDU SANKARAN, is an outstanding Athlete. Right from his school days he showed great promise as a sportsman and won the Grigg Medal in the District Schools Meet.

During his collegiate career he had the honour of representing the Madras University and Madras State, in the Inter-University and National Championships, respectively, in 1952. He led the Madras University Team at the Inter-University Track and Field Championship held in Ceylon, with great distinction, winning the individual championship and setting up a record in Broad Jump. In 1954 he was sent as a member of the Inter-University Team to the World University Summer Games held at Budapest.

His career has not been one of all sports and no studies, for he crowned his scholastic career with an Honours degree in Economics from the Madras University.

He joined the Integral Coach Factory on 12-9-56 as a Clerk and was promoted as Welfare Inspector in March, 1957.

He has been winning many a laurel for the Integral Coach Factory, his latest achievement being the setting up a new record in Broad Jump at the last Inter-Railway Meet. He will be representing the Indian Railways in the Inter-Services Meet to be held shortly.



A penman of a high order with special aptitude for writing spicy articles is Shri Sarma of the Accounts Department.

SHRI MITTAPALAYAM VORUGANTI BALASUBRAMANIA SARMA comes from a railwaymen's family, his father having served in the Traffic Department of the ex. M. & S.M. Railway.

Born in North Arcot District 31 years ago, he had his early education in Kalahasti. After passing the Intermediate Examination, he joined as a Commercial Clerk in the Traffic Department of the ex.-M. & S.M. Railway. After putting nearly 10 years of service in that Railway, he was transferred to the Accounts Department of the Integral Coach Factory in August, 1955. He is interested in Cost Accounting and recently passed the examination held by the Institute of Cost and Work Accountants, Calcutta.

He is a regular contributor to the "Rail-coach" and his pungent and witty articles are longed for and read with great interest. He is a gifted writer in Telugu also.

He is a voracious reader and his subjects range from literature to industrial administration and management.

He is an amateur photographer of considerable skill.

## “TICKET, PLEASE”

BY

C. S. KRISHNAN

This can rightly be called an age of tickets. People are being made ticket-minded. Wherever you want to go or whatever you want to do you will have to get your ticket.

There are the season tickets, which spare us the trouble of standing in a ‘Q’ and purchasing our daily ticket. But there is a botheration also ; you must have it with you all the time you travel. You know what human memory is ! The Ticket Examiner will be around when you have just once forgotten to bring it along. Well, that is life !

Just imagine for a second, the mass of people—high and low—to whom this business of tickets has given an employment and a livelihood. People who print, folks engaged in transport, chaps who sell them at the counters, fellows who see whether you have it or not, then those who collect it from you, so on and so forth.

When we talk about tickets we remember the ‘Annapoornas’ and such other canteens. Although they call theirs ‘coupon’ or ‘token’ as the case may be, they are not very far from tickets. After all, names may differ ! I, for one, have no love for such hotels. I do not like the trouble of purchasing coupons, exchanging them for the food, and carrying the plates to your table. It very often happens the item for which you have got the coupon is sold out ; then you have to start all over again, which, you will agree with me, is far from pleasing. Folks when they are in ordinary restaurants scold and drive the poor servants ; indeed great is their plight in these “coupon canteens.”

Many a funny story gains circulation about tickets. There are the bravados who boast about their escapades with the Ticket Examiner. Then there was the story of the simple peasant

who wanted a ticket to his father-in-law’s place of which, he could tell many details except its name. I still wonder whose plight was the greater, the peasant’s or the counter clerk’s ?

Ticketless travel is on the increase, says a Press note. I know a man way back in my village who never purchased a ticket when he journeyed. Nor that he did not have the money, but he had a philosophy : “Railways are the Nation’s property and you don’t expect a guy to pay when he uses his own vehicle.” The Ticket Examiners, he complained, did not understand his philosophy or pretended so.

A talk about ticket is not complete if it does not touch upon cinema and buses.

I have had the experience—I am not alone in this—of being told ‘sold out’ at the counter after standing for hours in the ‘Q’ under horrible conditions. The man just before me got his ticket, but Alas ! not so for me. Buying a ticket for newly released picture is a task worthy of Hercules. I do not mean reservation, but actually getting it from the counter. And there is the Naya Paisa trouble, which adds fuel to the flame, as the saying goes :

Perhaps you might have heard this story :

A newly married couple received two tickets for the night programme at the local cinema. There was only this much in the covering letter : “Guess who it is.” Needless to say the couple in question had a good time that evening. When they returned they found their house burgled and there was a rejoinder to the previous note : “Now you know.” Tickets do come in handy to different folks in different ways.

Lottery tickets are a class by themselves. People to whom these tickets brought misery and disappointment are innumerable. But the funny thing is the more they lose the more determined they are to have another try. Some, few in numbers of course, get a lucky break. Then wise is the guy who makes good what he won, instead of going in for bigger stakes. May be this tale is not a new one :

A man won a big amount in the lottery. Fearing the news might kill the lucky chap, a parson was deputed to break the happy tidings to him. After an elaborate sermon the good old curate came to the point : “My dear man, what would you do if you win 2 lakhs in the lottery ? Unhesitatingly came the reply : “Of course, I’ll give it to the church.” At this the good old parson fainted and never recovered.

### *How foreman can control costs (continued from page 18)*

14. A chair of proper height to permit the individual worker to maintain a comfortable and proper posture is an economy. When the nature of the work permits, provision should be made for the worker to alternately sit and stand at his work.

15. The work space should be safe—the operator should have full confidence in his personal safety, and be thoroughly trained in safe work methods.

“Red flags” in methods improvement :—Certain acts or movements made by a worker on the job are so inefficient, fatiguing, or non-productive as to be generally undesirable. The presence of any of them in a *repetitive* task suggests the possibility of improving productivity and reducing unit direct labour costs by some changes in :

1. Work space set up
2. Sequence of operations
3. Tools used
4. Materials used
5. Method of doing the job
6. Movements made by the operator

The supervisor interested in controlling his direct labour costs will be alert to detect any of these fatiguing and unproductive movements.

When observed, he could consider them as “red flags,” calling his attention to the need for studying the job for a means by which these undesirable acts or movements can be eliminated, or at least minimized, and the direct labour unit costs reduced.

The following is a partial list of such undesirable acts or movements :

Walking—operator taking one or more steps during operation :

- (1) to get material worked on ;
- (2) to move material or parts from one work position to another ;
- (3) to get rid of finished work ;
- (4) to get tools ;
- (5) to get supplies ;
- (6) to prepare or condition supplies or materials used.

Reaching—involving :

- (1) bending of the back at the hips ;
- (2) turning of the body about the hips ;
- (3) stretching of arms by bending the back

Searching—fumbling or hunting to locate or select :

- (1) tools used ;
- (2) supplies used ;
- (3) parts worked on.

Holding—controlling the position of motionless object with hand :

- (1) material or parts worked on ;
- (2) tools used.

Transporting—(moving) by hand :

- (1) unfinished work from pile, stack, or tote box to point at which it is worked on ;
- (2) finished work or part to point of disposal ;
- (3) lifting or handling parts weighing “over a pound ;”
- (4) lifting or handling tools weighing “over a pound ;”
- (5) tools to and away from point of use ;
- (6) two or more tools to point of use when a single or combination tool will serve purpose ;
- (7) transferring parts, papers etc., from one hand to another.

Positioning—or pre-positioning material or parts by hand when guide, fence, jig, hopper or other device can be used to locate piece in position to be worked on

Guiding—by hand :

- (1) tool used ;
- (2) material worked on ;
- (3) free hand aligning of parts, papers, or material.

Delays or hesitations—periods of inactivity during which nothing productive is done by the operator :

- (1) operator idle (machine may or may not be running) ;
- (2) operator stops to figure out what to do next or how to do it.

Utilization—of machine :

- (1) machine shut down (operator may or may not be working) ;
- (2) machine operates intermittently or at less than capacity because operator

cannot “get” and “get rid of” work fast enough.

*Control of spoilage re-work and reclamation costs* :—The one most effective way to cut re-work, reclamation and spoiled work costs is to avoid the production of imperfect parts. Once the foreman has determined the cause of poor work in his department he is responsible for correcting the situation, by direct action if he can control it, or by reporting the condition if he cannot control it. The report should be a formal one, substantiated by facts and specific data and contain, if possible, specific recommendations.

Since all spoilage in a department is likely to be charged against the department, the foreman has every right to exert all reasonable pressure on his superiors to get action on causes of any spoilage charged to his department but which are beyond his control. Top management has a serious responsibility for acting promptly on such reports.

The answer to low spoilage costs does not lie in more and tighter inspection, but rather in good methods, tooling, equipment, training, and supervision. Inspection never put quality into a product. Inspection merely sorts out imperfect work. Productive departments and only productive department can put quality “in.” Every rejected part or piece adds to the price that must be charged for each product of standard quality. The foreman has a responsibility to see that quality is a characteristic of each part produced.

*Control of supplies and non-durable small tools cost* :—It can be false economy to be niggardly on departmental expenditures for supplies. However, unless some control is exercised the departmental cost for supplies and non-durable tools can be excessive.

Certain items such as screw drivers, pliers, drills, towels, small paint brushes, copper wire, etc., provide some employees with temptations. There is always the problem of petty

thievery due in part to the odd notion that “swiping from the company is not really stealing.”

The foreman needs to know about how much in the way of supplies are necessary for the operation of his department. If he is asked to requisition supplies of any kind in excess of what would seem necessary for normal operation he should carefully investigate the matter. To do this he must first have a general idea of the amounts of each type of material he requisitioned in a given period. The foreman can check on wastage only when he knows about what should be requisitioned.

A foreman may find it well worth while to make an occasional check on a number of the major supplies and tools consumed in his department. When discrepancies are found between “reasonable” consumption and “actual” consumption the foreman has identified a situation to which he should give his attention. He must determine if the excess tools and supplies are being wasted or pilfered. He must then decide on and put into effect appropriate steps to remedy the situation.

*Control of machine utilization* :—Idle machines increase unit costs. The foreman can minimize this cost by making maximum use of his equipment.

Absenteeism is often a cause for idle machinery. The foreman should take all possible steps to minimize absenteeism. He can explain to absentees the cost of idle equipment ; point out the loss in wages to the employee ; develop a system to encourage employees to advise him in advance of absences, if possible, so he can plan machine usage ; in extreme cases he must take or recommend disciplinary action.

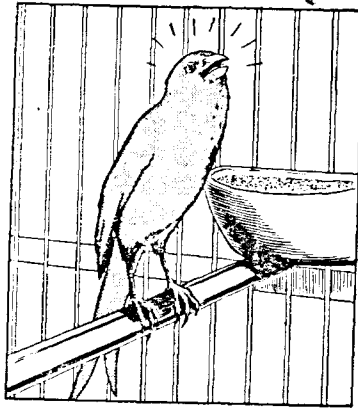
Poor departmental planning ; slowness in machine setups ; poor housekeeping ; inconvenient storage of tools and fixtures ; poor maintenance of tools ; insufficient parts or material are all causes of a low machine utilization factor and a higher unit cost.

The foreman should plan so that an operator seldom has to wait for an assignment. Speedy setups should be facilitated by good housekeeping ; ready availability of fixtures, gauges, etc. ; proper training and supervision of setup men ; and arranging for preventive maintenance insofar as possible. The foreman should be sure that there is work enough to keep all machines busy. He must look ahead and take whatever steps are necessary to keep work flowing into his department in sufficient volume to keep his machinery in use. It is his responsibility to report any conditions which he can not control and which prevent a maximum of machine utilization in his department.

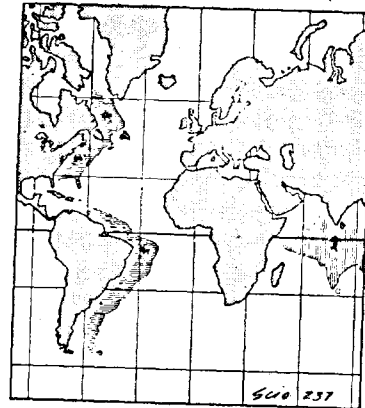
*Effect of employee relations on costs* :—Probably no single factor has a greater influence on the productivity and unit costs of a department than the attitude of the employees, and their willingness to get the job done.

The foreman is very largely responsible for all relationships between the company and the employees in his department. He may and should have help and guidance from the personnel department if there is one, but the foreman is the individual who supplies and administers personnel policies. If he exerts friendly, effective leadership ; recognizes each employee as a person ; treats all employees with fairness ; is interested in them ; sets a good example in the matter of application to the job in hand ; avoids showing favouritism, then he is likely to have good morale, high productivity, and low unit costs.

## DID YOU KNOW?



Authorities say the feathers of a yellow canary will turn red if the bird is fed paprika.



Scientific studies conducted in the International Geophysical Year reveal at one time the United States and Europe were 1,000 miles closer together, and that India was once south of the equator.



Antarctica's massive burden of ice may be responsible for depressing the land beneath it. At one place, recent measurements have shown the ice to be 9,750 feet deep, with the underlying land 5,000 feet below sea level.



Man has tried to beat the heat for centuries. Some primitive tribes, for instance, faced their crude huts into prevailing winds and hung reed mats across the entrance which they sprinkled with water, creating a form of air conditioning.

## NEWS MAKERS

### Our Felicitations to

1. Shri G. E. DeBrass, Senior Foreman promoted Assistant Mechanical Engineer/Millwright.
2. Shri K. Balakrishnan Nair, Head Clerk in scale Rs. 160-250 promoted Head Clerk in scale Rs. 200-300.
3. Shri T. S. Govindarajan, Head Clerk in scale Rs. 160-250 promoted Head Clerk in scale Rs. 200-300.
4. Shri P. M. Neelakantan, Chargeman 'C' grade in scale Rs. 150-225, Shop 14 (D Shop) promoted Chargeman 'B' grade in scale Rs. 200-300.
5. Shri Surjit Singh Nagi, Chargeman 'C' grade in scale Rs. 150-225, Shop 18 (J Shop) promoted Chargeman 'B' grade, Shop 21 (B Shop) in scale Rs. 200-300.



Shri R. L. Kukillaya.

### Our Welcome to

1. Shri K. Bansilal appointed as Probationary Draftsman (Mechanical) in scale Rs. 260-350 and posted to Mechanical Drawing Office.
2. Shri Theodore Samuel appointed as Hostel Superintendent in scale Rs. 200-300.
3. Shri G. Doraiswamy appointed Senior Metallurgical Assistant in scale Rs. 250-500.

### Our Best Wishes to

1. Shri R. C. Tandan, Secretary to the CAO. (R) retransferred to the Northern Railway.
2. Shri R. L. Kukillaya, Assistant Engineer retransferred to the Southern Railway on promotion as Executive Engineer.
3. Shri S. Subramaniam, Office Superintendent in scale Rs. 360-500, CAO. (R)'s office proceeded on leave preparatory to retirement.



Shri G. E. DeBrass.

4. Shri W. Wullschleger, Expert, Boring and Milling returned to Schlieren on 4—12—1957 on completion of his contract period.
5. Shri E. Murari, Expert, Fitting returned to Schlieren on 6—12—1957 on completion of his contract period.
6. Shrf E. Kaehr, Foreman, Body Welding returned to Schlieren on 6—12—1957 on completion of his contract period.
7. Shri A. Gertsch, Foreman/Wheel Shop returned to Schlieren on 17—12—1957 on completion of his contract period.
8. Shri H. With, Foreman/Body Finishing returned to Schlieren on 31—12—1957 on completion of his contract period.



### DID YOU KNOW?



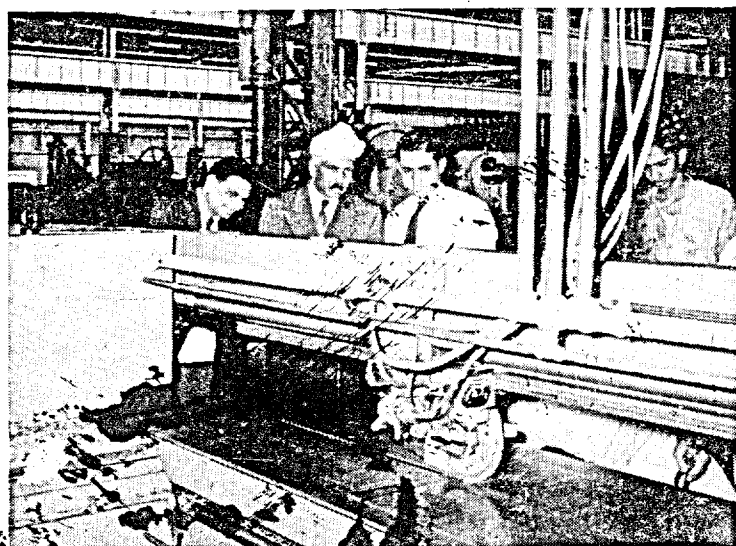
The largest gold nugget ever found was the 7,560-ounce Holtermann nugget taken from Hill End, New South Wales, Australia, in 1872. The largest silver nugget ever recorded was one of 2,750 pounds Troy, found in Sonora, Mexico.



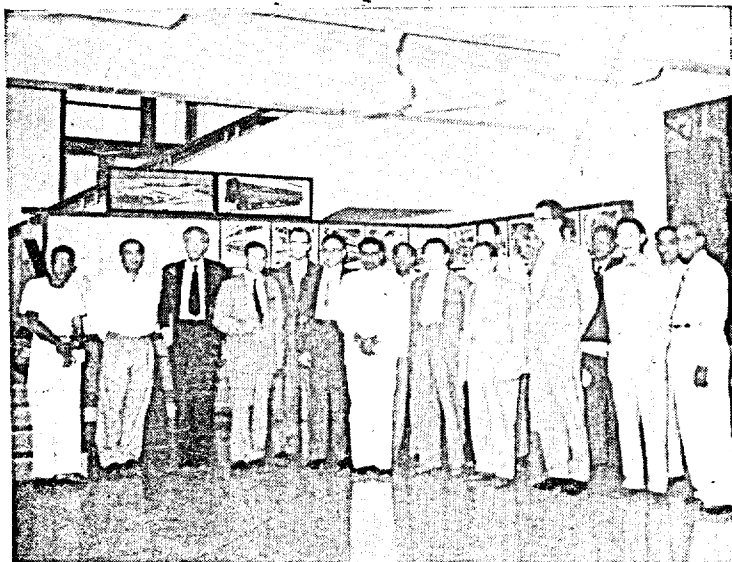
The chances are you'll walk 65,000 miles in your lifetime, or more than  $2\frac{1}{4}$  times the distance around the earth.

Pictures taken on the occasion of the Farewell Party held for Mrs. & Mr. Braem, prior to their departure to Switzerland.





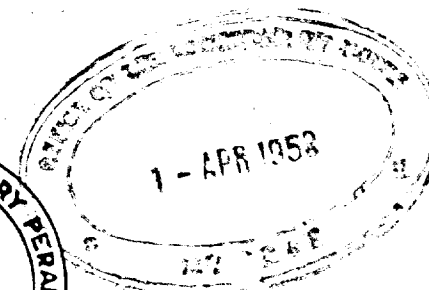
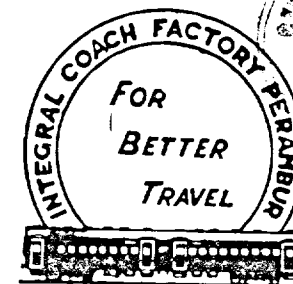
Sir A. Parasuram Mudaliar visited the Factory on 29-11-57



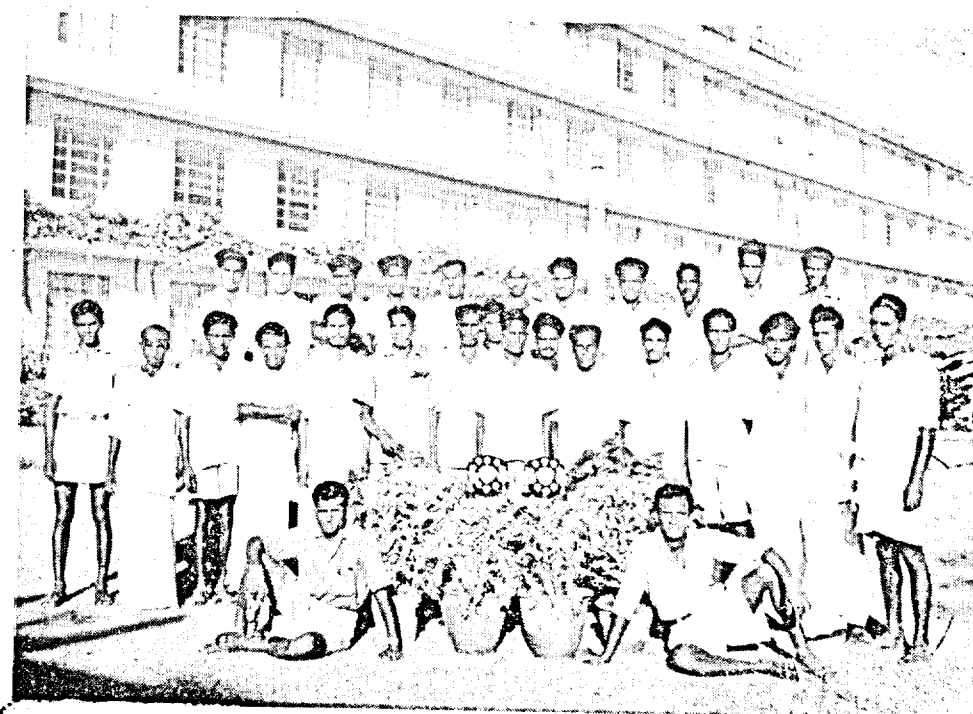
The International Press Delegation with our C. A. O. (R) in the lobby

# RAILCOACH

VOL. II, No. 5



FEBRUARY 1958



I.C.F. Garden Staff with the Garden Competition Trophies

# 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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## CIRCULATION

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

4213

We have represented for many years Wadkin Limited of Leicester, manufacturers of a comprehensive range of Woodworking Machinery. This range of equipment, due to a recent merging of The Sagar and Bursgreen Woodworking Machinery Companies with Wadkin Limited, has now been very greatly extended and consequently our recent appointment as Sole Agents in India, Pakistan, Burma, and Ceylon for the sale of all Woodworking Machinery produced within the Wadkin Group of Companies has enhanced our opportunity of supplying the Industries in this country with a more varied range of equipment than previously. our prompt attention.

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## WOODWORKING MACHINERY

In addition to the new high production types of machines, such as the Sagar Two and Three Drum Sanders, Planing and Moulding Machines, Edge Glue Jointers and Three Cutters, the Bursgreen range will enable us to offer many additional sizes and types of Bandsaws, Jointers, Planers, Saw-benches, etc.

We invite you to write for full particulars for this new range of equipment that we can now offer and such enquiries will receive

Ask Jacks about it.

**William Jacks & Co., Ltd.**

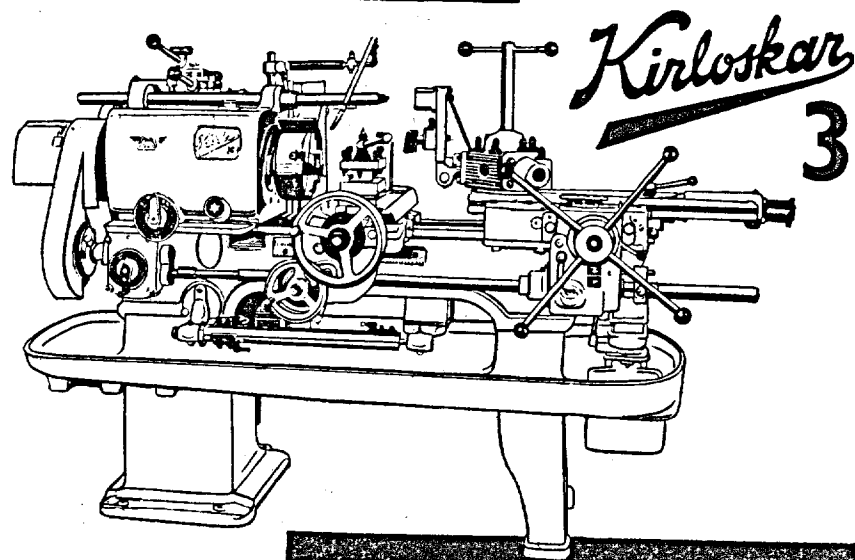
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**IN THE PROGRESS OF MACHINE-TOOL INDUSTRY**

**SPECIFICATIONS:** Swing over bed 13" — Bar capacity 1½"  
Spindle speeds 6 — Feeds 6 — Motor  
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This modern design Capstan lathe is of rigid construction and the speeds and feeds are so arranged to enable use of tungsten carbide tipped tools efficiently. All the gears in the headstock are hardened and ground.

Today, as in the past several years, the largest number of lathes are manufactured by THE MYSORE KIRLOSKAR LTD. Their leadership in the manufacture of high quality machine tools is achieved by easy operation, sturdy construction, best workmanship and above all backed by years of rich experience in the line of precision machine tools manufacture.

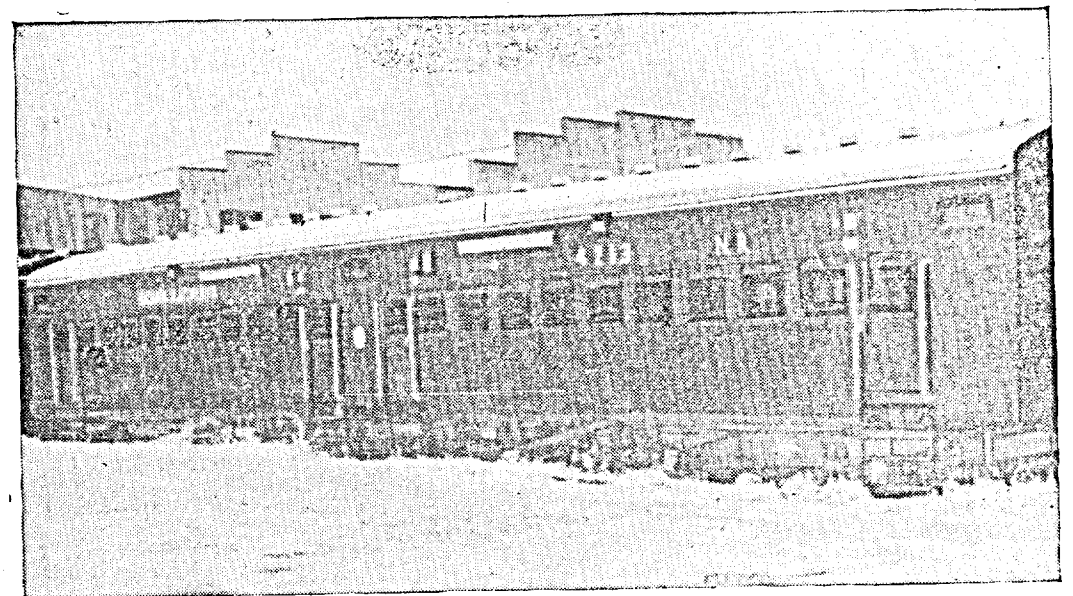
MANUFACTURERS:-

**THE MYSORE KIRLOSKAR LIMITED**  
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## *The Superfine SPARTAN*

### *in the service of*

## **INDIAN RAILWAYS**



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

#### *Passenger Comfort in Travel:*

That is the slogan of the Railway Board during the Second Plan period to the millions of travelling public who use Railways.

Pleasure to the eyes is a soothing comfort and colour affords it. The excellence in performance of SPARTAN DURAFLEX SYNTHETIC ENAMELS renders added comfort to the passengers travelling in the coaches built in our country to-day.

**ADDISONS PAINTS & CHEMICALS PRIVATE LTD.**  
SEMBIAM MADRAS 11

*Manufacturers of:*

Automobile Lacquers, Synthetic Enamels, Ready Mixed Paints,  
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FOR QUALITY & ECONOMY  
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IN WIDE AND VARIED USE THROUGHOUT OUR COUNTRY  
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## RAILCOACH

(INTEGRAL COACH FACTORY MAGAZINE)

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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.

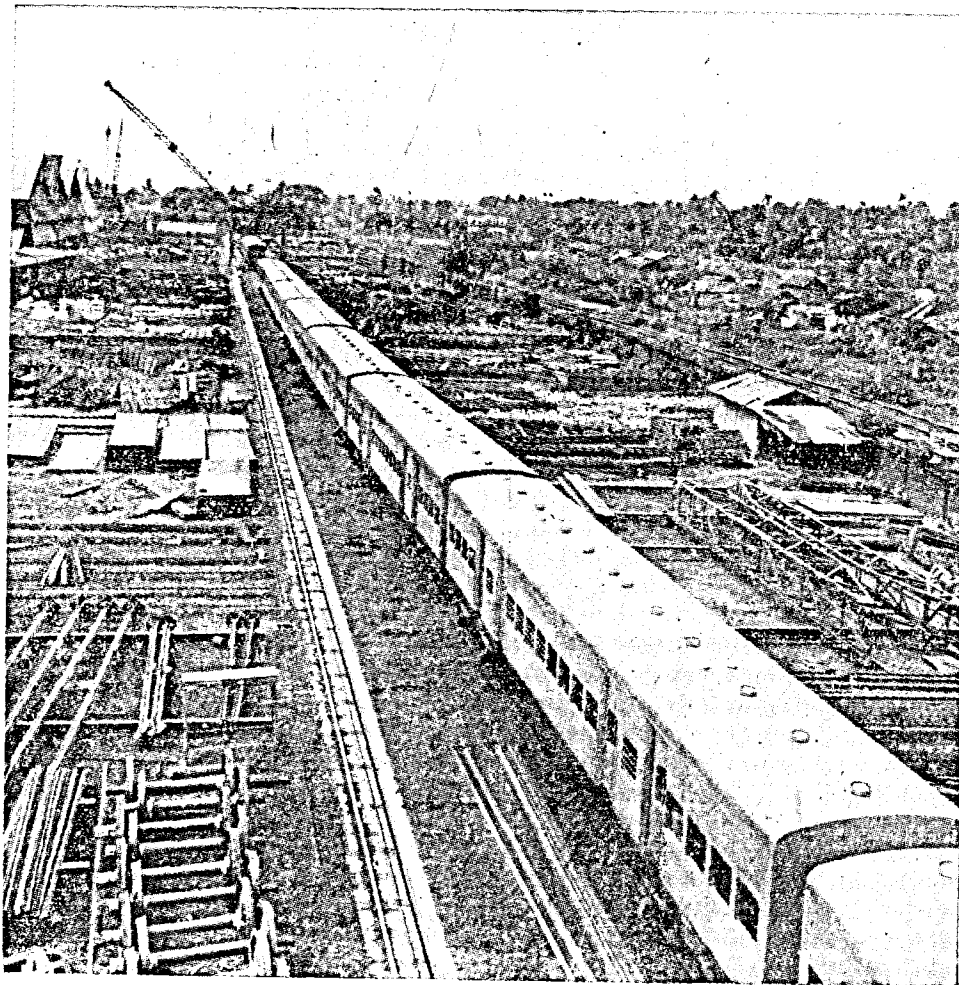
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## editorial

### COMPLETION OF FIRST PHASE OF DEVELOPMENT

The inauguration of the 6th Assembly Line by Shri Karnail Singh, Member/Engineering, Railway Board is a significant event of the last month in that it brought us practically in sight of our cherished goal of attaining full production this year itself. A noteworthy feature of the function was the reference made by Shri Karnail Singh to the confidence displayed by the staff in discharging their duties. Coming as it does from an eminent Engineer, his words are of great value to us and we are sure they will be a great source of encouragement to the staff to do better and better so that the name of the factory "may shine brighter and brighter" as observed by him. We are aware that we are about to achieve the targets originally set, but we are sure we will not rest content with that and will continue to keep marching forward with our minds fixed on the task yet to be achieved by way of successfully working the second shift.

\* \* \* \* \*

The month that went by was a memorable one as we received encomiums from the distinguished Prime Minister of Czechoslovakia, Mr. Viliam Siroky. He has paid a tribute to the skill of Indian workers and we will cherish his observations for a long time to come, as he is an eminent leader, who was associated with the Railways in his early days.

## HATS OFF TO THE I.C.F. GARDENERS

From its inception, the I.C.F. has been first in quite a few things, but it looks as though it is bidding fair to a permanent first place among the gardens of Factories and Industrial Establishments in the City of Madras. For the third year in succession, the first prize has been awarded to the I.C.F. gardens and we can do no better than quote the comments of the panel of judges for the Industrial Garden competition.

"The authorities have to be congratulated on the idea of creating gardens to relieve what would otherwise be 'dry-as-dust' surroundings. While throwing life and colour into the place, they help to develop an aesthetic taste among the workers. The I.C.F. garden is a picture of beauty. The people behind it are enthusiastic and extremely progressive minded. A beautiful environment inspires latent talent. It was a surprise to see a gardener of this esta-

blishment creating a miniature garden of flowers in a small bowl of water."

In addition to this competition, the I.C.F., for the first time, took part in 13 events at the Flower Show itself and secured Five First, Four Second and Three Third Prizes. The distribution of prizes was a colourful ceremony at the Agri-Horticultural Society Grounds at Teynampet, presided over by Dr. M. S. Randhawa, D.Sc., I.C.S., Director, Indian Council of Agricultural Research, New Delhi. The prize distribution was on the 14th January and being Pongal day the awards had special significance to the garden staff. The Shield and the Prizes awarded to I.C.F. were exhibited in front of the Main Portico of the Administrative Office and it is hoped that all our staff will become increasingly garden-minded not only in creating the gardens, but in preserving their beauty and elegance.

Our hearty congratulations to the staff associated with this facet of the I.C.F.'s work.



Shri Tirunavukkarasu, Gardener, I.C.F., receiving the certificate from Dr. M. S. Randhawa, who presided over the Flower Show celebrations

## SHRI KARNAIL SINGH INAUGURATES THE SIXTH ASSEMBLY LINE

Shri Karnail Singh, Member/Engineering, Railway Board, whilst addressing the staff of the factory, during the inauguration of the sixth assembly line observed :—

"To me it looks that though making of the integral coaches is a fine achievement—it is no doubt we turned out a large number of them—we now feel that we need not entirely depend on someone else—there is something greater than that, that is the acquisition of confidence, the confidence that has been built in the I.C.F., that you can now fashion metal sheets into anything that is required of them—not only in the making of a coach, but anything that may be wanted or anything the country needs. It is that confidence which is worth much more than the immediate material production. I congratulate you all, the workers and the people under whose direction you have learned the work."

The visit of the Member/Engineering to the factory on the 9th January, was taken advantage of for the inauguration of the sixth and last assembly line to go into production. Shri Karnail Singh was, on arrival, received by Shri K. Sadagopan and after an inspection of the factory, furnishing annexe, Technical Training School and the Colony, he was taken to the B Shop for the inauguration ceremony. The Chief Administrative Officer in his introductory speech said :

"Today is a Red Letter Day in the annals of the I.C.F. in that we have the honour of welcoming to our midst, our Captain and Leader Shri Karnail Singh. This is his first visit to us as Member, Engineering Railway Board. We are all working directly under his leadership and

guidance. Shri Karnail Singh is one of the pre-eminent Engineers in the country, and has a long and most distinguished record of public service. It is a matter of common knowledge, that under the special direction of the late Sardar Patel of revered memory, he undertook the construction of the Assam Rail Link at a most critical time in the country's history, and completed it in record time, and well ahead of schedule—a record for which there can hardly be a parallel anywhere else.

"Shri Karnail Singh was later entrusted with the formation of the Northern Railway Zone and here his remarkable organisational abilities were brought to bear upon this assignment, with the result that the Northern Railway was formed into a well-knit unit. One of his most remarkable achievements in this connection was that, as far as I recollect in a matter of 36 days, he was able to complete 75 Officers' quarters in connection with the establishment of the Headquarters of the New Zonal Railway at Delhi.

"Later, Shri Karnail Singh took charge of the Chittaranjan Locomotive Works and, here, with his usual dynamic ability, leadership and personality, he was able to create a most impressive production record of 14 large sized locomotives a month—an achievement much greater than was originally visualised for this Factory."

"We are very happy to have this rare opportunity of working for him, and I have no doubt that you would all wish me to extend to him a most cordial, respectful and affectionate welcome and assure him

that we would give of our best in the service of the Indian Railways.

"In the Coach Factory, Sir, you may be pleased to hear that we are all working together as members of a happy family, dedicated to the common task of making this production unit a model in every respect. Our production in the first year was 43 coaches against the original target 20, and in the second year which we completed last September, our production was 150 against the original target of 100 and the subsequently enhanced target of 120. Most of the Swiss Experts and Engineers, who have so successfully co-operated with us, have now left us, and we Indians face the future with the confidence that in the course of this year itself, i.e., 2 years ahead of the original schedule, we shall be achieving the peak target of 350 coaches on a single shift.

"On the Furnishing side, we have built up an organisation and established temporary facilities for furnishing about 100 coaches a year and made satisfactory progress in the course of last year. We are further building up the temporary organisation with a view to taking on as much of the furnishing work as possible as an interim measure, pending the construction of the Permanent Furnishing Annexe. On the Permanent Furnishing Annexe also, we have been making steady progress in regard to land acquisition, etc.

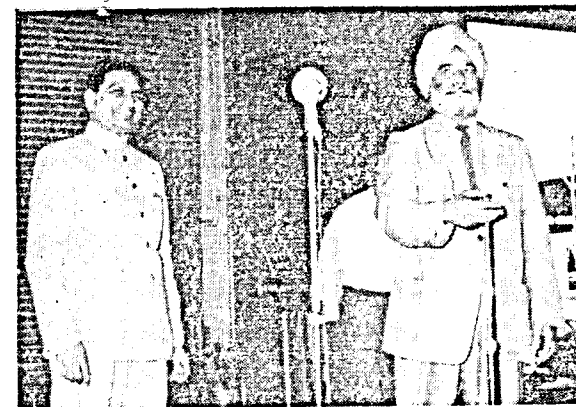
"It is entirely due to the team spirit, the enthusiasm, the efficiency and the spirit of dedication to duty that we have been able to step up our production, even exceed the enhanced production targets. We beg to assure you, Sir, that with your invaluable leadership and direction, we would march ahead and achieve the peak production target and also establish

a second shift working at the earliest possible date.

"Your visit to us today happily synchronises with the establishment of the 6th Assembly Line and thus marks the completion of the arrangements and provision of equipment for the attainment of the maximum production. May I on this occasion, request you to kindly do us the honour of launching out the first shell assembled on the 6th Assembly Line, and speak a few words of advice so that we may go ahead with the very big tasks that we have to perform in the New Year."

The Member/Engineering rising amidst cheers said :—

"I wish I could talk to you in Tamil, but I can see from your looks that each one of you is fairly conversant with English. Words, which Mr. Sadagopan, mentioned about me, I am afraid, are rather exaggerated. We have worked on the Railways for a long time and while he was in charge of this prized factory of Indian Railways—The Integral Coach Factory—I had to look after the sister concern in Chittaranjan, which is the older or the bigger sister. Which is the more beautiful factory, I leave it to you to judge. I have no doubt that in the latter category falls the Perambur Factory, as it is adorned with a complement of handsome-looking and cheerful band of fine workers. I am an old man at this game of looking through the workshops or visiting works and therefore my eyes are naturally trained to look into something more than mere fashioning of the metal. This is the good part of it, that is the material part of it, but that part is the result of the human mind behind it. I have during my short trip through your beautiful workshops, watched you all very keenly

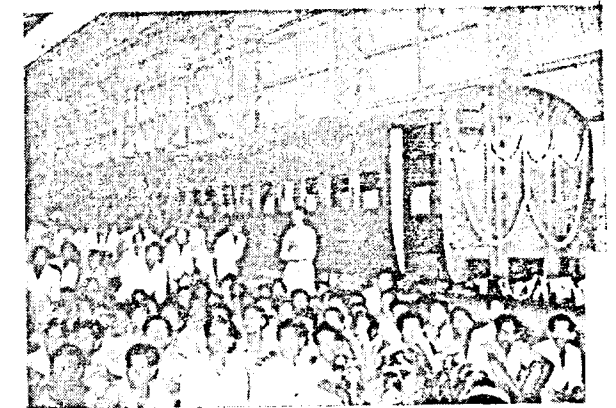


Shri Karnail Singh pressing the switch to release the first coach assembled on the Sixth Assembly line

and intently. It has given me a lot of pleasure—and very much pleasure indeed—to notice the inner happiness and the brightness so far as the human part of it is concerned. And in so far as the work part of it is concerned, I could see in the hands and the eyes of the workmen, at the machines, the confidence, with which you were either handling the electrodes, shaping sheet metal in machines or doing any other type of work.

"It is a matter of very great pleasure that some of the machines which are said to require most experienced hands and a long training are, in your adept hands, in a short time, producing as much and as good stuff as any one could hope for.

"In regard to the output of the factory, I have no doubt that to the mutual benefit of the Indian Railways who have installed this factory and the Indian Railway workmen who are working in this Factory, the management will introduce the Incentive Scheme. By the introduction of the Incentive Scheme



The first assembled coach and a portion of the gathering

or Bonus, not only should the production increase but that will go hand in hand with the increased earnings of the workers. The latter part of it will give us as great a pleasure as the first part of it, and I am quite sure that with the assistance of the workers, under the guidance of the supervisors and under directions of the officers, we shall go in this workshop from success to success.

In conclusion he observed :—

"As it is today this is a model factory, one of the finest factory, if not the finest, that I have ever seen and I am sure that by your efforts the name of this factory will soar higher and brighter from day-to-day. I wish you all every happiness in your work, in your homes, and, reflected by your happiness, I hope, the name of the Perambur Factory, as I have said before, will shine brighter and brighter and for ever.

Shri Karnail Singh then formally inaugurated the sixth Assembly Line in the Main Assembly Shop of the Factory, by pressing a switch, when the first coach assembled on that line rolled out.

## PRESIDENT'S REPUBLIC DAY MESSAGE

Our revered President, Dr. Rajendra Prasad, broadcast the following message to the people from All-India Radio, New Delhi, on the eve of Republic Day on the 26th January 1958.

"On this day, the Eighth Anniversary of our Republic, I send my greetings to all my countrymen. Today we have completed eight years of our existence as a Sovereign Republic and are entering the ninth year with renewed hope and enthusiasm. A day of national rejoicing as it is, every one of us should observe it in a spirit of happiness and good cheer. At the same time it is a day of dedication when every Indian citizen should take the pledge of service of the nation and renew his resolve to contribute his or her mite to the building up of the India of our dreams. It is on such occasions when the passing out and the incoming years meet that one is apt to review the happenings of the year which is ending and welcome in a spirit of hope and preparedness the year which is to begin. These two processes are in a way interdependent and indissolubly linked with each other.

"As all of you know, the principal feature of our life these ten years has been a collective endeavour on a nation-wide scale to reconstruct our economy, to improve our social conditions and to enrich our cultural life. Though for better living progress in all these directions is essential, it is economic development which has claimed first priority. Eradication of poverty, the spread of education so that ignorance and illiteracy are liquidated and the provision of minimum civic amenities and domestic comforts—all these call for material resources without which the urge to progress may get blunted and popular enthusiasm chilled.

"Therefore, those responsible for shaping our policies have given due place to the development of the Nation's material resources in our programmes. For the achievement of

this object and in order to raise the level of India's prosperity we have resorted to modern planning. The successful implementation of the First Five-Year Plan and the results achieved therefrom have been a source of encouragement to us. Nearly in all spheres we were not only able to reach the targets but in some cases actual production even exceeded them. With redoubled confidence and vigour we launched the Second Five-Year Plan last year. As is perhaps inherent in the phase of development through which we are now passing, we have come up against difficulties here and there. These difficulties, far from discouraging us, should be—and actually have been—a force prodding us to still greater effort. I am glad to say that in face of the difficulty caused by the gap in the required outlay and the available resources the whole nation has responded to the Government's call to co-operate with official measures. We are determined to find a way out, and God willing, we shall succeed in implementing the Plan.

"Let me also refer on this occasion to scarcity conditions prevailing in certain areas affected by drought and subsequent failure of crops. Though we knew that in our agriculture chance plays a part and that natural calamities which can affect adversely the outcome of the cultivator's efforts are not always unexpected, yet I am not inclined to gloss over the grave food situation in the country. The very idea of having to import large quantities of food-grains from foreign countries piques us and give a setback to our Planning as a whole, besides putting a terrible strain on our foreign exchange resources.

"Self-sufficiency in food is our basic requirement without achieving which our projects in other spheres can hardly carry conviction with the common man. It is a task to which every Indian must address himself. Those

employed in agriculture must do their utmost to get the maximum yield from land. I believe that agricultural production can be greatly enhanced if we diligently and intelligently apply ourselves to it because our land is fertile and steps are being taken to provide facilities for irrigation, improved seeds and manures. If our farmers make proper use of these facilities and use their inherited experience and intelligence, the shortage of food can easily be removed. Those who follow other avocations have to observe austerity in the use of foodgrains, changing their food habits where necessary, so that the needs of the various regions in India can be met and properly adjusted. Our target should be to build up sufficient reserves of food-grains so that we can meet all situations and in case of failure of crops for one reason or another we may be able to do without importing grains from other countries.

"In the face of difficulties and hardship we have been able to make progress in other notable spheres. It is indeed gratifying that we were able to hold the second general elections, sending again the world's largest electorate to the polls. The manner in which these elections were held and the way in which administrative machinery at the Centre and in the States has been functioning in the country, should gladden the hearts of all those interested in the progress of democracy in the world. Whatever one might think of India as a whole or of any one of our problems; the one thing which is beyond the pale of doubt, is the fact that we are pledged to follow the democratic way of life and nothing can deflect us from our resolve to follow this path we have chosen for ourselves. We are determined to give effect to our decision to reconstruct our society and that in a way not incompatible with the liberty and dignity of the individual. The good of the community as a whole is no doubt a supreme consideration, but the individual

forming an integral part of the community is guaranteed certain fundamental rights upheld by our Constitution and sanctified by our age-old traditions.

"I want to appeal to my fellow-countrymen to keep abreast of the developments in the world and the great need of their adjusting themselves to them. The world today is witnessing great events in the realm of Science and other spheres of knowledge.

"Vast vistas are opening up and knowledge and resources being placed in the hands of man which can add infinitely to his material prosperity all the world over, if only man knows how to utilize them in the proper way for the benefit of all and not of any limited sections of humanity. Herein comes the necessity of understanding and accepting those moral and spiritual values which alone can conquer distrust, selfishness and fear and let in an era of peace.

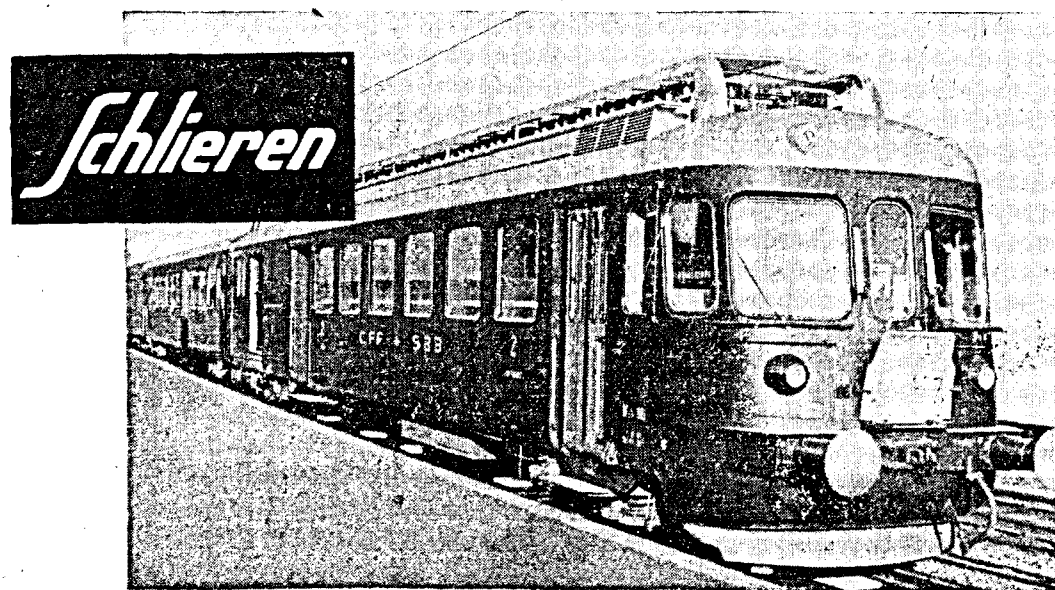
"No one who fails to respond to these developments with an open mind and in a scientific spirit can hope to play his part for the good of society at large and to his own advantage. Let us, therefore, pause and coming out of old ruts and grooves think of the great developments that are taking place in the wider world. These developments will inevitably result in bringing the various countries together and broadening human outlook on pain of total extinction in case of maladjustment with the latest scientific discoveries. We hope, and to the best of our capacity we are also striving, for the establishment of peace in the world so that all of these achievements could be of use to humanity's advantage towards constructive ends. In fact this desire on our part has been the main feature of our foreign policy. We stand for peace and non-aggression—objects which we believe can be achieved through the principle of co-existence.

"Once again I wish you all the best of luck and pray that the coming year may bring you greater happiness and prosperity and that each one of you may be able to contribute more to the well-being of India as a whole."

#### DID YOU KNOW ?



Dave Geer, USA, world champion wood chopper, chopped through a 10-inch square pine timber in 23 seconds.



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Swiss Car and Elevator Manufacturing Corp., Ltd., Schlieren-Zurich (Switzerland)

## NEWS AND NOTES

### North-East Frontier Railway Inaugurated

Inaugurating the North-East Frontier Railway (N.F.R.) at Maligaon, Pandu (Gauhati) —Assam on January 15, 1958, Shri Jagjivan Ram, Minister for Railways said that the creating of the new zone was a step forward to the maintenance of high standard of efficiency and provision of adequate transport facilities when the country had taken up the task of great developmental construction.

The Minister pressed an electric button showing distinctively the portions comprising the newly formed North-East Frontier Railway in soft yellow shade out of the gaily illuminated map of the North Eastern Railway displayed prominently behind the specially erected dais.

With the creation of the new zonal railway administration with headquarters at Pandu with a mileage of 1,738.3 miles covering the whole of Assam, part of North Bengal and North Bihar the total zonal railway administrations in India rose to a figure of eight.

The Minister said that a succession of problems of considerable magnitude having vital bearing on strategic considerations, internal administration, economic expansion and industrial development of this area had arisen. The maintenance of the Assam Rail Link as a dependable all weather communication between Assam and the rest of the country was of paramount importance. Construction of a bridge across the Brahmaputra river had recently been sanctioned and the work was to commence in 1958-59. In view of the emergence of these factors, a stage had been reached when the question of providing permanently for that area a suitable railway machinery competent to deal promptly and effectively with the immediate as well as long term railway problems had to be considered

seriously and it was felt that the only correct solution was to locate a full-fledged Railway administration in that area by bifurcating the North Eastern Railway.

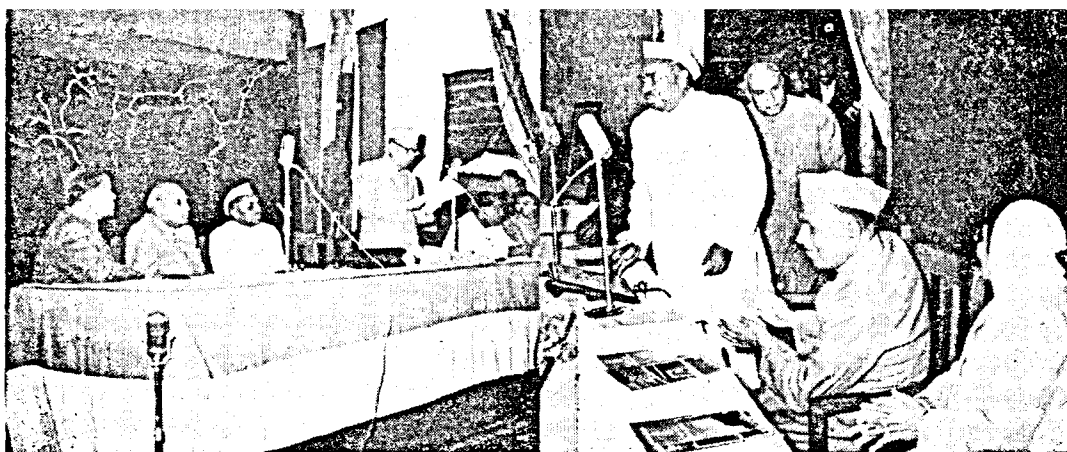
Shri Jagjivan Ram also referred to the criticism that had been levelled on the policy of the bifurcation and reiterated that when he decided on it there was only one consideration before him and that was the interest of higher efficiency of the railways and the best interests of the country.

Wishing Godspeed to the new Railway administration the Minister said that the Railways constitute a dynamic national undertaking and in an expanding economy these cannot afford to be static.

Shri Fazal Ali, Governor of Assam, who presided over the function said that efficient functioning of the transport system in a country contributed to its progress and prosperity. Assam, the North-eastern portion of the country occupied an important position and the development and maintenance of railway communication in the area was a matter of prime importance. He expressed the hope that the formation of the new railway zone would be conducive to greater efficiency and afford better opportunity of contact between the railway administration and the public. Shri Fazal Ali concluded by saying that the new railway will be able to transform itself into a model of railway administration.

### Awards to Employees with Longest Service

Four railway employees, oldest stalwarts, with longest period of service on the railway were presented to the Railway Minister by Shri D. C. Bajjal, General Manager designate N.F. Railway and awards in recognition of their meritorious services were given to them by Shri Fazal Ali, Governor of Assam.



Inauguration of the North—East Frontier Railway  
(Left) Shri Fazal Ali, Governor of Assam delivering his address  
(Right) Shri Jagjivan Ram, Minister for Railways pressing the switch to inaugurate the Railway

The railway employees were Sarvashri Khedua—Gangmate ; Jangbit—Painter ; Nar Bahadur Chetry—Head Clerk ; and Bhola—Driver.

An absorbing cultural show depicting the life and culture of Assam, songs and dance sequences were also presented much to the enjoyment and appreciation of the distinguished gathering viewing them.

Shri K. B. Mathur, Member Transportation, Railway Board, who also spoke on the occasion said that adequate share of attention to deal with increasing transport requirements of the new railway zone would be paid.

Earlier, Shri B. Arora, General Manager, North Eastern Railway while extending a most hearty welcome to the guests on the memorable occasion said that it gave him great pleasure to see the fulfilment of a long cherished dream and desire to have there an organization which would rub shoulders with any other Railway administration in India and thus ensure a high standard of service.

Shri D. C. Baijal, General Manager, North-East Frontier Railway proposed a vote of thanks to the guests.

\* \* \* \*

#### Ernakulam-Quilon Railway

Mr. B. Ramakrishna Rao, Governor of Kerala, inaugurated the new railway link between Quilon and Kottayam about a year after the opening of the railway line between Kottayam and Ernakulam. The cost of the 96.55 mile link between Ernakulam and Quilon came to about Rs. 6 crores.

The railway line from Cochin Harbour and Ernakulam to Quilon and Trivandrum and the rest of South India is expected to aid the development of commerce and industry in this area. This will, also fulfil the long-felt need for such an arterial link for the flow of food-stuffs and other essential commodities.

The gap between the Mangalore-Shoranur-Ernakulam line and the Shencottah-Quilon-Trivandrum line has now been filled up and this will serve as a life-line to bring Malabar, Cochin and Travancore closer and also provide

southern areas.

Dr. Ramakrishna Rao said the inauguration of the new rail link marked the fulfilment of one of the keenest desires of the people of Kerala for the past 35 years.

The Governor complimented the engineers in charge of the project and 10,000 workers for completing the construction according to schedule. He expressed his appreciation for utilizing manual labour in preference to machine in the construction of this project and commended the example to those in charge of similar projects in other parts of India.

Earlier Mr. T. A. Joseph, General Manager, Southern Railway, welcomed the gathering. While tracing the history of the Quilon-Ernakulam railway project he observed that all the work had been done by local labour, without any recourse to such equipment. Divers from Kozhikode, with exceptional skill and physical endurance, were found to be able to go under water with a diving helmet in depths upto 60 and 70 feet and work there for anything upto three hours. "The result is that we have been able to complete the piers of the bridges in record time, at a cost far less than what is current in major bridge works in other parts of India. These divers deserve congratulations for the excellent work they have done," he said.

One of the special achievements of this project, according to Mr. Joseph, was that it had been worked more or less within the cost, as estimated in 1952. The cost as estimated in December 1952, was Rs. 569 lakhs. Subsequently the cost of steel, Permanent Way and cement had shot up, accounting for an increase of about Rs. 32 lakhs. A few additional items of amenities, like electrification of stations, not originally contemplated were later decided to be included in the first construction cost and this cost an extra Rs. 6 lakhs. In spite of these increases, the final cost, as now actually

the original estimate. Regarding passenger amenities, he said, "we have been specially careful to provide at the inception itself, all standard facilities like high-level platforms, covered way on platforms, upper class waiting rooms, etc. We have also electrified the stations wherever electricity was available nearby."

The General Manager said in conclusion : "I hope that this new Quilon-Ernakulam link will weld the three pre-integration units of Kerala, namely, Travancore, Cochin and Malabar into one close knit unit and thereby increase the prosperity and well being of this country."

Mr. Shah Nawaz Khan, Deputy Minister for Railways said that the construction of the rail link between Quilon and Kottayam was a difficult piece of engineering work.

He said that about 100 bridges had to be constructed. Normally on new constructions of this nature higher mileage of charges for passenger and goods traffic was levied. But in the case of the Quilon-Ernakulam link, keeping in view certain economic factors, a departure had been made from the usual practice and it has been decided to charge only the normal fares and tariff. It was anticipated that over this railway line there would be good traffic to the extent of 400,000 tons annually. He hoped the opening of the line would bring prosperity to this area. Amenities not found in other new lines were provided here in view of the intensity of population and the anticipated high traffic.

Mr. Karnail Singh, Member, Engineering, Railway Board, said the Board wished that it would serve every town, post and important place of pilgrimage in the country by the railway route from all directions. The gap between Quilon and Kottayam was now being closed. In the last ten years a large number of

railway connections had been provided. Despite limitations, the railway authorities had tried their best with firm determination and dedication to the service of the country and within a few years "we are as good builders of locomotives, coaches and rolling stock as any one else in the world." The construction of Quilon-Ernakulam link was a difficult task and yet it was well performed.

#### **New III Class Mainline Booking Office opens at Victoria Terminus**

The Central Railway opened to public use its fine new III Class Mainline Booking Office and Waiting Hall at Victoria Terminus on Republic Day. Shri M. N. Chakravarti, General Manager of the Central Railway accompanied by Heads of Departments of the Railway conducted pressmen around the new building at a special preview on the evening of January 24, 1958.

The new building which adjoins the Mainline station building is a fine, airy and well-lighted structure of four storeys. The ground and first floor have been set aside for the use of Third Class passengers, the two upper floors being utilised for much-needed office accommodation. New features include six fully furnished single-bed Retiring Rooms, a modern Cafeteria and Bathing Rooms all located on the first floor.

The new building has 13 booking windows as against 7 in the old permanent booking office which was situated on the Dadabhoy Naoroji Road. There is much additional waiting hall space with extensive modern sanitary facilities provided in the new building. The old waiting hall-cum-booking office had a combined area of 9,400 sq. ft., whereas, in the new building, these facilities are spread out over an area of 17,000 sq. ft.

#### **Steam Locomotive Components**

The Chittaranjan Locomotive Works proposes to manufacture steam locomotives with entirely indigenous components by 1961—by the end of the Second Plan period.

By this time, the steel foundry at Chittaranjan and the three steel plants in the public sector—BHILAI, ROUREKELA and DURGA-PUR—will go into production and supply necessary castings and steel.

Egged on by the country's foreign exchange difficulties the Chittaranjan Locomotive Works has been taking concerted measures to cut down imported components to rock bottom. In the first stage of this drive towards self-sufficiency, the cost of imported components was reduced from Rs. 2.5 lakhs to Rs. 1.3 lakhs per engine. It has now been further slashed to Rs. 50,000. The items now imported mainly consist of bar frames, boiler plates, tyres and axles.

The Chittaranjan Locomotive Works has been asking local agents of foreign manufacturers to manufacture in India certain parts of a steam locomotive which could not be manufactured here. Now the Chittaranjan Locomotive Works are taking steps to eliminate imports by setting up the necessary capacity for the manufacture of these parts in their own workshops.

#### **Diesel Rail cars**

A consignment of 12 diesel rail-cars, manufactured in Australia and sent to India under the Colombo Plan aid programme, arrived in Madras on January 1, 1958 by the s.s. "Belkarin" a Norwegian vessel. The vessel intended to carry heavy equipment has also brought a consignment of meter gauge underframes and components for the manufacture of 460 covered goods wagons. Both the rail-cars and the goods wagons are intended for use on the Southern Railway.

Mr. N. Sankaramoorthi, Assistant Mechanical Engineer, Southern Railway, who had been deputed to Australia by the Railway Board said that the vehicles, manufactured by the Commonwealth Engineering Company, at Bassendean in Western Australia had been built

according to Indian Railway standard specifications. The rail-cars, each car weighing about 50 tons gross, are fitted with engines of 200 horse power and have a running speed of about 70 miles per hour and seating accommodation for 82 passengers. They can be driven in both directions, singly or in multiple units.

The underframes and components for the manufacture of wagons will be sent to the Binny Engineering Workshop at Meenambakkam for assembling, while the railcars will be sent to Perambur for trial runs.

Under the Colombo Plan, Indian Railways

will receive 12 more diesel railcars for use on the Northern Railway.

#### **U.K. firm to supply cranes to Indian Railways**

A British Engineering Firm has gained a contract to supply 27 Diesel and Steam cranes, worth some £300,000 sterling (about Rs. 41 lakhs) to the Indian State Railways.

Work has already started on the contract and deliveries may begin in October.

The cranes are part of large orders placed in connection with the electrification plants of the Indian State Railways.

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# THERMOSTATS

BY

C. R. RADHAKRISHNAN, E.F., I.C.F.

Thermostat is a device used in conjunction with any cooling or heating equipment, to maintain the resultant temperature at a pre-determined level without manually operating excepting for switching on the supply initially.

When used with a heater for example, the thermostat breaks the current circuit, when the temperature reaches the present value and closes the circuit when the temperature falls to a pre-determined value. When handling heavier currents, the thermostat is used in conjunction with a relay to operate the mains, so that there is no necessity to design the thermostat to withstand the heavier load currents. It will be seen, that the "cutting in" and "cutting out" temperatures of a thermostat are not the same. In all thermostats, the "cutting in" temperature is always less than the "cutting out" temperature and this difference in temperature, is called the "differential of the thermostat." Therefore the "differential" is the means by which the sensitiveness of various thermostats could be compared and in certain applications, it is an important factor where very close ranges of temperatures have to be maintained.

Thermostat control besides saving labour is much more accurate than manual operations.

**Design :—**Means have to be provided, where a change of temperature produces a movement of some kind to actuate a set of contacts. The movement of the contacts due to change of temperature is small and in case of the "differential" temperature it is extremely small since the range is only a few degrees. Therefore high degree of accuracy and precision are required in the design and manufacture of thermostats.

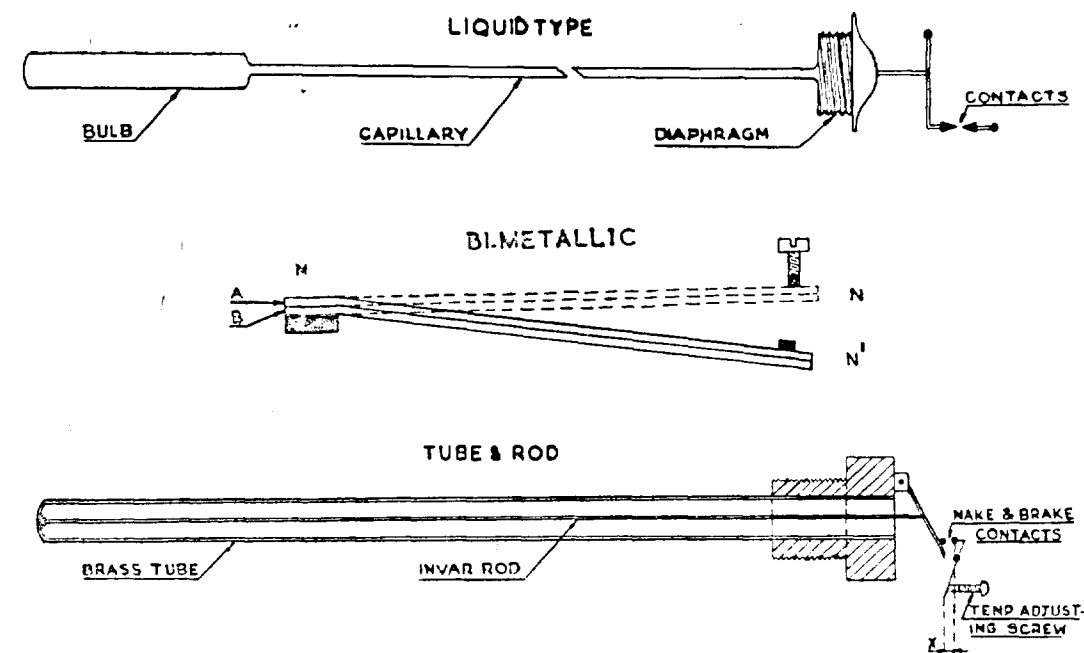
**Nature of supply :—**Thermostats by their action have to open or close the contacts slowly in like toggle switches. Alternating current attains zero value twice in a cycle. This is very useful and an advantage in the design of thermostats, since the arc will be quenched when the current attains zero value, irrespective of the speed of breaking of the contacts. Whereas in direct current circuits, for the same value of current the size of the contacts have to be heavy and still the arcing is inevitable. Therefore, though for small D.C. currents thermostats could be designed, they have to be incorporated with quick make and break relays or contactors along with capacitors to arrest the arcing.

When not specified a thermostat is taken to be for use in A.C. Circuits.

**Types of Thermostats :—**There are three main types of thermostats :—

- (1) The simple Bi-metallic type.
- (2) Metal rod and tube.
- (3) Liquid expansion type.

(1) **Bi-metallic type :—**This type of thermostats, operates on the principle that when heated no two metals expand or contract to the same extent. The sketch shows two metal strips A and B welded together continuously. Metal A has greater co-efficient of expansion than Metal B. The bi-metallic combination is anchored at position M and so any expansion will result in the movement of the free end about the position N. At position N, the circuit is made to close and at the position N<sup>1</sup> the circuit is made to open. When the above bi-metallic combination is exposed to heat, Metal A expands more and therefore it exerts a pressure over the whole combination



resulting in the movement of the free end from N to N<sup>1</sup>. By adjusting the fixed screw at N, different temperature ranges could be obtained. The bi-metallic strip either in the form of a flat or in the form of a spiral or coil, is adapted according to the convenience and nature of need of the industry. Different metal combinations result in different range of temperatures and "differentials."

These types of Bi-metallic thermostats are used in household articles, like electric irons, small ovens and heaters and in places where the current does not exceed 15 A—250 V. In modern practice these are used as protective devices in motors, from getting single phased.

(2) **The metal rod and tube type :—**Here also the operation depends upon the difference in elongation of two dissimilar metals exposed to heat.

Usually a brass tube, inside of which another rod of metal steel alloy (INVAR) is welded at the closed end forms the combination.

Brass has very high co-efficient of expansion compared to INVAR, which has a very low co-efficient of expansion.

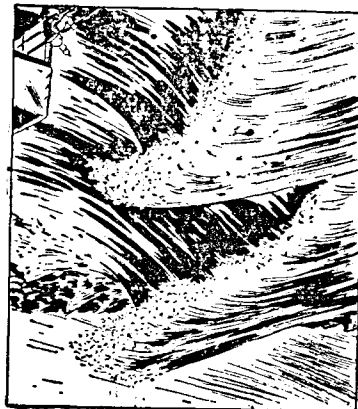
When the whole unit is exposed to heat, the brass tube expands and increases in length, this being effected at the free and closed end. Since the heat does not affect the INVAR materially when compared to the brass tube, the rod is pushed in along with the outer tube. Due to this, the distance 'X' gets increased and the contact which was in existence originally gets broken. This type of thermostat is used in water, oil heaters, etc. In I.C.F. this type is invariably used in the Anodising and electroplating plant.

(3) **Liquid expansion or Hydraulic thermostat :—**This type of thermostat is made up of three major parts—

- (1) the phial or the bulb at one end,
- (2) the capillary in the middle, and
- (3) the diaphragm at the other end.

The whole combination is filled with a non-volatile liquid and sealed from leakage. The phial is placed in the heat zone. The expansion or the contraction of the liquid due to heat, is communicated to the diaphragm which moves the movable contact either to make or break the circuit as the case may be. This is very handy and is mostly used in refrigeration, air conditioning, etc. The same principle is used in the design of remote control pressure switches, pressure gauges, low pressure cut outs, etc. This type of tube and rod thermostats in conjunction with solenoids, permanent magnet and armatures and other timing relays (both pneumatic and electronic) form a variety of special features in the modern industry where this particular method of control is favoured in preference to others.

#### DID YOU KNOW?



Sixty feet is usually cited by experts as the greatest possible height a wave at sea can attain. However, in the Pacific Ocean, on February 7, 1933, during a 68-knot gale, the U. S. S. Ramapo recorded a wave 112 feet from trough to crest.

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## SELECTING AND DEVELOPING FOREMEN

(This article is digested from the March 1957 issue of "The Foreman's Digest" and reprinted with the kind permission of the United States Technical Co-operation Mission to India—Ed.)

Does your plant make an effort to select foremen with leadership ability? After selection are they then given guidance to further develop their foremanship?

Top management at Dewey and Almy Chemical Company, Cambridge, Massachusetts, believes the affirmative answer to those two questions is the key to efficient operation. They have developed a definite systematic program which they feel enables them to select the best leadership potential and to encourage its continuing development.

The plant's approach to the problem is the net product of these three convictions:

1. A foreman is expected to be a manager in the fullest sense of the word.
2. Any manager must first and foremost be a leader.
3. Potential leadership ability is more a matter of attitude than a matter of existing skill or knowledge; and attitude, in this sense, is the product of his orientation toward work, his integrity, his courage, and a genuine interest in other people.

There are three sources for foreman candidates: (1) promotion from among non-supervisory employees (that is where most of the foreman come from at this plant); (2) transfer from other management jobs in the company; and (3) recruiting from outside the company. Only the steps involved in promoting a foreman from within the company are dealt with here.

#### Steps in selection

1. The plant manager sets in motion a series of steps. He first notifies all members

of plant management and asks them to nominate candidates who they feel should be considered.

2. Second, the plant manager reviews the files and records of the candidates who are suggested to him. Normally he will have a list of about a dozen names at this point.

A number of people will be eliminated on the basis of what is in the written record, such as a physical deficiency or circumstances that suggest that further consideration is not indicated. However, few candidates will be eliminated in this manner.

3. The third step is to ask the candidates whether they want to be considered. One or two will generally eliminate themselves because of a shift problem or some type of change they are not willing to undertake. Eventually, a list of six to eight names is arrived at.

4. The next step—the key to the whole process—is interviewing, the plant manager, a representative of Industrial Relations, and usually a third member of management will, as a group, interview each candidate. Looking primarily for leadership potential. The interviewers ask few questions that pertain to a man's present knowledge or skill. They are basically interested in what potential he has as a leader.

The questions are not simple. Typical problems or "cases" may be described to the man, and he is asked to comment on them. Taken from actual experience in the plant, they tend to show up such characteristics as a person's real interest in people or his integrity, however difficult these qualities may be to measure.

5. When the interviews have been completed, the interviewers compare notes, and the successful candidate is selected and notified by the plant manager. Those not chosen are also notified for the decision and afforded opportunity to ask questions. Generally, they don't react badly; the experience of having been carefully considered for a management job tends to offset any disappointment.

#### Development Program

There are also basic assumptions at this plant from which the approach to the development of foremen is made. Since leadership is the core of the development program, the approach aims primarily to develop leadership ability. Certainly other skills and knowledge are required to do a management job. It is felt that if leadership can be developed, and the right environment for people to acquire the skills and knowledge they need to set up, foremen will develop such skills and knowledge on their own initiative.

What kind of development program does that lead to? It consists of four phases as indicated below:

(1) *Individual Coaching and Guidance.*—Once a year the foreman sits down with a superintendent or plant manager and gets a "How am I doing?" talk. This review outlines the foreman's strong and weak points, the extent to which he has improved since the last talk, and what he can do to improve his performance still more.

Second, the foreman has access to the people above him in the plant, to the Industrial Relations Staff, and even to higher management. He is not unlikely to want to consult others in the company about some situation that needs to be straightened out.

Finally, assignments are rotated among the foreman within the plant. This is done when there is evidence that a man is getting in a rut, or needs other experience.

(2) *Opportunities for Self-Development.*—The second phase of the development program is designed to facilitate self-development, both of groups and of individuals. Rather than say to the foreman, "These are the skills and knowledge you need; sit down and let's talk about it," the opportunity is provided for him to acquire them.

An illustration: Every Thursday morning the foremen hold a meeting in the Foremen's Conference Room. This nicely furnished room belongs literally to the foremen. Here they discuss problems among themselves, determine in what areas they need knowledge and skill, and with a minimum of outside assistance, decide how to meet these needs.

For example, they may be interested in some aspect of the research program or some aspect of accounting.

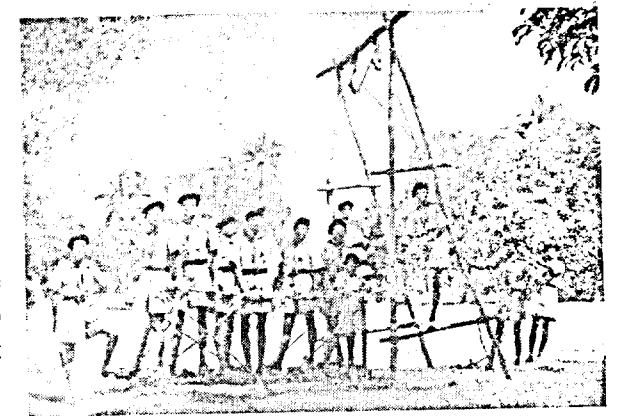
This makes it easy for a foreman to acquire the additional knowledge and skill he needs.

At least once a year the foreman visit some other plant in the community. About three hours are generally devoted to a tour of the plant and a session in which they sit down with the foremen in the host plant and discuss mutual problems. Usually the visit takes place in the afternoon, and adjourns for cocktails and dinner, and further discussion of what they have learned. Plant visits of this type are frequently returned by the plants visited, and help to give foremen an appreciation of the management job and a broad understanding of plant operations.

Sometimes a foreman is sent to take a three or four day trip out of town with a salesman. This gives him a chance to visit customers' plants, see the home plant's products being used, talk with customer's foremen, and get better acquainted with the home plant's own sales activities.

(3) *Communication.*—Top management also works hard at keeping foremen informed of

what is going on elsewhere in the company. A group called "Group of 50," which represents the top and upper middle management groups of the organization, holds a dinner meeting quarterly. The president reports on what is going on in the company, what the results have been, what the plans are. These meetings are always attended by at least one foreman from each of the three plants in the area. The foremen thus take part in this top meeting for management, as a recognition that they are part of management.



The Rover Crew with the Pioneering Project put up by them during the Republic Day Celebrations.

#### REPUBLIC DAY SPORTS



Srimathi Rajagopalan, wife of Shri R. Rajagopalan, Dy. C.M.E. II (left) and Srimathi Menon, wife of Shri M. N. Menon, A. M. E. (right) receiving their prizes from Shrimathi Pattammal Sadagopan

## THE PRIME MINISTER OF CZECHOSLOVAKIA VISITS I.C.F.



Mr. Viliam Siroky being received at the Administrative Office

1. His Excellency Mr. Viliam Siroky, Prime Minister of Czechoslovakia accompanied by his entourage visited the Integral Coach Factory on the 11th January 1958. The Prime Minister and his party were received on arrival by Shri K. Sadagopan, Chief Administrative Officer, who presented to His Excellency the principal officers of the factory. The Chief Administrative Officer, in a short speech, welcomed the distinguished guest to the factory and explained the lay-out of the factory, its origin and the manufacture of Integral Coaches with the aid of charts and photographs.

2. His Excellency and party were then taken round the Workshops. They saw the details of manufacture and assembly of the Integral Coach under production in the factory. His Excellency and party inspected the interior of a fully furnished 3rd Class coach ready for despatch.

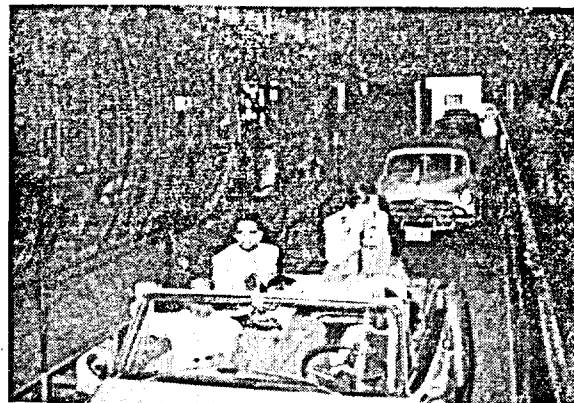
3. On arrival at the Technical School His Excellency was presented with a bouquet by an apprentice. His Excellency showed great interest in the training methods followed and complimented the trainees on the way they were shaping.

4. The party then drove round the factory's staff colony and, in the children's park attached to the colony where the colony children gave His Excellency a warm welcome and the children sang a song welcoming His Excellency.

5. In the Meeting Room of the Administrative Office, at the conclusion of the visit, the Chief Administrative Officer in a short speech mentioned about the development of close ties between Czechoslovakia and India, and presented to His Excellency, on behalf of the workers of the factory, a silver model of the Integral Coach, as a memento of the visit.

6. His Excellency the Prime Minister of Czechoslovakia expressed his thanks to the Chief Administrative Officer for the warm welcome accorded to him and his party and said :—

"We are very happy to visit the factory. We have been very much impressed by your Factory—the landscape, the surroundings in which the people here work and the results you have achieved. India has an industrial tradition and the work you have built here will become a worthy



The distinguished visitor in the Assembly Shop

monument of the engineering skill and talents of the Indian people and of their achievement after Independence. We wish you success in your effort to provide comfortable railway travel to the Indian people. We wish you success in the training of your Technicians and Engineers so that you may continue to develop your national economy. I accept your present as an expression of your friendship for the people of Czechoslovakia. This will serve to remind us not only of the friendly welcome we have received here, but also of the great engineering skill of the Indian people for the development of their country."

7. In the visitors' book of the factory, His Excellency recorded the following impression :

"Your enterprise is a telling witness to the skills of the free and independent people of India. We wish you much success."

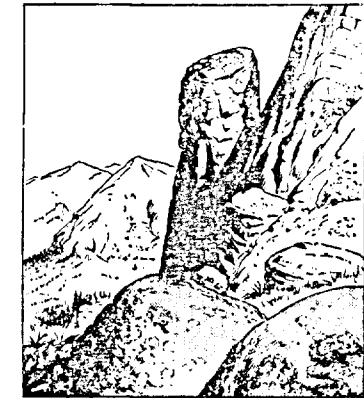


Mr. Viliam Siroky inspecting a furnished coach

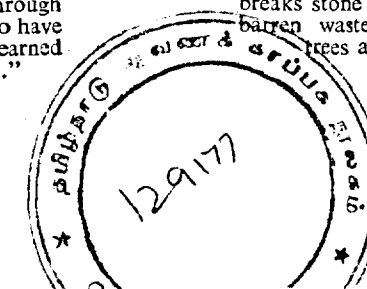
### DID YOU KNOW?



Bees communicate by means of intricate dances. Scouting bees inform the swarm of the distance and location of feeding areas and nesting sites through dance steps. Some scientists who have observed bees at length have learned to translate this "language."



The lichen is nature's pioneer. A unique partnership of fungus and alga, the composite plant produces acid that breaks stone into soil. This action turns barren wasteland into a place where trees and flowers can grow.



# ABRAHAM LINCOLN: ENDURING VOICE OF PEACE AND HOPE

BY

CHARLES FRANKLIN

*(This article, released through the Courtesy of U.S.I.S., is of topical interest as the 149th birth anniversary of the great emancipator falls on the 12th of this month.—ED.).*

From the great body of literature that emerged after his death, the figure of Abraham Lincoln stands out clearly as a great statesman, an unswerving champion of democracy, and orator of rarely-equalled eloquence.

The story of Lincoln's dramatic rise from farm boy to President makes a basic appeal wherever it is told. In London a drama about him by John Drinkwater filled the Hammersmith Playhouse night after night, while the script went to 11 printings in a year and a half. Numerous Lincoln biographies have appeared not only in America but in several European countries. Even today Lincoln and his times is among the most popular subjects for historians and biographers.

But in his own day few people understood or appreciated Lincoln's greatness. Day after day his course of action were challenged, attacked, belittled. He was the target of slander, scandal, misinterpretation and vituperation.

Soon after his accession to the presidency, Lincoln saw his country split on the issue of slavery, caught in a struggle as bitter and brutal as any ever fought, with son pitted against father, brother against brother. Lincoln had to deal not only with the slave states, but also with a section of his own party which was conservative enough to tolerate slavery. And in his desire not to alienate sympathy for the cause of the Union, he might have appeared

to the radicals of the day as though he was not doing enough to abolish slavery.

Through this maze of clashing ideas Lincoln had to ride. And in those first dizzy days his bewilderment is reflected in a remark he made to his secretary, John May: "My policy is to have no policy." Many a time when making a decision, Lincoln admitted it was partly wrong but it was the best he could do. He would point to what he would like to do that would be perfectly right and then show how what was perfectly right wouldn't work—how in the end it would get worse results than the course decided upon which he termed "expedient." The saving of the American Union was the only major issue where he held his cause completely just, as well as politic and expedient.

Pre-eminently a man of peace, Lincoln never sacrificed his principles for peace. When, therefore, he was forced into the incongruous role of a war leader, he accepted it because it seemed essential to the maintenance of the Union.

Lincoln looked upon the Civil War as the first great trial of democracy, the test to determine "whether that nation, or any nation, so conceived, and so dedicated, can long endure." Out of the war, democracy—in the shape of the abolition of slavery—emerge triumphant. More than this, the United States emerged as a nation, whereas it had entered

the war as a quasi-confederacy with uncertain constitutional authority.

Americans look back to the war of 1861-1865 as the beginning of industrialism and material prosperity. Lincoln himself was an exponent of free enterprise, speaking for the millions of Americans who had started their lives in humble circumstances and who by hard work and personal ability had risen to the propertied or professional class. His own life, in the eyes of Americans, has come to exemplify the opportunities open to the citizens of a free country, a country in which the right of every citizen to life, liberty and the pursuit of happiness is recognised.

Throughout his life Lincoln believed passionately in human dignity and individual freedom. He abhorred human oppression, whether of Negroes or otherwise. Each one of his speeches bears witness to this, as also to the firm reliance he placed on divine guidance. Though he never joined any church formally, Lincoln was a deeply religious man. He once told his wife: "I shall obey my own conscience, and follow God in it."

This simple affirmation of faith is typical of the way Lincoln used words—with a beauty seldom equalled by any orator. Practical as he was, a golden thread of poetry ran through his official papers. He wrote with the majesty of the great English poet Milton and the biblical dignity of a King James scholar of 1611.

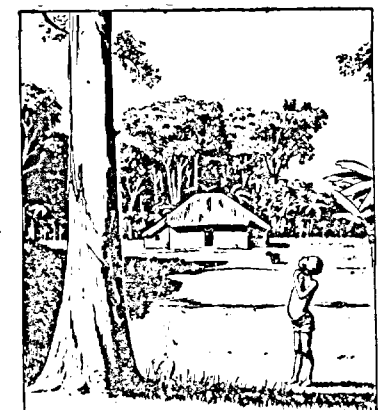
His speeches were marked with a simplicity of style, sentences of short, terse words, aptness of illustration and a keen, slashing logic. His ideas were couched in homely phrases which the common man could understand. Looking back, it might seem as though the most important factor which brought the frontier circuit rider from his dingy, squalid office in Springfield to the White House was the force of his oratory.

Lincoln put the dogma of democracy in words that cling eternally to the minds of men—phrases like "with malice toward none, with charity for all," or a sentence like: "Must a Government, of necessity, be too strong for the liberties of its own people, or too weak to maintain its own existence?"

And the world today can take a measure of strength from a look back to that day at Gettysburg when President Lincoln, facing a future as cloudy and uncertain as any, could with calm determination restate in these words the basic American belief in the rights of man.

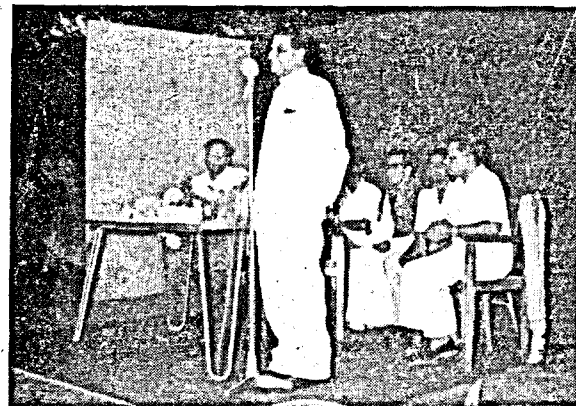
"Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal."

## DID YOU KNOW ?



The fastest growing tree in the world is the Eucalyptus valigna which in Uganda, Central Africa, has been known to grow 45 feet in 2 years. Bamboo, which is not botanically classified as a tree, has been observed to grow as much as 16 inches in a day, to a maximum height of 120 feet.

## PONGAL DAY CELEBRATIONS



Shri Sadagopan addressing the gathering.

The staff of the factory got together and put up a gala function on the 10th of January, in connection with the Pongal celebrations. The whole show was organised and managed by the staff and was a shining example of co-operation. Staff numbering over 1,500 took part with great enthusiasm and it was no wonder the function was a great success.

The function was presided over by Shri K. Sadagopan, Chief Administrative Officer and was attended by Shri T. A. Joseph, General Manager, Southern Railway and Officers of the Coach Factory.

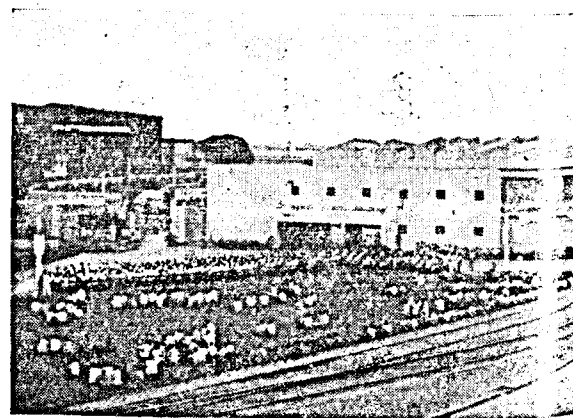
The first item in the evening was a Tea party in the Workers' Canteen and the orderly manner in which Tea was served to about 1,500 staff showed that the staff can get together and work in a harmonious manner.

Then the invitees adjourned to the area in front of the main gate where an open air stage had been rigged up. The next item was the meeting and it began with an invocation song by Shrimathi Sulochana Pattabiraman, the talented daughter of the Chief Administrative Officer. Shri P. N. Srinivasan then read the Welcome address. Shri Sadagopan in his address explained the significance of Pongal and wished the staff prosperity during the entire

year. Shri K. Swarup, Dy. Chief Mechanical Engineer-I and Shri R. Rajagopalan, Dy. Chief Mechanical Engineer-II also addressed the gathering and after referring to the good work put in by the staff, wished them all happiness.

Then Shri B. Veeraswamy, Clerk attached to the Machine Shop in an eloquent speech in Tamil, quoting extensively from Tiruppavai, explained the significance of Pongal and exhorted the staff to work together so that there will be peace and prosperity. This was followed by a Variety Entertainment. Besides a Tamil Farce by Shri K. Natarajan, Welder of Machine Shop and party, a number of musical items were presented. Shri S. Govindarajan, Machinist of Millwright Shop, besides presenting orchestral music also arranged for song hits being rendered by Kumari D. Susila, the famous play-back singer. The fair provided was greatly appreciated by the vast gathering and the function came to a close at 20.30 hours.

All the staff took equal interest in putting up the show, but special mention has to be made of the assistance rendered by the staff of the Electrical Department. The signal success achieved on the first occasion has prompted the organisers to put up many such shows in the future.



A portion of the gathering that attended the function.

Our hearty congratulations to the under-mentioned members of the Pongal Celebrations Committee for their significant contribution in making the celebrations a success.

Shri A. Subramanyam Naidu, Welder, Shop 13—*President*.

Shri P. Bicham, Fitter, Shop 20—*Secretary*.

Shri K. R. Ranganathan, Inspector, Shop 42—*Asst. Secretary*.

Shri P. N. Rajamurthy, Fitter, Shop 21—*Treasurer*.

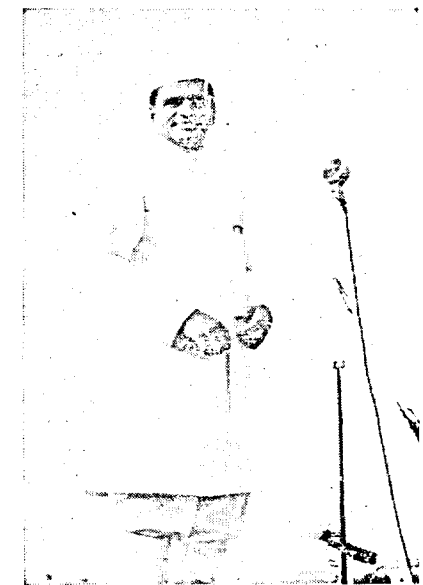
Shri P. N. Srinivasan, Store-Checker, EF's Office—*Member*.

Shri P. M. Seshadri, Steno to Secretary—*Member*.

Shri K. Jagannathan, Painter, Shop 25—*Member*.

Shri D. Maduraimuthu, Fitter Apprentice, Shop 22—*Member*.

Shri G. Venkatarathnam, Machinist, Shop 18—*Member*.



Shri Sadagopan addressing the gathering during the Republic Day Celebrations.

## WEDDING BELLS



Shri Virendra Swarup, son of Shri K. Swarup (Dy. C.M.E.) was married to Kumari Pushpa Jain, daughter of Shri Dharam Chand Jain at Calcutta.

OUR BEST WISHES TO THE MARRIED COUPLE

## DISTINGUISHED VISITORS

Mr. Guiseppe Lepori, Federal Councillor for Posts, Telegraphs, Railways, Broadcasting, Television and Tourism of Switzerland paid a visit to the Integral Coach Factory on 29th January 1958 and was received on arrival by Shri K. Sadagopan, the Chief Administrative Officer of the Factory. They were then taken round the Technical Training School, the Staff Colony and the Workshops. At the meeting room he addressed a gathering of Swiss and principal Indian Officers. He stated that after going round the factory, his mind went back to Switzerland because the cleanliness and the beautiful layout of the factory reminded him very much of the conditions in Switzerland. He also said that the efficiency of the factory must in no small measure be due to the keenness and ability of the personnel who are running the factory, and he was glad to note that whatever Switzerland and Swiss personnel have been able to pass on to Indians, has turned out to be a great success.

At the conclusion of his visit, Mr. Lepori recorded in the visitors' book that he was deeply impressed by the splendid results arising from this example of collaboration between Switzerland and India.

The Radio Delegation of the U.S.S.R. led by Mr. N. A. Smetanin visited the Integral Coach Factory on 29th January 1958. The Delegation were received and taken round the Workshops, the Technical School and the Staff Colony. At the conclusion of the visit, Mr. Smetanin recorded that he was very glad to see the progress of this great country in industrialisation and that the I.C.F. has a very good organisation.

Mr. N. R. Muniswamy, Member of Parliament and a Member of the Public Accounts Committee has visited the Factory the same day and recorded his high appreciation.

Mr. Lepori, Federal Councillor for Posts, Telegraphs Railways, Broad-casting, Television & Tourism of Switzerland, in the works



Sri C. R. Srinivasan, Editor, Swadesamitran, in the Technical Training School



## Shop Safety

(Reproduced from the Journal entitled "Accidents how they happen and how to prevent them" Volume 33, published for the Factory Department, Ministry of Labour and National Service by Her Majesty's Stationery Office, London—Ed.)

### 12. Cleaning machinery in motion

The practice of cleaning machinery while it is in motion is one of the commonest causes of accidents in the cotton industry. At all stages of manufacture, fibrous particles of cotton "fly" become airborne and settle on the machinery and all parts of the workrooms. Fly often accumulates into small masses on machines and these may be drawn on to the material being processed and cause faulty work. Regular cleaning of the machinery is, therefore, essential. Fly tends to accumulate rapidly on various parts of the machines and the practice of picking it off whilst the machinery is running is not uncommon. This has led to serious accidents in the past when the operator has inadvertently come into contact with dangerous parts near where the fly has lodged.

Certain parts of some machines can be cleaned safely whilst the machines are in motion but in the main, cleaning involves approach to dangerous moving parts and cannot be done with safety unless the machine is stopped. "Cleaning time" during which the machinery is at rest is generally allowed at the end of a period of work but, unless instructions have been given and are supplemented by adequate supervision, a machine-minder may be tempted to start the cleaning whilst the machinery is still running. Cleaning involves greater risks than those which occur during the normal minding of the machines because there is a much closer approach to points of potential danger and although these points may be normally inaccessible they may be able to grip the end of a cleaning rag and drag the operator into danger.

While cleaning a ring spinning machine, a woman operator reached through a restricted opening between an end spindle and the end frame of the machine. Her cleaning rag was caught by toothed gearing situated fourteen inches within the body of the machine and her hand was injured when it was drawn into the gears by the rag.

Although this accident was primarily due to the machine being cleaned while in motion, risk of injury should be obviated by providing a guard to reduce the gap between the end spindle and the frame so that access is rendered physically impossible.

### 14. Use of unauthorised lifting gear

In order to turn over a 36 ins. diameter casting, 8 ins. deep and weighing 4 cwt. which was on the bed of a radial drilling machine, the driller placed an eyebolt, not provided with a collar, and having a 5/8 in. diameter shank, which he had himself made for this and previous jobs, into a recently drilled hole, securing it by means of a nut. He then placed the hook of a chain block, the load chain of which was oblique, into the eye and commenced to lift. Suddenly, the shank of the eyebolt fractured and the casting fell backwards, fracturing the driller's left leg.

There are, indeed, lessons to be learnt from this occurrence. First, particularly where repetition work is undertaken, men often exercise their ingenuity to make some particular piece of lifting gear which can be used to do a particular operation conveniently and quickly. Unfortunately, they rarely have sufficient knowledge of the stresses which will be developed

and, furthermore, as they not infrequently hide the piece of gear and keep it to themselves, resulting in lack of maintenance, failure often results. Careful supervision, which should include unexpected searches of tool boxes, is a useful precaution.

Although a British Standard 5/8 in. eyebolt with collar has a safe working load of 18 cwts. when the pull is applied vertically, the pull should not exceed 6-1/3 cwts. if the pull is at an angle of 45° to the vertical or 5½ cwts. at 60°, even when the tension is applied in the plane of the eye.

In the case of a well proportioned eyebolt without a collar, experiment indicates that an obliquity of pull of 5° reduces its strength by more than a half; speaking generally, therefore, eyebolts without collars should not be used for inclined pulls, but if in any particular case it became absolutely necessary to provide for non-axial loading, it is essential to make special provision, such as by ball and cup washers, to ensure direct axial loading of the eyebolt. Moreover, in this case there was no valid reason why an oblique pull need have been applied since the shop was equipped with an overhead runway. Had the block been secured to its carriage, positioning of the block directly over the load would have been an easy matter. Furthermore, both suitable wire rope and chain slings were available, and had they been used instead of the eyebolt, there is no reason why this accident would have occurred.

Secondly, it will be found that eyebolts designed with eyes to accept a load hook of equivalent strength will need to be so greatly increased in size as to be uneconomic; a shackle should be used, the pin being placed through the eye.

## FORGING

### 21. Dangers of loose fittings in hydraulic presses

A fatal accident which occurred at a large

hydraulic press illustrates the dangers which can arise when loose fittings are employed to assist in the forging process. In the case under consideration, a cylinder, 44-ins. long, outside diameter 15-ins. and internal diameter 9½ ins. was being worked on to increase the diameter by reduction of wall thickness. The cylinder was threaded on to a mandrel which was supported by two metal blocks; a saddle block was interposed between the end of the mandrel and the supporting block. The work was then subjected to a series of compressions, the work being rotated through a small angle between each compression. After one complete revolution of the work, the process was about to be repeated and, on delivery of the first compression, the saddle block fractured, and one half struck the foreman-in-charge whilst the other struck one of the workmen, who subsequently died.

It was calculated that the forging load at correct heat was 500 tons, and that the load required to break the block was approximately 1,000 tons. It was not possible to come to a firm conclusion as to the explanation for this occurrence, but the following are possibilities:

- (a) Application of excessive pressure. This was thought to be unlikely, as the press was very sensitive to its control.
- (b) That the deceased person had himself signalled for too great a pressure. There was no firm evidence to support this.
- (c) That the billet was too cold and, in consequence, excessive pressure had been necessary to achieve the desired result.

Experience in the use of the saddle blocks, which were made of an aluminium alloy, had been that there would be some deformation giving an indication of over-stressing and this had been noted well before any fracture was likely. It is clear that very great care should

be exercised in the selection of the saddle blocks to ensure that there can be no possibility of such an occurrence being repeated. They should at least be capable of withstanding the maximum load which the machine can exert, based on a liberal factor of safety.

### 29. Amputation at a metal-planing machine

A metal-planing machine of conventional design had been permanently fitted with three saddles or bolsters secured to the table. The object of these saddles was to give greater facility for securing work than was afforded by the table itself. The saddles, which were 10½ ins. by 8½ ins. in cross section, extended across the table and projected beyond each edge to such an extent that there was only 5/8 in. clearance between the saddle end and the frame.

As the operator leaned over the table to look at the work, his right hand was trapped between the end of a saddle and the inside of the frame. It is clear that the man must have rested his hand on one of the saddles as he leaned over. Users of machine tools should always be on the look-out for these dangerous shearing traps, and either eliminate them altogether or, if this cannot be done, then provide effective shielding. In this case, there was no necessity for the saddles to overhang, and if they had been flush with the table there would have been sufficient clearance to ensure

at least that this accident could not have occurred.

### 30. Other accidents at metal-planing machines

On metal-planing machines, the mechanism for operating the feed or traverse motion is often achieved through a ratchet system actuated by the table movement which causes associated gearing to make partial revolutions. The operator of a machine of this type, while standing near the feed mechanism, sustained the loss of part of a finger when the ratchet mechanism operated. His finger was trapped between the two gear wheels.

This accident illustrates that intermittent gearing possesses exactly the same kind of dangers as continuous running gears, and it should not be assumed, because the mechanism is intermittent in action and light in character, that it is not dangerous and need not be guarded.

Another trapping risk at metal-planing machines is that between the table traverse dogs and the reversing mechanism. A man was stooping to pick up a spanner from the floor when in steadying himself he placed his right hand on the reversing gear as one of the dogs approached it. This risk of trapping can be avoided by providing fencing to keep persons away from danger or by enclosing the trapping parts.

## HINDI DRAMA AT THE RAILWAY INSTITUTE

The Perambur Firka Samithi of the Dakshina Bharat Hindi Prachar Sabha put on boards a Hindi drama "Shajahan" on the 19th January in the Railway Institute, Perambur. The performance was presided over by Shri K. Sadagopan, Chief Administrative Officer and the distinguished gathering included Shri T. A. Joseph, General Manager, Southern Railway and a number of Officers of the Integral Coach Factory and Southern Railway and their families.

The Perambur Firka Samithi, which has been rendering yeoman service in the spreading of Hindi in the Perambur area, has on its rolls a vast number of employees of the Integral Coach Factory and Southern Railway and their children. As a part of their work the organisers of the Samithi have been arranging variety entertainments and oratorical contests. Though they had staged a number of plays, this was their first full length drama. The histrionic talents of the actors and their mastery over the language drew repeated cheers from the audience.

Shri Sadagopan in his speech praised the excellent performance put up by the artists and expressed that the Samithi should not rest content with playing the drama at Perambur, but should arrange for the drama to be enacted at various centres in Tamilnad, as it would be a proof to the people of Tamilnad that Hindi is not after all very difficult to learn and that the same fluency and command over the language, which the people of South attained over English could be attained in the case of Hindi also. He concluded expressing his appreciation of the good work put in by the office bearers of the Samithi.

Shrimathi Visalakshi Swaminathan, Vice-President of the Samithi, welcomed the Chief guest and Shri M. P. Ganapathe, the Firka Organiser, proposed the vote of thanks.

The railway employees and their children, who took part in the drama were :—

1. Shri R. S. Mani, Head Clerk, XEN's Office, I.C.F.
2. Shri M. Parthasarathy, Trade Apprentice, I.C.F.
3. Shri K. Sreedharan, B. Shop, I.C.F.
4. Shri A. Shyamasundara Rao, R.P.F., I.C.F.
5. Shri P. S. Lakshman, Office of C.C.S., Claims, Southern Railway.
6. Shri R. Dattatri, Office of the C.C.S., Rates, Southern Railway.
7. Shri P. Sankaranarayanan, Store Depot, Southern Railway Loco Works.
8. Shri K. Subramaniam, Tracer, Loco Works, Southern Railway.
9. Shri S. Ekambaram, GL/495, Loco Works Southern Railway.
10. Shri R. Raman, Progressman, Carriage Works, Southern Railway.
11. Shri P. Chinnappan, C.B. 815, Carriage Works, Southern Railway.
12. Shri K. Venkatakrishnan, Clerk, CWM's Office, Southern Railway.
13. Kumari G. Shanta, D/o Shri S. G. Iyer, XEN, I.C.F.
14. Kumaris Sumathi Bai and Shanta Bai D/o Shri Subbiah Naidu, Senior Labour Welfare Inspector, G.M.'s Office, Southern Railway.

## LETTER FROM SWITZERLAND

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### Switzerland looks to her industrial future

It is only as a result of repeated efforts and constant endeavour that the Swiss export industry has succeeded in reaching its present high technical level. Today, it is once again faced with new problems—problems common to the industries of other countries too—two of which are of particular importance to it.

First of all there is the problem of finding and keeping up a supply of new *technical recruits* for industry. Whereas in the United States 136 new engineers are turned out annually for every million inhabitants, the countries of western Europe average 67, Switzerland for her part not being able to exceed the figure of 62. Although obviously such figures cannot be taken at their face value without probing more deeply into their real significance, it is none the less true that the shortage of qualified engineers, which is being made even more acute by the large number of new graduates leaving the country to take up posts abroad, must, for the sake of the country's industrial future, be made good as soon as possible. Among those who have grasped the full importance of the question and are taking active steps to find a solution, let us mention the Old Students' Association of the Federal Institute of Technology which published an open letter in the press addressed to the youth of the country as well as those responsible for their training and education in order to draw their attention to the opportunities offered by a career in engineering.

Contrary to the generally accepted opinion, the present state of prosperity is not alone responsible for this shortage; the causes are to be found rather in the rapid advance of mechanisation and automation. We are on the threshold of a period which will require

more and more highly qualified technical staff. Therefore Switzerland, which not only must but also wants to—remain an industrial power, will leave no stone unturned in her efforts to ensure a continual supply of qualified recruits.

Closely related to this problem is another that is very much in men's minds at the moment: that of the *peaceful use of nuclear energy*, on which, here again, Switzerland's future, like that of many other industrial nations, depends. It has in fact been shown that the day will come when the production of traditional sources of energy, even developed to their utmost, will no longer satisfy the continually growing demands of industry. Switzerland too faces the same prospect. She is dependent on other countries for oil and coal, and although she is well supplied with hydraulic resources, these are already beginning to prove inadequate. It is only natural therefore that both the government and certain industrial circles have sought to develop the study of the production of atomic energy. Work has already started on several projects for atomic power stations. In this connection, mention must be made of the "Joint Commission for the study of the Production and Use of Nuclear Energy" set up in 1956 by 13 concerns in Western Switzerland and followed last July by the establishment in Lausanne of the "Nuclear Energy Co. Ltd."

At the same time it has been felt necessary to draw up new legislation to cover this field. Thus, for example, the Federal Council recently submitted to the Swiss Parliament a bill concerning a new article of the constitution regarding atomic energy and protection against radiation. The bill submitted, which will be voted on this year, contains numerous clauses, some laying down the part to be played by the State in this new field, others concerning

the support to be given to research and the training of the necessary qualified scientific staff.

Quite obviously, in the race for the peaceful use of atomic power, Switzerland cannot hope to succeed alone. She must naturally limit her scope and seek above all to co-operate as far as possible with other countries. An agreement to this effect has already been signed with the United States. Others are being considered, in particular with France, Canada and Great Britain. They will concern exchanges of information and specialists, as well as the acquisition of the necessary materials. Furthermore, Switzerland has joined the International Agency of Atomic-Energy as well as the European Centre for Nuclear Research, which has moreover set up its headquarters on the outskirts of Geneva. Finally, Switzerland will be organising, for the second time, the United

Nations Scientific Conference on the peaceful use of nuclear energy.

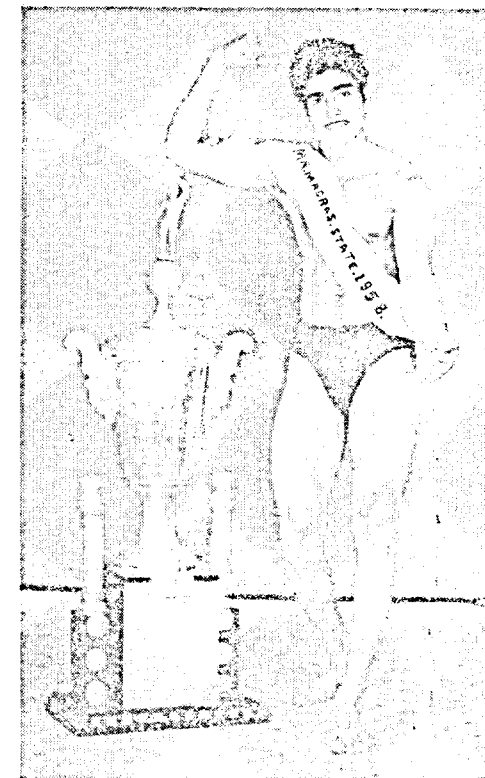
Taking into consideration not only the work that has already been accomplished but also the spirit of co-operation that fires atomic scientists both on the national and the international levels, one is immediately impressed by the satisfactory evolution of the situation. But it should not be forgotten that in this field even more than in others perhaps the training of qualified technical staff is indispensable which brings us back once more to the solution given to the previous problem, a solution which—and this cannot be stressed too strongly—is of vital importance for the country's industrial and economic future. Switzerland knows that she cannot afford to lag behind in the industrial field, from which nearly half her active working population draws a livelihood. She will therefore do everything in her power to overcome the present difficulties.

## SPORTS FOLIO

### "MR. MADRAS STATE 1958" CONTEST

Photo alongside is that of Shri R. Angamuthu, Fitter apprentice undergoing training in B Shop, who won the "Mr. Madras State 1958" contest. Shri Angamuthu has been winning several prizes in weight lifting and best physique contest, notable among them being the "Mr. Madras City" title won by him in 1956.

The Annual Weight Lifting and Best Physique Contest conducted by the Madras State Weight Lifting Association for the year 1958 were held on the 5th and 6th of January at Gokhale Hall. Shri S. A. Ayyaswamy Chetty, Chief Presidency Magistrate welcomed the gathering and Shrimathi Tara Cherian, Mayor of Madras, who presided on the occasion gave away the prizes.



### Monthly Outturn

|                                                                |     |     | Target figures |                    | Actual figures |                    |
|----------------------------------------------------------------|-----|-----|----------------|--------------------|----------------|--------------------|
|                                                                |     |     | K.D. coaches   | Indigenous coaches | K.D. coaches   | Indigenous coaches |
| December 1958                                                  | ... | ... | 10             | 8                  | 4              | 17                 |
| Cumulative total for the first 10 months of the year 1957-1958 |     |     | 80             | 57                 | 71             | 103                |



The I.C.F. Cricket—XI with the CAO(R) and members of the Sports Council.

## A RENEGADE

BY

M. V. B. S. SARMA

Man has been an enigma in all the generations that have gone by. There are varied definitions, but they do not help us much in understanding this elusive being. Whatever be the time or clime man has somehow or other managed to be the same and mankind is susceptible to the same frolics and foibles, passions and prejudices. In the following paragraphs, you will learn something of my great great grandfather, Mahamahopadhya Venkataraman. He could have been anybody's grandfather and it is just an accident that he happened to be mine. All the same, he can be taken as a typical representative of a 'common man' of whom we hear so much nowadays, and let us proceed without much ado about nothing.

Venkataraman was a runaway. "It was the best of the times and it was the worst of the times, it was an age of light and it was an age of darkness." Our country was yet to be corrupted by Macaulay's Universities, of which we are now so proud. In those days the white element was still a scarce commodity and the spoils of Plassey were yet to be consolidated. So whether he liked it or not, Venkataraman had to learn in the traditional sastric style all the Pancha Kavyas of which he made a short work. He was known for his mastery over the Panini grammar and by the age of sixteen what he did not know in literature was not worth knowing. In short he was an "Ashtavakra" without the physical deformity.

You may not approve of his hair style but all the same it was considered quite chic for his days. What an affectionate attention was lavished by the barber on Venkataraman's

head! The hair-dresser was ignorant of time and motion studies and when he was on work, considered himself to be on a precision job. He was accordingly paid on a time basis, instead of so much per piece. They lived in eternity and time did not matter to them. All through the process time, the barber flooded Venkataraman with local gossip and news with the authority and an air of an accredited news agency. Venkataraman's weakness was his unalloyed interest in spicy scandal.

Venguttu's father was a great astrologer. It appears he predicted that his son would be of scholarly disposition. He would be a pious individual, respected for his erudition and feared for his incisive tongue. But there was also a snag in the horoscope. There was very strong malefic planetary influences which would assert at a particular period of Venkataraman's existence on this planet that would make him a prince among the rogues and a rake of the first water. This was to continue till he attained the age of twenty-five. Later the malefic influences would give way to the benefic ones and he would turn a new leaf as it were and become a model 'grihasta' to perpetuate a progeny which would be noted for its intelligence. It is with this interesting period of his adolescence—that we have to concern ourselves now.

True to the prediction Venkataraman ran away from his parental home at the age of twelve and became a tramp. He begged for his food if circumstances permitted and stole with impunity when circumstances did not permit. In these six years of vagrant life he attained a hardihood of nature which winked at pleasures and scorned at pains. He

retained the sharpness of his brain but his brawn was more prominent now. He could fence admirably, knew one or two varieties of jujitsu and could kick anyone who dared him on the nether of anatomy putting his heart and soul in the process.

A brahmin took pity on this good looking, good-for-nothing lad and gave him shelter. The nomadic instinct seemed to have subsided in him and the pent up energy began to seek new outlets. He was now nineteen with a virility which could not be ignored. Romance was the obvious thing on the list and Venkataraman was not known to do anything in half measure. So he plunged into a receptive community like a Donjuan and easily became the Valentino of the village.

I said Venkataraman was good looking. Nay he looked like a Greek God. He was witty when he spoke, amiable when he chose, magnificent when he sang, scholarly when he engaged himself in dialectical dissertations that made you swear "The devil quotes the scriptures." He had princely preferences in respect of his sartorial needs. He did not use 'channel', yet he managed to smell pleasant. He was able to win-over whatever he wanted and it was a question he came, he saw and he conquered.

Numerous were his exploits but they passed off like the seasons of a year. He incurred the envy of the young and enmity of the old. He seemed to establish an undesirable monopoly over the available resources. I would give here the last but not the least of his affairs, which had an abiding interest for him.

The Sastri who gave shelter to Venguttu had a daughter who was married off when she was a mere stripling and she was unfortunately a widow now. She was what a 'Kalidasa' would have desired his heroine to be. She had a leonine waist according to sanskritic traditions and her nose was like champaka flower. Her lips were red and her face was lovely

without the aid of lipstick or cosmetics. The texture of her skin was soft while her long tresses though unkempt made her look like goddess Parvathi in her penance. If I am archaic in my description I may be excused because I want to present her as she looked and not as a present day college girl.

It was but natural for her to be fascinated by this young scamp, who distributed his free and meaningful glances like an uncontrolled commodity. In the initial stages there was a resistance which was the outcome of traditional inertia of centuries old that was ingrained in her blood, and it gave way to the immense pressure of love and courting. Venguttu began to sing Geeta Govinda depicting Radha's *viraha* for Krishna. He was able to overcome her restraint and induced in that not-much-lettered-girl a desire and passion for further study. She readily acceded to his request quite understandably. And then the first bastion fell.

The father was passive because he had a pity in a corner of his heart for this unhappy offspring of his, an 'anagatha pushpa' (unsmelt flower). Venkataraman started with Kalidasa's Cloud Messenger. It is a story in which a Yaksha lover was separated from his love for one year because of a curse. He could not distinguish things animate and things inanimate and addressed a cloud that flitted across the heavens to take a message to his love on his behalf. The narration deals at length with the topography of the country from Panchavati to Yakshinis' abode. Venguttu added in large doses to Kalidasa's version not only his own geography but his philosophy as well. He planned elaborately as a mining Engineer would prospect for oil and executed his plans resolutely. He went through the whole of the text and at the end both the guru and 'shisya' were tried so sorely that their tensile strength was at a breaking point. The next text for study was "Raghuvamsa."

It was spring time. One day at 4 o'clock, early in the morning, Venkataraman went to the riverside for his morning prayers and *Sandhya*. Yes, he continued to be devotional in spite of his being a devil. He almost finished his religious offerings. The eastern skies were yet dark and indicated a consummation of a longing night and an impending birth of an impatient dawn. The stars were pale and losing their lustre. A stillness hovered round the treetops, the banians, the peepuls and the palmyrahs. There was an intoxication in the air and an ineffable joy around. He desired something and knew not what. He sniffed the air like an animal. A rustling sound as though someone was walking over dry leaves, was heard and the valiant Valentino was filled with a sudden fear. He abruptly turned round and strained his looks. He saw a dusky figure. He did not know that his disciple followed him and had finished her bath. She was carrying a brass pot full of water. Her clothes were wet.....and his breath became hot. Her blood rebelled and his spirits revelled.....

No doubt he was made an outcaste but he was prepared to fight relentlessly with grim determination. This episode rocked the very foundations of the village. But like the grey streaks of the dawn the benefic planetary influences were asserting themselves in Venguttu's horoscope. His stars actually turned at the age of twenty-five. Time is a great healer and there was conciliation between the warring camps. He lived the full span of his life absolutely without hurry. He sipped the last drop of nectar in the cup of his eventful life and when he passed away as Mahamahopadhyaya, his adolescence was only a bad dream with good portents.

We perpetuate his race and to him we owe our family which is the 'family of man.' If Venkataraman was scandalously modern for his age and if he not only approved but practised widow marriage, I would think he was at least an acceptable renegade for his time and a reformer for posterity.

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I, K. Santhanam, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Dated 28-2-1958

K. SANTHANAM.  
Publisher

## Brain teasers

1. On dart board there were ten spaces each bearing a number ranging from 1 to 10. Of the five competitors, Ravi, Deva, Chandu, Perumal and Kannan, each had two throws and surprisingly they covered all the spaces. The points scored by them were : Ravi-16, Deva-11, Chandu 4, Perumal-17 and Kannan-7. What were the hits scored by each of them ?

2. While returning from Delhi I had five co-passengers in my compartment and by strange coincidence all of them were also Lecturers in one or the other branches of Engineering like me. We were seated three-a-side in the compartment and the names of my co-passengers were Ramesh, Suresh, Kamlesh, Kapilesh and Naresh. The branches with which we were connected were Civil, Mechanical, Electrical, Production, Chemical and Sanitary ones. Each of us were reading a book the subject of which was not of his line.

I was reading a book on Mechanical Engineering. Suresh was reading a book the subject on which the person sitting opposite to him was an expert. Ramesh was sitting between a Mechanical and a Chemical Engineer. Kapilesh was sitting next to the Electrical expert. The Mechanical expert was facing the Sanitary Engineering expert. Kamlesh was reading a book on Electricity. Ramesh did not know the A B C of Production Engineering while I, in the corner seat, had no interest in Sanitary Engineering. Suresh was facing the Production Engineering expert. Kapilesh had a book on Chemistry. Naresh is not interested in Civil Engineering. Identify each of the Lecturers.

3. The old Mama in the office was once asked his age. Mama did not want to reveal it at once but told that his was equal to the difference between five times his age five years

hence and five times his age five years back. How old was he ?

4. There were three sizes of apples available in the stall, each of them costing nP. 25, 15 and 10. Each of Seenu's five sisters purchased 12 apples and spent exactly Rs. 2. No two sisters purchased the same number of apples in any of the sizes. How many apples of each kind were bought ?

5. Three girls Vanitha, Vasantha and Shanta came out of the flower garden with a number of flowers.

"If you exchange that beautiful Marigold of yours for my dozen Zinnias" said Vanitha to Vasantha "then I shall have only half as many flowers as you."

"I would not very much like the idea" said Vasantha and continued, "But if I give Shanta my ten Buttonroses for her chanting white rose she will have half as many more as I shall then have."

"The suggestion suits me," said Shanta and continued, "But if Vanitha is willing to give me that big Sun-flower, I am ready to give her nine of my Red-roses, which will make her flowers three times as many as mine."

How many flowers did each of these girls have ?

7. In an interview three candidates Karunakaran, Rajan and Vijayapathy were asked as to what salary each would prefer whether Rs. 2,400 a year, rising by Rs. 200 every year or Rs. 2,400 a year rising by Rs. 50 every six months. Vijayapathy preferred the first and Karunakaran decided to accept the second offer while Rajan said that either would be acceptable to him. Who was the wisest of the three ? (Note.—The increment in each case is for the period mentioned).

#### Solutions to last month's teasers

1. The numbers are 9, 24, 30 and 81.

## Wit and Whistle

1. My friend Piplani recently had opened a ready-made garment shop and out of courtesy I made a call at his show-room and enquired about his business.

"Very bad," he complained, "I sold yesterday only one dress and believe me it is even worse today."

"Why," I enquired little but surprised.

"Could you not sell even one today?"

"My boy, I told you even worse," he exclaimed, "The person who purchased it yesterday returned it today."

2. Kumaran received an unexpected letter which read as follows :—

"If you don't send one thousand rupees immediately, we will kidnap your mother-in-law."

Kumaran thought for a while and then decided to send the following reply :

"Sorry ; even though I do not possess that much money, your proposition is quite interesting."

3. *Film producer* : "I am sorry Madam, we don't have the necessity for an actress at present but if you leave your address we shall try to call you to play a Granny's part."

(Continued from previous page)

2. 11 hours and 48 minutes.

3. 1905.

4. The story is not acceptable for the reason that if the Professor has died in his sleep he could not have explained what he was dreaming about.

5. Left arm (His right arm should have been undamaged as he has written the letter and the lower limbs also undamaged as he had tramped to the camp after the incident).

*Enthusiastic girl* : "Granny's part ? I feel I am quite young now."

*Film Producer* : "Don't worry Madam, by the time we call you, you will be old enough."

4. An enterprising Salesman belonged to a rather exclusive Club in the town. He went down there one afternoon but found that no one he knew was in. The only person in the Club was an old gentleman perusing a copy of "Mystics and Mysticism." The salesman thought he might try and strike up a conversation. So he went to the old man and said, "Hallo, my name is Kapoor. Would you care for a game of cards ?

The man looked up sourly. "No, Don't play cards. Tried it once and did not like it."

Poor salesman wandered for sometime and then came back with another suggestion, "How about a game of billiards ?"

"No" said the old man. "Don't play billiards. Tried it once and did not like it."

Salesman did not give up. After sometime he came up with a third suggestion, "Have a Cigar" he said extending a couple of best Havanas.

6. The partners in the five rubbers were :  
Captain Spade and Commodore Die won 1100 points in the first rubber.

Seargent Heart and Commodore Die won 800 points in the second rubber.

Admiral Club and Commodore Die won 900 points in the third rubber.

Captain Spade and Commodore Die won 400 points in the fourth rubber.

Captain Spade and Admiral Club won 1700 points in the fifth rubber.

"No, thanks," said the old man. "I don't smoke. I tried it once and did not like it." Then he cracked his face with a pleasant smile "My son will be here in a few minutes" he said. "I am sure he will play with you."

Salesman nodded, "Your only son, I suppose."

5. The Doctor was disgusted as the lady was back again to ask her usual silly questions. He made up his mind to get rid of her once for all.

But when she asked, "Doctor, what will stop my husband's snoring ?" He replied in rather a professional manner "if there are no nasal obstructions, perhaps comfortable mattress plenty of fresh air in the room, no eating before bed time may help."

The lady continued, "What shall I do if this doesn't work out ?"

"Ah !" said the Doctor. Then you might stuff an old sock in his mouth ?"

6. The Engineer of a crack express returned to the front car and called to the Fireman "Look I just saw a burglar entering into one of the mail cars. Tell the brakesman to get him off."

The brakesman ran along the top of the coaches until he got to the mail car and slipped in. He found himself facing a tough-looking tramp holding a revolver grimly in one hand.

The brakesman suddenly became very weak and in a very weak tone he said, "you did not see any dog running into this car did you ?" and without waiting for an answer he came back to the Fireman and told him, "I

could not throw him off, he is a cousin of mine. How can I throw my own relative off the train ?"

The Fireman laughed, "Oh ! I thought you were tough" he said. "O.K. I will go and take care of him myself."

In a few minutes he too returned with a rather dry face and said, "You see, I did not realise until I reached the car that he is really your cousin. How can I throw a friend's cousin off the train."

7. One of our neighbours has a son whose head unfortunately is nearly twice the size it should be. His little class mates invented several nicknames for him and finally he refused to go to school. The father tried to reassure him, "Your head is bigger than any of the other kids and in fact you are the most handsome boy in the school. Now you just check up and go to grocery store and get five dozen bottles of ginger ale.

"I have nothing to carry them in," the boy complained.

"Don't be silly" said the mother sharply, "Use your hat !"

8. Once a lawyer happened to be curious to know the worth of his client. He said, "What do you have in your possession ?"

"Oh ! nothing" said the client. "except a "49 Pontiac." Lawyer's face became very cheerful and said "that is quite a good property to be in possession of. Now I will take up your case. Please tell me what are charged for."

Immediate came the reply, "Stealing a 49 Pontiac."

## OUR FAMILY



EDWIN STEPHEN MOTHIS STEPHEN is a Turner, who should go very far in his profession. A painstaking worker he has tackled a number of difficult jobs in centre lathes.

He hails from Quilon and after passing S.S.L.C. he underwent training in the Industrial Training Centre attached to the College of Engineering, Trivandrum. He passed the diploma examination in First Class securing the First rank. He joined the Integral Coach Factory as a Trade Apprentice in 1954 and has been doing good work as a Skilled Turner from November 1955.

He is a good sportsman and has been a member of the I.C.F. Hockey Team. Watch repairing is his hobby.

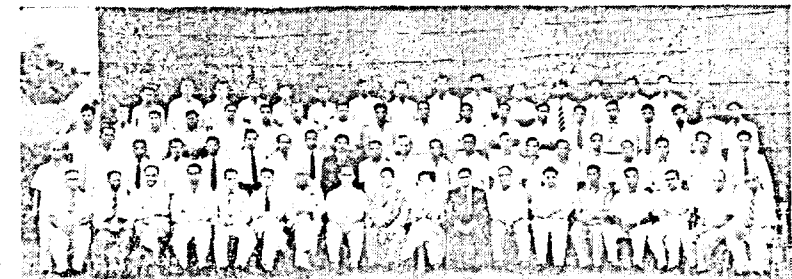
\* \* \* \*



MAPRANATHUKARAN OUSEPH VAREED is a promising Mistry in the Press Brake section of the A Shop. He has specialised on Press Brakes and no situation is difficult for him.

He was born in Kerala State and after passing the S.S.L.C. examination, underwent one year overseer course at Trichur. He then underwent craftsmanship training for a period of 1½ years in the Industrial Training Centre at Trichur and put in 6 months apprenticeship at the FACT, Alwaye. Joining the Integral Coach Factory as a Trade Apprentice in 1955 he soon made a name for himself and after a short spell as Skilled Artizan, was promoted as Mistry Grade II in October 1957.

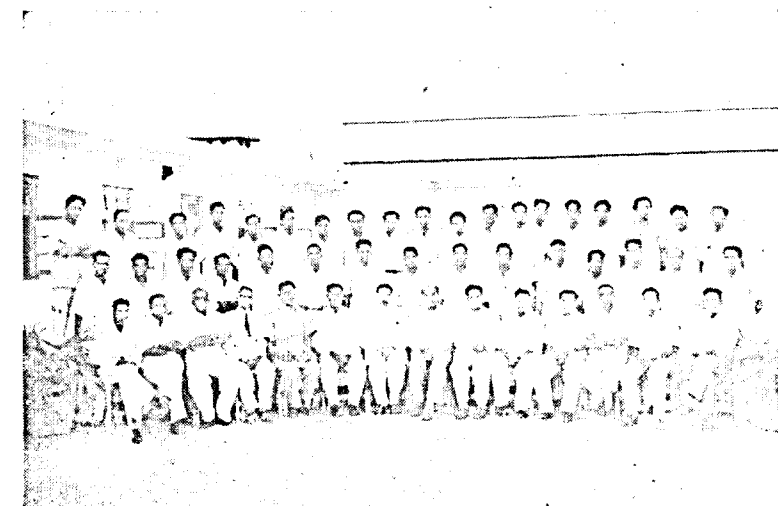
Gardening is his hobby.



A party was got up by the staff of the Production Department to bid farewell to Mr. E. Leemann on the eve of his return to Switzerland on completion of his contract. Photo shows Mr. and Mrs. Leemann with CAO (R), other Officers of the Administration and the staff of the Production Department.



Group photo taken on the occasion of the farewell given to Shri R. C. Tandan, Secretary to CAO (R).



## **NEWS MAKERS**

### **Our Felicitations to**

1. Shri R. Viswanathan, Foreman promoted Assistant Works Manager.
2. Shri K. T. Jethmalani posted Assistant Mechanical Engineer on satisfactory completion of training.
3. Shri K. V. Ramaswamy, Head Clerk in scale Rs. 160—250 promoted Progress Superintendent in scale Rs. 260—350.
4. Shri C. Padmanabhan, Chargeman 'A' in scale Rs. 260—350 promoted Foreman in scale Rs. 300—400.
5. Shri N. Bose, Chargeman 'A' in scale Rs. 260—350 promoted Foreman in scale Rs. 300—400.

### **Our Welcome to**

1. Shri J. Merk reposted as Swiss Technical Assistant.
2. Shri Brahma Swarup Saharia, Carriage and Wagon Draughtsman, Central Railway in scale Rs. 260—350 transferred to this Administration and posted Draughtsman in scale Rs. 260—350.
3. The undermentioned Graduate Apprentices of the Shell Factory posted for training with effect from 29-1-1958.
  - (1) Shri M. S. Venugopala Rao.
  - (2) Shri Thomas Jabaraj.
  - (3) Shri Syed Waheed Pasha.

### **Our Best Wishes to**

1. Shri W. Wernli, Expert returned to Schlieren on 1-1-1958 on completion of his contract period.
2. Shri H. Saxer, Superintendent returned to Schlieren on 5-1-1958 on completion of his contract period.

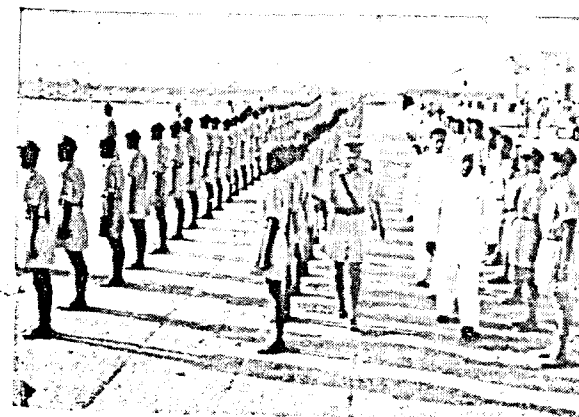


Shri H. Saxer

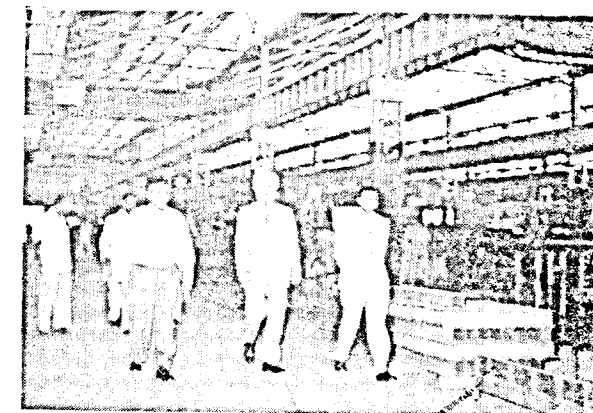
3. Shri H. Leemann, Superintendent/Production returned to Schlieren on 5-1-1958 on completion of his contract period.
4. Shri Surjit Singh Nagi, Chargeman 'B' in scale Rs. 200—300 transferred to Loco Component Works Project and Metre Gauge Coach Factory, Varanasi.



Actors who took part in the Hindi Drama "Shajahan" with Shrimathi Visalakshi Swaminathan, Vice-President and Shri M. P. Ganapathe, Organiser of the Perambur Firka Samithi and Shri T. P. Veeraraghavan of the Dakshina Bharat Hindi Prachar Sabha



Shri K. Swarup, Dy. C.M.E-I inspecting the guard of honour during the Republic Day Celebrations



Shri Karnail Singh in the Sheet Metal Shop of the Factory



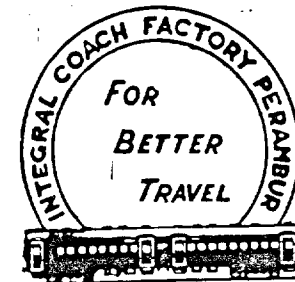
Mr. Viljam Siroky being welcomed by the children of the Colony School in the Colony Park



Mr. Lepori being welcomed by the children of the Colony School in the Colony Park

# RAILCOACH

VOL. II, No. 6



MARCH 1958



Shri Sadagopan distributing the Sweets, donated by H. E. the Governor of Madras, to the Colony Children

# RAILCOACH

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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.

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The Editor

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(INTEGRAL COACH FACTORY MAGAZINE)

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FAREWELL MESSAGE OF  
**Sri K. SADAGOPAN**

*Chief Administrative Officer*

MY DEAR BROTHER WORKERS,

I am relinquishing my post in our organisation from the afternoon of the 18th instant. As I write to you these few lines, I feel overwhelmed at the thought of having to take leave of you all.

I joined the I.C.F. on the 15th July, 1953 and I may say without exaggeration, that in the whole of my official career of nearly 32 years, I had never experienced such joy, excitement, such thrill of adventure, such warm and affectionate fellowship as in the I.C.F. The period of my official life which I have had the honour and privilege of spending with you all in the I.C.F. has been a most satisfying culmination of my official career.

We have succeeded in constructing this great National Project in record time. We have succeeded in establishing production and in achieving production considerably ahead of the targets set for us by Government. All this impressive and spectacular success is due to the keen, enthusiastic and untiring efforts of each and everyone of you.

We have built sound and healthy traditions in the I.C.F. and excellent human relations and assiduously cultivated the outlook that we belong to the I.C.F. and that we are all partners in this grand undertaking bent upon producing the best results. I have no doubt that with your wholehearted co-operation and single-

minded and patriotic devotion to duty, the I.C.F. will keep the torch aloft, undimmed, in its onward march in the service of the Indian Railways.

I am deeply sensible of the deep affection and regard you have so generously lavished on me, and which I heartily reciprocate. Some of my friends are pleased to remark that I look rather young for my age. You know the secret? It is because of the great mental satisfaction and joy that I have derived from working with you all in such an atmosphere of affection and goodwill.

The time has now come for me to take leave of you. I am so sorry, it has not been possible individually to shake hands with each and everyone of you and say GOOD-BYE.

I have no doubt that you would extend to my successor the same enthusiastic co-operation which you have given me in such abundant measure.

With every good wish to you and to your families,

I remain,

Ever yours sincerely,

(Sd.) K. SADAGOPAN.

## editorial

### FULL PRODUCTION TARGET ACHIEVED

February, 1958 will go down as an important month in the annals of the history of the Coach Factory, as during that month 30 coach shells—the full production target per month—were assembled and turned out of the Assembly Shop. Our first duty will be to offer our heartfelt thanks to the Almighty for having made it possible for us to achieve, what was scheduled to be reached in October, 1959. This splendid achievement would not have been possible, but for the wholehearted effort of the staff of the factory and so to them goes our hearty congratulations. We are sure that all connected with the factory are aware that achieving the target is not the end of our labours and that the real test lies in our ability to establish the production recorded. In that respect it can be said that our labours are just beginning. The progress recorded in the Coach Factory has been receiving the attention of the public and the whole nation will now be keenly watching to see if the ICF family is capable of consolidating what has been achieved. The sustained enthusiasm with which the ICF family has worked all along makes us confident that the consolidation of the success achieved is almost certain.

## HIS EXCELLENCY THE GOVERNOR'S VISIT TO I.C.F.

His Excellency Shri Bishnuram Medhi, Governor of Madras, accompanied by Shrimathi Medhi visited the Integral Coach Factory on the 15th February. The distinguished visitors were received by Shri K. Sadagopan, Chief Administrative Officer and a guard of honour was presented to His Excellency by the I.C.F. Protection Force. The principal officers of the factory were introduced to His Excellency and the lay-out of the factory and the salient features of the Integral Coach were explained, with the aid of charts and photographs. His Excellency and party were then taken round the workshops where they saw the details of manufacture and assembly of the Integral Coach. His Excellency and party were then taken to the Technical Training School and the Furnishing Annexe of the Factory. Later on the staff colony children gave His Excellency a warm welcome. A sum of Rs. 100 was presented by the Governor for distributing sweets to the children of the colony school.

At the Meeting Room, Shri K. Sadagopan, Chief Administrative Officer presented His

Excellency with a model Integral Coach as a memento of his visit. His Excellency was pleased to record his impressions as under :—

“It was a pleasure to go round the Integral Coach Factory which is very orderly and kept neat and clean. We are proud of the achievement of the installation, which demonstrates the result of technical co-operative efforts with the Swiss Coach Building Firm. The Technical Training School has been turning out technical personnel to supply the expanding needs of this installation. I am glad that they reached the maximum target of production of coaches years ahead of schedule and have started also a furnishing wing for furnishing the coaches. I wish all success to our engineers and technical personnel who have devoted themselves in this important industry in the public sector.”

\* \*

Important personages visiting the Integral Coach Factory take a keen interest in the working of the Technical Training School as well as the living conditions provided for the staff in the adjoining Staff Colony. On 15-2-1958, when His Excellency Shri Bishnuram Medhi, the Governor of Madras, visited the Factory, the children of the I.C.F. Colony School had the privilege of greeting His Excellency, in front of the Children's Park and welcome him by singing a song and presenting a bouquet. His Excellency very graciously announced a gift of Rs. 100 to be utilized for giving sweets to these children.

The distribution of sweets to the children was done by Sri K. Sadagopan, Chief Administrative Officer, at a simple but impressive function organized, on 28-2-'58, in the Colony School. Shri K. Sadagopan in his speech explained to the children the significance of the gift by the Head of the State and exhorted them to develop the good qualities of obedience to parents, teachers and elders and evince a keen interest in their scholastic activities. The children were greatly delighted and repeatedly cheered Shri Sadagopan for his affection to them.

## NEWS AND NOTES

### ECAFE's suggestions for safety on the Indian Railways

A recommendation that India, with its large railway system should have a separate Railway Inspectorate organisation for controlling safety on the railways is made in an ECAFE report to the United Nations.

The Inland Transport Committee of the Economic Commission for Asia and the Far East found that “taking the countries in the (ECAFE) region as a whole, the faults of personnel are responsible for the majority of the railway accidents; the failure of rolling-stock comes next.”

The report said that in the interest of ensuring greater safety “each railway requires one or more experienced personnel attached to the head office exclusively for this purpose.”

“This is in addition,” the report emphasised, “to the separate Railway Inspectorate organisations in countries with large railway systems like India, Japan and Pakistan.”

“There is room for improvement in the various fields of railway working for the achievement of higher standards of safety,” the report said.

To carry out this object, investigations in every sphere of railway working should be made, the survey added.

The report is one of a series submitted to the U.N. Secretariat by the ECAFE Committee.

“Funds should be provided for this purpose in the annual budget under a separate heading which may be called ‘safety measures’.”

“Although the money spent on safety measures does not catch the public eye so readily as the provision of amenities, the reduction in the number of accidents should increase their confidence in railway travel, thereby causing augmentation in railway revenue.”

It was recommended that in order to reduce railway accidents the ECAFE countries might avail themselves of U.N. Technical assistance. As regards the recommendation that one or more “senior men with all-round experience should be attached to the head office of each railway and entrusted exclusively with the task of promoting safety in every sphere of railway working,” the report said that “such men should be hand-picked and their work should be judged by the actual results in bringing down the number of accidents on the Railways.”

In countries with separate railway inspectorates they should work in close liaison with such organisations and attend the inquiries held by the Government Inspector of Railways into the more serious accidents, as far as possible.”

The report said that in India and Pakistan, a Government Inspector's inquiry is held only into accidents to trains carrying passengers “and yet no distinction is made in the rules between casualty to passengers and to railway personnel for making such inquiry obligatory.”

The report added : “It is apparent from this that the inspectorate is as much concerned about the safety of the railway personnel as of the travelling public. The inspectorates in these two countries do not, however, possess the necessary men for holding inquiries into the more important cases of accidents to the railway personnel that take place in course of the discharge of their duties, nor has any regulation been enacted for this purpose.”

The report, however, stated that in India and Pakistan as well as in Japan “there has been some improvement (in prevention of railway accidents) indicating that the steps already taken are becoming progressively effective.”

### **Railway expansion programme**

At a Press Conference held in New Delhi on February 17, 1958, the Chairman of the Railway Board, Mr. P. C. Mukherjee, said the railways would receive only Rs. 750 crores from general revenues for its Rs. 1,125 crore plan. The balance would be met by the railways from their own resources. He said the railways were planning to carry 181 million tons of traffic during the plan period. But if this target was to be reached an additional Rs. 200 to Rs. 250 crores would have to be found. This had been brought to the notice of the Planning Commission.

Mr. Mukerjee said that the railways would require foreign exchange of the order of Rs. 425 crores to implement the development plans so far sanctioned by the Planning Commission.

Answering questions, Mr. Mukerjee and Mr. K. B. Mathur, Member for Transportation, said that decisions on the recommendations of the Railway Rates Structure Committee would be taken in two or three months' time. The Committee had suggested rationalisation of the rates structure. In some cases, there would no doubt be some increase, but it was difficult to say at present what the quantum of increase would be.

Mr. Mathur said that the number of serious accidents in the railways as compared to the past had not gone up. But a reduction in the number of accidents due to the introduction of interlocking system had not been achieved. This was because, Mr. Mukherjee said, the volume of traffic on the railways had considerably increased. Naturally, the chances of human failures were now more than before. The human failures were also partly due to the "large increase" in the number of less experienced staff. The railways had taken special measures for giving adequate training to their staff by arranging refresher courses.

The Member in-charge of Engineering, Mr. Karnail Singh, said that the Committee

headed by Mr. A. N. Khosla which was going into the question of bridges had not completed its work. He said that the electrification of the Tambaram-Villupuram section of Southern Railway would be completed before the end of the Second Plan period. One of the difficulties in going forward with the scheme at present was the shortage of electric power in that section.

### **Zonal Manager's discussion on safety on railways**

Problems relating to the inculcation of higher standards of safety consciousness amongst railwaymen responsible for the running of trains were discussed in great detail at New Delhi on the 28th January, 1958, at a special meeting of Railway General Managers convened by the Railway Minister, Mr. Jagjivan Ram.

Among those present at the meeting were Mr. Shah Nawaz Khan, Deputy Railway Minister, Chairman and members of the Railway Board and the General Managers of the eight zonal railways.

Addressing the meeting, the Railway Minister said that even though statistics could be produced to prove that the performance of the Indian railways in the field of safety was better now than previously or that it was better than that of some other leading railway systems, the travelling public was not interested in such arguments and would not feel satisfied by such statistics. An accident was always a matter of concern, and it was upto the railway administrations to satisfy themselves that all necessary steps were being taken to minimise the incidence of accidents occurring due to failure of the human element either from laxity or negligence on the part of the staff. Cases of accidents should be carefully analysed to pinpoint particular areas, where the situation called for special remedial measures.

The Minister emphasised that staff indiscipline must not be tolerated in any shape or form, and guilty persons should be given swift and

exemplary punishment. To be really effective, punishment should be particularly prompt and deterrent in cases connected with the safe running of trains.

Trade Unions of railwaymen the Minister said, should equally be concerned with the safety of train operation. They should play a positive role and help actively in increasing safety consciousness amongst railwaymen.

During the discussion which followed, it was brought out that in order to institute a special drive for correcting irregular or unsafe working and awakening safety consciousness amongst the staff, the Railway Board had instructed the General Managers to appoint a senior-scale Safety Officer at the headquarters of each Railway, and also Safety Inspectors on the basis of one for every 200 miles of railway line.

General Managers outlined their own peculiar problems affecting safety measures, and explained how difficulties were being overcome. Staff slackness, wherever noticed, was being combated through better education and training.

The General Managers also referred to the dilution amongst the experienced supervisory staff, resulting from quick promotions consequent on expansion of developmental activities. It was stated that steps had been taken to give intensive training to the supervisory staff.

Several technical problems and difficulties of procurement of materials, particularly signalling, were also brought up.

The Minister, in his concluding remarks, referred, among other things, to the question of punctual running of trains, and urged the General Managers to intensify their efforts to improve the standards of punctuality.

### **Steps to meet pressure in railway traffic**

Detailed plans for dealing with the heavy pressure of railway traffic in the ensuing year, particularly in connection with the new steel

plants, were finalised at a four-day conference of Chief Operating Superintendents of the eight zonal railways with the Railway Board, held in New Delhi some time ago.

The Conference was told that the pressure of traffic was likely to commence from about the middle of the current year. The major brunt of this traffic would be borne by the South-Eastern and Eastern Railways, and the conference discussed arrangements necessary to enable these two railways to cope with the rising demands from steel plants as well as from other industries.

The Conference reviewed in detail the operating performance of the different railways as reflected in various efficiency indices, and prescribed higher targets for the current year. It was also decided that at important loading points and transshipment junctions steps should be taken to more strictly enforce scientific loading of commodities in order to utilise wagon capacities to the maximum extent.

The Conference laid stress on increased loading of coal from Bengal and Bihar coal-fields and also decided on higher targets for movement of traffic through Moghalsarai to north and western India and through Waltair and Bezwada for South India.

The Conference spent considerable time in discussing ways and means for increasing the efficiency of the railways' safety organisation. Steps to enforce various measures would be taken through Safety Officers and Inspectors whose appointment on each Zonal Railway has been sanctioned by the Railway Board. The Conference also devoted considerable time in discussing measures for improving the punctuality performance of passenger trains.

### **New type railway warning signal**

The Railway Testing and Research Centre has invented a device to give warning signal to the driver of a locomotive inside its cab while running at speed.

The device—a tele-indicator—has been so designed as to ring an alarm bell and put on a red light inside the driver's cab if he does not see a danger signal due to negligence or poor visibility in thick fog or inclement weather or if it is intended to warn and stop him at the required distance from a danger point. The hooter and the red light will continue until action is taken by the driver.

After a practical demonstration of the device at the Centre, the Director of the Research Centre told Pressmen that the tele-indicator was significant from the safety point of view and would avoid possibilities of trains running against signals. It was cheaper compared with identical automatic control devices in vogue in foreign countries.

The flood indicator designed at the Centre and introduced at a number of bridges for giving warning and advance intimation to the driver has proved useful.

A new design of bogie for providing Comfortable travelling conditions with less jerks and less noise designed by a German firm is under test and would be introduced on the Indian Railways in the near future.

In view of the shortage of steel and wood, concrete sleepers have been designed to replace steel and wooden sleepers on the railway track. **Incognito travel in III Class**

Some of the officers of the Western Railway have already started travelling incognito in third class compartments to acquaint themselves personally with the conditions of travel in these compartments.

Government have forwarded to railway administrations a suggestion received by it that railway officers should travel incognito in third-class compartments to acquaint themselves personally with the conditions of travel in these compartments and to suggest remedial measures wherever necessary.

#### Monthly Outturn

|                                                                |       | Target figures |                    | Actual figures |                    |
|----------------------------------------------------------------|-------|----------------|--------------------|----------------|--------------------|
|                                                                |       | K.D. coaches   | Indigenous coaches | K.D. coaches   | Indigenous coaches |
| February 1958                                                  | .. .. | 8              | 10                 | 5              | 18                 |
| Cumulative total for the first 11 months of the year 1957-1958 | .. .. | 88             | 67                 | 76             | 121                |

## EXTRACTS FROM BUDGET SPEECH

Introducing the Railway Budget for 1958-59 in the Lok Sabha on 18-2-58, the Railway Minister, Shri Jagjivan Ram, said :—

“I rise to place before the House the Estimates of Receipts and Expenditure of the Indian Railways for the year 1958-59.

“As usual, I shall deal first with the completed accounts of the previous year. The actual gross traffic receipts were Rs. 347.57 crores against the Revised Estimate of Rs. 350 crores, the shortfall of Rs. 2.43 crores being mainly under the goods traffic. The Ordinary Working expenses, on the other hand, showed an increase of Rs. 4.91 crores, over the Revised Estimate of Rs. 229.03 crores, due partly to heavier expenditure on repairs and maintenance, and partly to unforeseen miscellaneous expenses under the Suspense head. After allowing for other minor variations, the actual net surplus stood at Rs. 20.22 crores against the Revised Estimate of Rs. 26.95 crores. The entire surplus of the year was credited to the Development Fund.

#### Review of 1957-58 operation

“Before I come to the Revised Estimates of the current year, I would like to give the House a broad picture of the operating position on the Railways during the last twelve months. During 1956-57, the first year of the Second Five-Year Plan, the total tonnage lifted was 124 million tons against 114 million tons in 1955-56, that is, an increase of 8.8 per cent. In the current year, there has been a further increase in traffic. The wagon loads of originating traffic have risen by 5.3 per cent on the Broad Gauge and 9.5 per cent on the Metre Gauge upto the end of December, 1957. The overall coal loading in the country has increased

in the current year by 6 per cent compared to last year ; in the Bengal and Bihar coalfields an average of 3,680 wagons are being loaded daily showing an increase of 6.5 per cent. Movement of goods traffic via break-of-gauge points has shown a substantial increase, being 13.8 per cent on the Broad Gauge and 14 per cent on the Metre Gauge.

#### Production of rolling stock

Regarding the question of indigenous production of Railway equipment, I am happy to be able to say that capacity for production of rolling stock in the country has shown a further increase during the current year ; 258 locos, 1,500 coaches and 16,800 wagons are expected to be produced in 1957-58 as compared to 234 locos, 1,236 coaches and 15,985 wagons in the previous year. The import of general service wagons was discontinued quite a long time ago and that of steam locomotives has also now been stopped, except for a few required for the Narrow Gauge lines. The Development Cell in the Board's Office working in collaboration with the Development Wing of the Commerce and Industry Ministry is making continued progress towards development of further manufacturing capacity in the country, which will, in turn, conserve the much-needed foreign exchange. Out of the total provision of Rs. 87.95 crores for rolling stock in the Budget for 1958-59, Rs. 60.17 crores will be spent in the country and Rs. 27.78 crores only will be spent on imports from abroad, including customs, freight, handling charges etc.

#### Chittaranjan Works

The Chittaranjan Locomotive Works produced 156 locos in 1956-57 and are expected to produce 168 locomotives in this year and an

equal number in the next. Telco Works delivered 78 locomotives in the last year against which the number expected in the current year and the next year is 90 and 100 respectively. The output of the Integral Coach Factory at Perambur, which was 88 unfurnished coaches in 1956-57, is expected to rise to 180 this year and 295 next year. Full production of 350 coaches under single shift working is expected to be achieved in the year 1959-60. For intensive utilisation of the Plant and reducing the cost of Production, it is proposed to introduce double shift working from 1st April, 1959, resulting with production of 180 more coaches by the end of the Second Plan period. A temporary furnishing unit is already functioning at the factory and work on a permanent furnishing unit at a cost of Rs. 3.69 crores has also been taken in hand.

The programme for the provision of passenger amenities which is broadly directed towards the provision of basic minimum amenities at all stations, irrespective of size, has been carried on steadily during the last few years, and it is proposed in spite of other pressing demands on our limited financial resources to continue with this programme, consistently with economy in the use of cement, iron and steel which are in short supply. Arrangements for the advance booking of seats for the III class passengers have recently been extended and railway reservations are being arranged on all Mail, Express and Janata trains not only from the starting stations but also from selected intermediate stations. An experiment is also being tried out for providing separate accommodation on one pair of long distance Janata trains on each Railway for passengers travelling upto 150 miles, 300 miles, 500 miles and over 500 miles, the passenger tickets and carriages for these zones being distinctly marked to facilitate identification. Public reaction to this experiment will be ascertained by deputing special staff to travel on such trains and report on the actual working of the arrangements.

Six coaches with a two-tier arrangement of sleeping berths are on trial in addition to the three-tier sleeper coaches already in service. A new design of three-tier sleeping berths has also been evolved. The relative advantages of all these types of coaches as well as military sleeper cars, which had also been suggested for consideration are being assessed, preparatory to constructing more III class sleeper-cum-sitting coaches and extending the facilities to more trains.

#### Overcrowding

I am aware that the problem of overcrowding is still far from being solved. As I have explained on previous occasions the difficulties confronting the Railways in eliminating overcrowding are the limited financial and material resources available, the limited capacity for building coaching stock, the acute shortage of line capacity *vis-a-vis* the increased demands for goods and passenger transport and the necessity in the larger interests of the country's economy, of meeting goods transport requirements adequately before diverting available capacity or resources to relieving overcrowding. I am afraid these difficulties still continue to be as formidable as ever. Whatever palliative measures are possible to reduce overcrowding in the areas in which it is most acute, are, however, being taken and considerable thought has been devoted to improvements possible within the existing limitations, such as, putting III class coaches on trains in place of air-conditioned coaches and dining cars on sections where circumstances justify such a course and increasing the number of coaches on trains, where possible, even at some sacrifice of speed. New passenger trains have also been introduced, 119 on the Broad Gauge and 43 on the Metre Gauge in 1956-57 and 118 on the Broad Gauge and 27 on the Metre Gauge during the current financial year upto 1st December 1957. The run of 25 Broad Gauge trains and 42 Metre Gauge trains was extended in 1956-57 and of 32 more Broad Gauge trains and 36 more

Metre Gauge trains in the current year. With all these new trains and extensions, the daily train mileage has increased, by about 23,000 miles. The De luxe train service between New Delhi on the one hand and Howrah, Bombay and Madras on the other has now been operating for over a year. In view of the low occupation ratio of III Class air-conditioned accommodation particularly during the cold weather, it has been decided to replace one or more such coaches by ordinary III Class stock within the hauling capacity of the locomotives at the prescribed speeds.

There has been considerable improvement in the suburban passenger services also. Sixty-five new trains were introduced and the run of 33 extended in 1956-57 and in the current year 86 new trains have been introduced and the run of 16 trains extended upto 1st December, 1957.

#### Steps to prevent accidents Directive to General Managers

Recently, there have been three serious accidents to trains carrying passengers, resulting in a large number of casualties. The House is already aware that in two of these cases, Commissions of Enquiry presided over by High Court Judges were set up and the third case has been enquired into by the Government Inspector. The report of the Commission in respect of the Bombay-Calcutta Mail accident has been received. The finding of the Commission, which has been accepted by the Government, is that the derailment of the train was the result of a deliberate act of sabotage committed by some person or persons unknown.

The occurrence of these accidents in quick succession has been a matter of grave concern to all of us. I had, therefore, recently called a special meeting of the General Managers to discuss with them the whole problem of accidents with a view to initiating effective measures for bringing about an improvement. The discussion confirmed that human failure

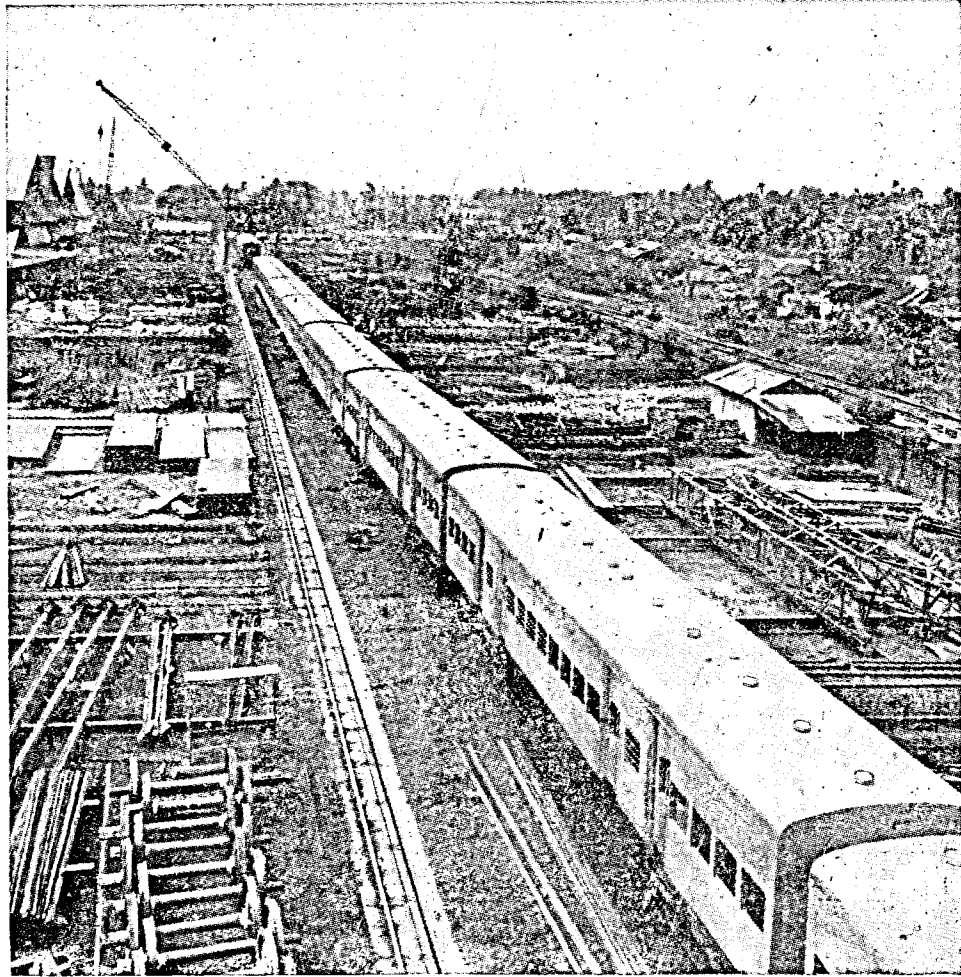
largely accounts for these accidents. Technical improvements, which can help to mitigate the incidence of human element, are being progressively effected, but a significant improvement can only be expected if all those engaged in the running of railways are fully alive to their duty and responsibility.

The General Managers have been asked to intensify outdoor supervision to check up on the strict observance of rules for safe working and to impress upon the staff the great responsibility for safety of travel which rests upon them. I would also request the Labour Unions to extend their full co-operation to the Railway Administrations in this endeavour.

#### Pay of employees—Appointment of Commission

As the House is aware, the Government have appointed a Pay Commission in August 1957, the main terms of reference being to examine the principles which should govern the structure of emoluments and conditions of service of the Central Government employees. The Commission have been requested to make their recommendations to the Government as soon as practicable, but in the meanwhile they could consider demands for relief of an interim character and send reports thereon. The Pay Commission have already submitted their recommendation regarding interim relief which, as I have mentioned earlier, has been accepted by Government and implemented.

The House will be glad to know that a Pension Scheme has been introduced for all Railway servants. Those Railway servants who were in service on 15th November 1957 or demitted service between 1st April 1957 and 15th November, 1957 have, however been given an option to be governed by the existing State Railway Provident Fund Rules or to come over to the Pension Rules. Even after the introduction of the Pension System, staff eligible for pension shall continue to subscribe to the State Railway Provident Fund at the existing rate on a compulsory basis. Such staff will, however, not



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be eligible for any Government Contribution to State Railway Provident Fund.

As mentioned by me during the budget speech in May last year a Committee with Shri Tapase as Chairman was appointed to review the channels of promotion of Class IV staff and connected matters. The Committee have completed their investigations and have recently submitted some of their recommendations, pending finalisation of their report which is due by the end of this month.

#### Medical facilities for Railwaymen

In my last Budget Speech, I referred to the expansion of medical facilities for Railwaymen and their families. There were 81 hospitals and 434 dispensaries at the end of 1956-57 and since then three hospitals and 11 dispensaries have been added and a further addition of nine hospitals and 59 dispensaries is planned for the next three years. The number of beds has consequently increased from 3,543 to 3,936 and would ultimately be 5,230. Special attention has been paid to the expansion of facilities for treatment of T.B. In addition to the 646 T.B. beds reserved at the end of 1956-57, 273 more beds have been sanctioned up till now. It is expected to increase the number of beds to 1,350. A number of chest clinics for providing domiciliary and outdoor treatment of T.B. patients and controlling the spread of T.B. have been established. Sanction has also been given for the reimbursement of medical expenses incurred by Railway employees and members of their families in connection with the treatment of T.B. in recognised Sanatoria. The Medical Attendance Rules have been reviewed and certain disabilities attached to Class IV staff have been removed and they have now been placed on a par with other categories of staff.

#### Housing

The question of improved housing and other amenities for Railway staff has always been kept in the forefront. Last year, about 10,000

quarters were built and during 1957-58, 16,000 quarters are expected to be built. Provision has also been made for 15,000 quarters in the Budget for the next year. In all, during the Second Plan period 64,500 new quarters will have been constructed. In addition to this, improvements to existing quarters such as structural alterations, electrification, provision of water-borne sewage etc., have been undertaken on a large scale and will continue to be made in the Budget year also.

The House is aware that Railways maintain a large number of Primary, Middle and Secondary schools and also render financial assistance to non-railway schools which cater primarily to the needs of Railway employees' children. There has been some expansion by way of more classes or higher classes in the existing schools. We have been also anxious to participate in the scheme of the Central Education Ministry for converting High Schools into multi-purpose schools and so far, the High Schools at Kharagpur and Golden Rock, Trichinopoly have been approved for conversion into multi-purpose schools. More schools will be so converted in the future.

I wish to mention to the House that on the inauguration of the North-East Frontier Railway the Railway has taken over two privately managed High Schools, one at Pandu and the other at Alipur Dua with a view to improving the schools and expanding them so as to provide adequate facilities for the education of Railwaymen's children in those places.

In my Budget Speech in May last, I referred to the opening of a residential school in each linguistic area to meet the needs of employees, serving outside their linguistic area. Proposals to set up subsidised hostels have been received and are under examination including the quantum of subsidy to be given.

The House will recall that in his Budget Speech for 1956-57, my predecessor referred to a proposal to award 1,000 scholarships of

Rs. 15 to 50 per month for technical education being under consideration. The first lot of these scholarships was sanctioned in 1956-57. The scholarships will be awarded annually and will be available to children of certain categories of Class III employees and all categories of Class IV employees. Of these scholarships, 12½% and 5% have been reserved for children of employees belonging to the Scheduled Castes and Scheduled Tribes respectively.

#### Training of personnel—New centres opened

The existing facilities for imparting training to the new recruits in the various Railway Services and arranging refresher and promotion courses for the existing staff have been considerably augmented. Basic training centres have been opened in a number of major Workshops and Running sheds and further extension in this direction is under consideration. A Signal and Tele-communication school has been set up at Secunderabad for training officers and staff of the Signal Engineering Department.

This was another year of fruitful co-operation between Labour and Management. Periodical meetings between the Railway Board and the National Federation of Indian Railwaymen which could not be held for some time past for various reasons, were resumed in July, 1957, and agreements reached on a number of points brought up by the Federation. The *Ad Hoc* Tribunal has also resumed its work and is dealing with two out of the five items originally referred to it, agreement between the Railway Board and the Federation having been reached in respect of other items. I expect that it will complete its work shortly.

#### Unity among Railwaymen

The differences within the National Federation of Indian Railwaymen seemed to have widened and the All-India Railwaymen's Federation was revived. Simultaneously with its formation, the new Federation also passed a resolution calling for a strike on all Railways in case the various demands put forward by it were not conceded. The main demand was recognition of the new Federation. Government consider that the interests of Railway workers would be best served by having only one Federation of all Railway Unions at the all-India level and have, therefore, consistently emphasised the need for unity among Railwaymen and appealed to them to have only one Federation. In November last, representatives of the Federations met and it is heartening that they have agreed to implement by the 31st July, 1958 the Unity Agreement made by them in March, 1956. The progress so far made in this direction, I understand, is satisfactory.

Before I conclude I would like to record my appreciation of the assistance and co-operation I have received from all Railwaymen. The Second Five-Year Plan is a gigantic experiment in national reconstruction and the Railways have to play a crucial role in bringing it to successful fruition. In spite of set-backs here and there, the Railwaymen have as a rule responded well to the call of the nation and have made improvement in Railway operation. There is, however, no room for complacency and, I am sure, that the Railwaymen will continue to keep before them the highest ideals of dedicated service to the country.

## PULLEYS AND HOISTS AND THEIR APPLICATION

(This article is digested from the July 1957 issue of "Distribution Age" and reprinted with the kind permission of the United States Technical Co-operation Mission to India—Ed.)

Pulleys and hoists are employed as hoisting mechanisms, usually in conjunction with such other types of equipment as derricks and cranes. Some of them are used to give other than vertical motion.

**Pulleys :** A pulley is a small sheave or wheel (Fig. 1) with a grooved rim usually mounted on a pin on which it turns, a frame or block in which it runs, and with a flexible rope, cord, or chain passing through the groove.

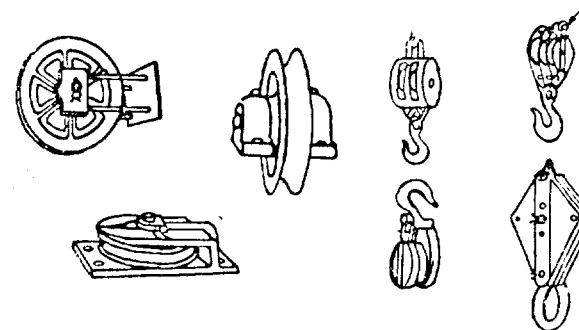


Fig 1 (Left) Sheaves for changing direction of Applied force. (Right) Typical blocks for Hoisting Tackle.

The term block refers to a unit consisting of one or more sheaves mounted in a frame. In most models it is equipped with an eye, a hook, or some similar device at one or both ends of the frame, by which it may be attached to objects.

The portion of the flexible rope, cord, or chain to which power is applied is called the fall. Hence the term block and fall.

Sheaves employed singly are used to change direction and point of application of the pulling force applied to the fall. They are mounted at the tops of derrick masts and for deflecting

ropes from the engine to the bull wheel of hoists and other similar situations. They are available in a variety of sizes, as indicated by the diameter of the wheel and the size of the rope or wire they will accommodate. Of particular interest from the standpoint of materials handling is the use of blocks for increasing the applied force, especially in lifting bodies.

The mechanical advantage of any piece of equipment is the ratio of the force which performs the useful work of a machine to the force which is applied to the machine. The simplest kind of pulley is one with a single sheave fixed to an overhead support. In this arrangement the mechanical advantage, found by the ratio of the output to input, is 1, thus

$$\frac{\text{Input effort } E}{\text{Weight lifted } W} = 1$$

Figure 2 confirms the earlier statement that single pulleys are utilised to change the direction of an applied force. Fixed pulleys are also so used.

Another relationship is brought out by fig. 2. As the fall is pulled down, the body is raised. The distance through which the force  $E$  acts is the same as that through which the weight  $W$  is elevated. We know that work done is the product of the exerted force multiplied by the distance through which it acts. In the given example, the force  $E$  acts through a distance  $D$  and the weight  $W$  is lifted through a distance  $d$ . The work put into the machine and the work from the machine must be equal. Therefore,  $E \times D = W \times d$ .

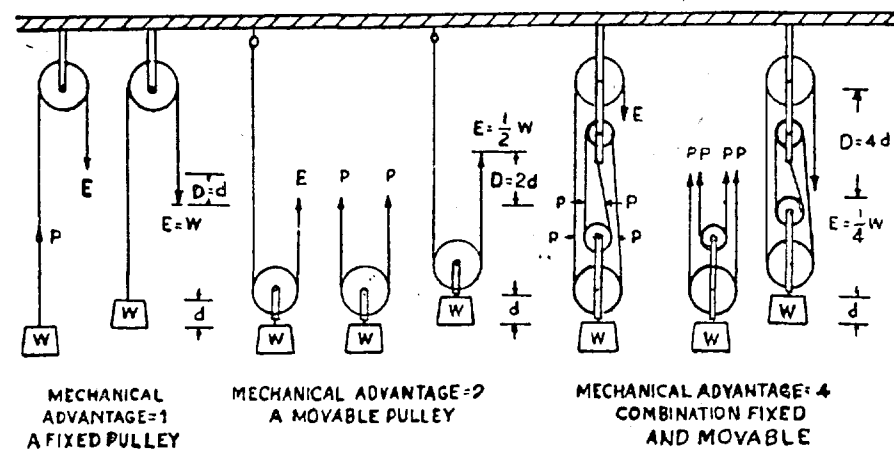


Fig. 2. Mechanical Advantages of Pulley systems.

Since  $D$  equals  $d$ , then  $E$  equals  $W$ . This is additional proof that, in this simple set-up, the force exerted is equal to the weight lifted.

The second group of illustrations in fig. 2 shows a movable pulley with a rope or cable which is fixed at one end and movable at the other end where the effort is applied. The weight  $W$  actually is being supported by two strands of rope. The two forces in each strand, marked  $P$ , must equal the weight  $W$  of the body. The force in the right rope is  $E$ , so that  $E$  in this case, is  $1/2W$ , or  $E = W/2$ .

In short, the mechanical advantage of a single movable pulley system is 2. It is important to note that there are two strands directly supporting the load.

To clarify the combination of a fixed and a movable pulley, the four strands which support the weight are shown in simplified form in the second sketch of fig. 2. The force in each strand is indicated as  $P$ . Therefore,  $P$  must be equal to  $1/4W$ . The supporting rope on the extreme left runs up over the large pulley at the top and the only function served by that particular pulley is to change the direction of force  $P$  in that rope, so that  $E$  is equal to  $P$ .

The mechanical advantage of this system is 4 because the effort  $E$  lifts a weight four times its own value.

There are many different kinds of pulleys available for materials handling work. They are designed for use with either manila or wire rope, or chain. There are a variety of hooks, eyes, and shackles. These may be fixed or swivel. A special type called a snatch block has a removable side frame so that the rope or wire can be reeved over the sheave without having to feed it through the shallow (the opening between the groove and the frame). They come with plain bore and with roller or bronze bushings to reduce friction.

Pulleys are utilized extensively in derricks as part of the hoisting tackle. They are employed in changing the direction of ropes from winches, especially in construction and outdoor work. Sometimes they are used for lifting operations, where the work is spotty. For the long run of handling operations there are more efficient hoisting devices.

**Hoists:** Hoists are machines which are capable of elevating and lowering loads. They employ some type of gear arrangement to multiply the effect of the applied effort. They are divided into chain hand hoists and powered hoists.

Because of the different mechanisms utilized in chain hand hoists, it is necessary to break these devices down into four types: lever-operated (ratchet), differential, screw or worm-gear, and spur-gear chain hoists.

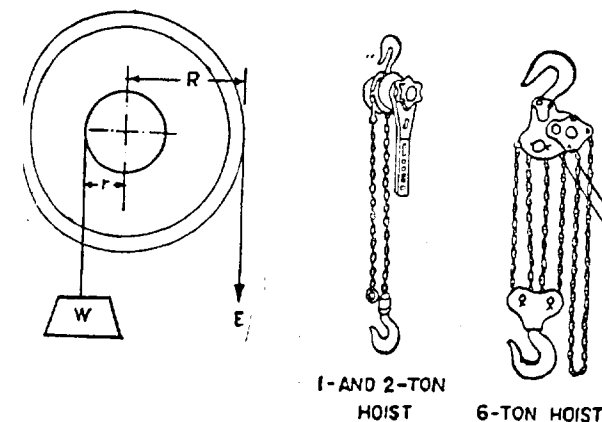


Fig. 3. (Left) Wheel and Axle. (Right) Lever-operated Hoists.

All types support their loads by means of a chain and carry their loads suspended without slipping. The first type is actuated by moving a lever; the other, by means of effort applied to a hand chain.

Because of their all-round usefulness in maintenance and repair work, the lever-operated or ratchet chain hoist frequently is referred to as a "one-man tool."

These hoists operate like many other devices—on the lever principle of a simple machine called the wheel and axle. If a force  $E$  is applied at the periphery of a wheel with a radius  $R$ , and a weight  $W$  is suspended by a rope from an axle with radius  $r$  mounted on the same shaft as the wheel, then, by the law of moments,  $E \times R = r$ .

If a lever arm is substituted for the wheel and the force  $E$  applied to the lever arm, the same results are secured. This is the principle of the lever-operated hoist. The "axle" in the mechanism frequently is a gear which, in turn, actuates other gears to further increase the mechanical advantages of the hoist. (Fig. 3)

Hoists of this type are able to lift and to pull—in fact, they are utilized widely for both services, especially in maintenance and repair work. They can be operated in very close quarters and the chain hook can be advanced by fractions of an inch if the handle is moved in short strokes.

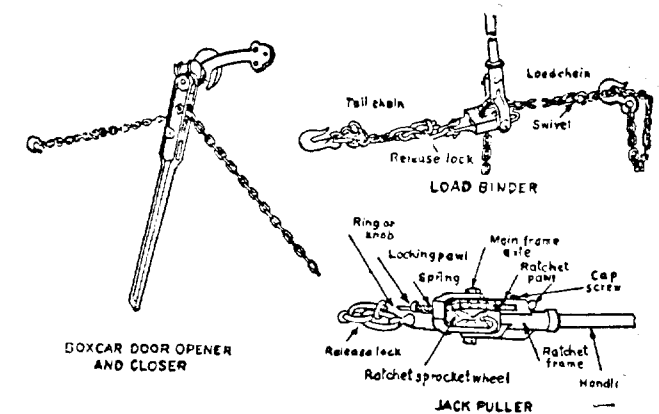


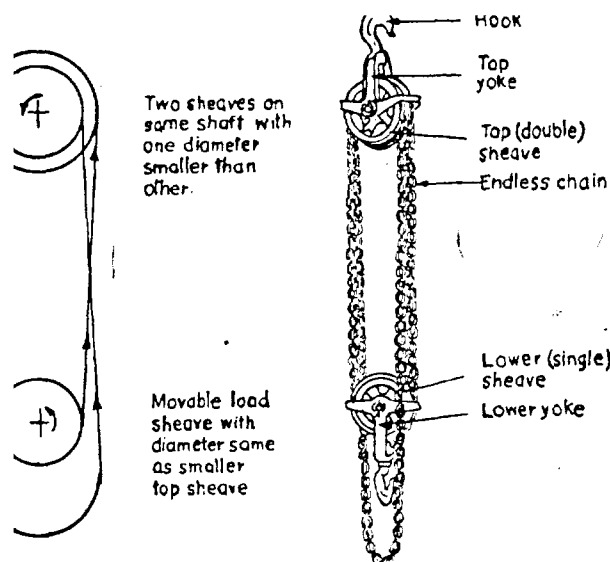
Fig. 4. Specialised Lever-operated chain Hoists.

The ratchet chain-hoist principle has been applied to special devices. One is a car-door closer and opener. The hook is fastened to the door of the car and the free end made fast to the car itself. By moving the handle back and forth, the door is "walked" open or closed. Load binders are utilized to hold together such bulky, heavy loads as logs on a truck. This latter device is offered in two models—3/4 ton and 5 ton capacities.

The differential chain hoist is the simplest form of the chain hoist actuated by the operator pulling on a chain. In principle and effect, the differential hoist is similar to a fixed double-sheave and movable single-sheave block and fall system. (Fig. 5).

There is no free end to the chain; it is endless. The upper sheaves are keyed to the same shaft and they are slightly different in diameter. The sheave with the larger diameter is the one over which passes the portion of the chain on which the force is exerted. The smaller sheave connects the two strands of chain which lead to and from the bottom (the load) sheave. The slight difference in the diameters of the upper sheaves supplies the name differential hoist.

The loads supported by differential chain hoists are held from slipping solely because of friction in the mechanisms. These are the



(Left) Differential chain Hoist and chain Reeving. (Right) Parts of a Commercial Differential chain Hoist.

least efficient and least expensive of the chain-actuated group. They are rated as having an efficiency of 35 per cent. They are utilized where time and effort are not factors—as in intermittent operations performed infrequently.

All the hoists of the screw or worm-gear group have a worm and gear mechanism. Sometimes the worm is called a screw and the gear a wheel. The principle of their action is that, as a worm is turned, its teeth mesh with those of a wheel and thus impart motion to the latter. Each rotation of the worm causes the wheel (gear) to advance a distance equal to the lead of the worm, as shown in fig. 6.

In applying the mechanism to hoists, the chain wheel, actuated by the operator, is mounted on the end of the worm shaft. When the chain wheel is turned the worm is rotated and it, in turn, moves the wheel which actuates the load chain. These hoists are more expensive than the differential variety, but they offer greater efficiency—40 per cent as compared with 35 per cent.

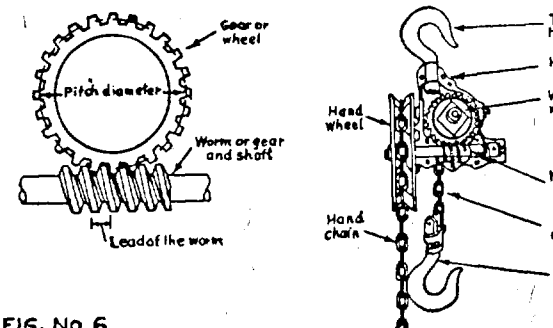


FIG. No 6

Fig. 6. (Left) Principles of Worm or Gear. (Right) Geared chain Hoist.

The mechanism of spur-gear chain hoists consists of what is known as a planetary-gear train. The system of gearing is so named because the gears circle around each other much like the planets around the sun.

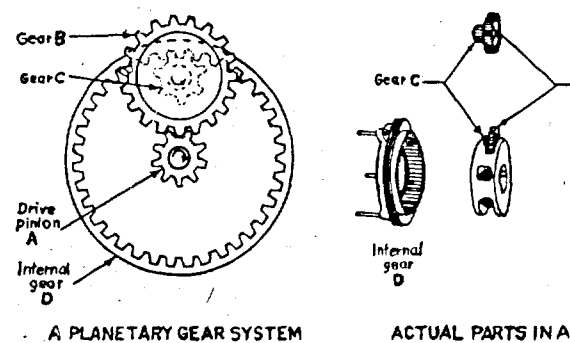


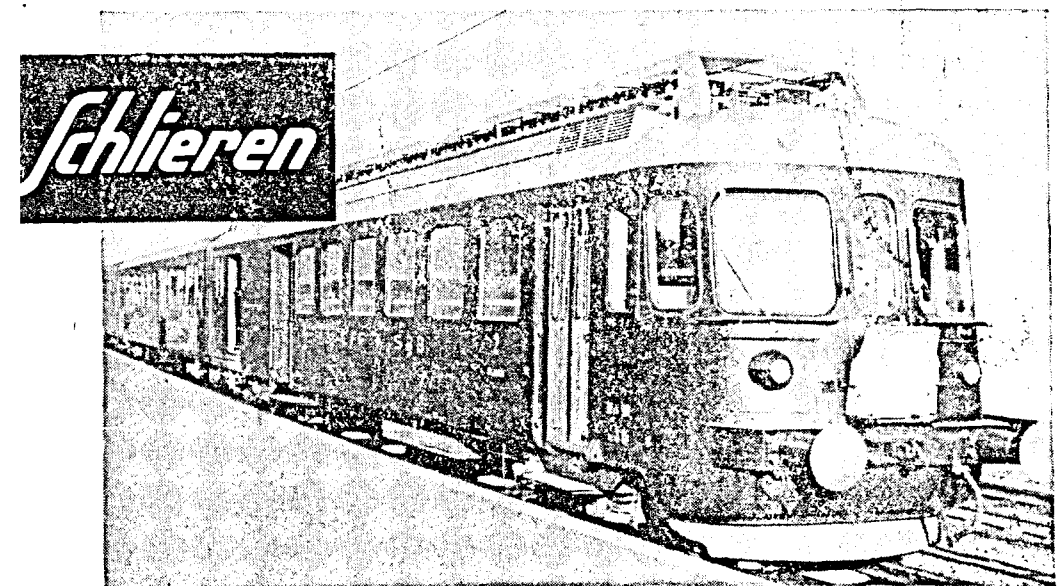
FIG. No 7

Fig. 7. Wheel Direction in Spur-Geared Hoist.

In the sketch of a planetary system (fig. 7) the drive pinion A is rotated by the chain wheel as the operator pulls on the chain in elevating

a load. Pinion A meshes with gear B which is free to revolve around A. Gear B has attached to it a smaller gear C which turns as gear B turns. Small gear C meshes with an internal gear D, which is the final gear in the system for turning the wheel which moves the load chain.

These hoists hold their loads in suspension by means of an automatic brake. Much of the friction in the train can be cut to a minimum, with the result that they have exceedingly high efficiency—85 per cent. Consequently, although they are the most expensive of the chain groups, they also are the most efficient.



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# BRAKING OF INDUCTION MOTORS

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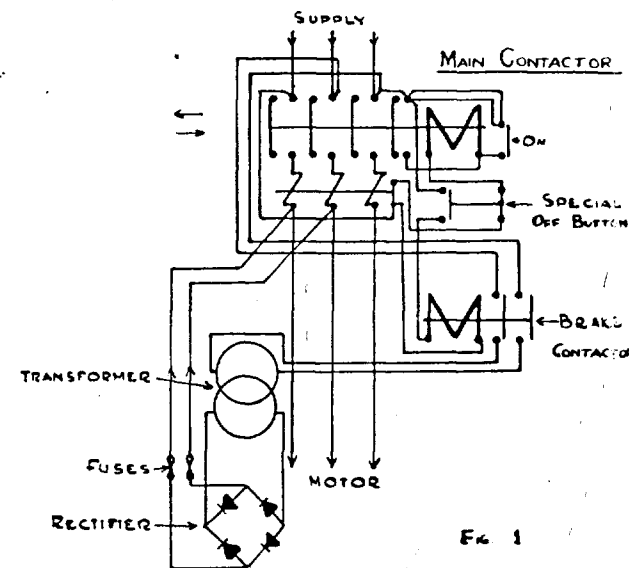
C. R. RADHAKRISHNAN, ELECTRICAL FOREMAN/ICF

Electrical braking is the method adopted to bring a running motor rapidly to rest or to control the speed as necessary (according to various circumstances of need).

Braking is particularly necessary in the case of modern machines, which operate at high speeds. By providing either an electrical or mechanical brake to stop a running motor, ease in operation, saving of time and safety from possible accidents, are obtained. For example let us take the operation of an electric crane. By providing a suitable brake to the hoist motor, hoisting or lowering of a weight over a desired distance could be achieved conveniently. Further the longitudinal and cross travel of the crab of the crane could be made at the required speed by providing a suitable arrangement in the drum controller of the respective motors and stop them instantaneously wherever required. In the case of a milling machine the brake serves a number of useful purposes. If no brakes were provided, the revolving part of a machine, say the cutter or the workpiece, will take some time to come to rest, every time the power supply is switched off, to set the machine or job for the next run. This time taken to come to rest could be saved by providing a suitable brake, leading to a considerable reduction in the time taken to complete a job.

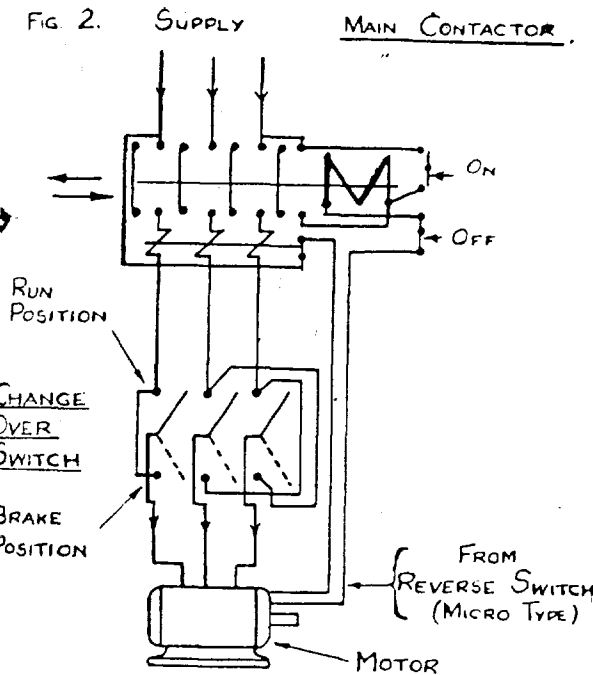
Electrical braking can generally be classified under the following heads :—

- (1) Dynamic.
- (2) Plugging.
- (3) Rheostatic.
- (4) Magnetic.
- (5) Regenerative.



1. *Dynamic braking*—(Fig. 1): When an A.C. motor is to be braked instantaneously, first the A.C. supply is cut-off and immediately through a suitable relay contactor, a D.C. supply, from an external source or from a suitable rectifier built-in the same panel, is fed to any two phase leads of the motor winding. This creates a field in the stator and due to its motion an electromotive force in the rotor. The magnetic field produced by this induced current in the rotor forms the braking torque and the motor comes to rest. This braking torque diminishes as the rotor comes to rest. This arrangement is adopted, almost exclusively in modern milling machines as it is very dependable.

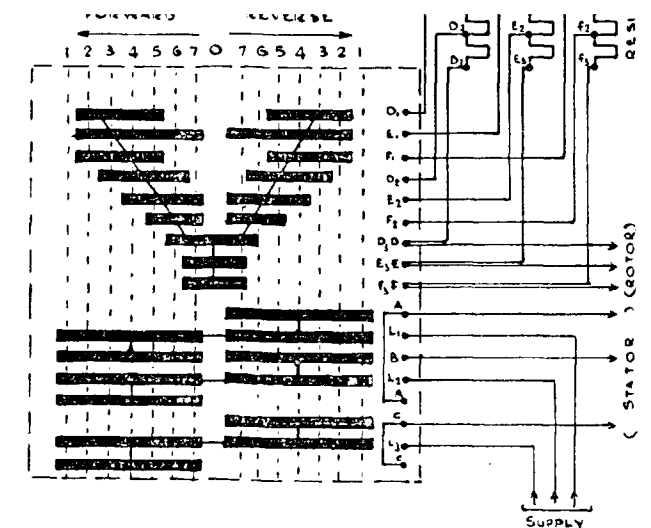
2. *Plugging*—(Fig. 2): Is one of the methods of bringing a three-phase induction motor to a stop, by interchanging two of the phase leads, as shown, leading to a reversal of the phase sequence of the supply. The motor is brought to rest immediately. But,



unless a provision is made to cut-off the complete supply immediately after it comes to rest, the motor will try to accelerate in the reverse direction. Rotation of the shaft in the reverse direction even less than 5 degrees actuates a micro-switch which cuts off the supply to the hold-on coil of the main contactor and the whole machine comes to rest. This method imposes considerable mechanical and electrical stresses on the motor and therefore in higher horsepower motors a lower voltage is applied for plugging purposes.

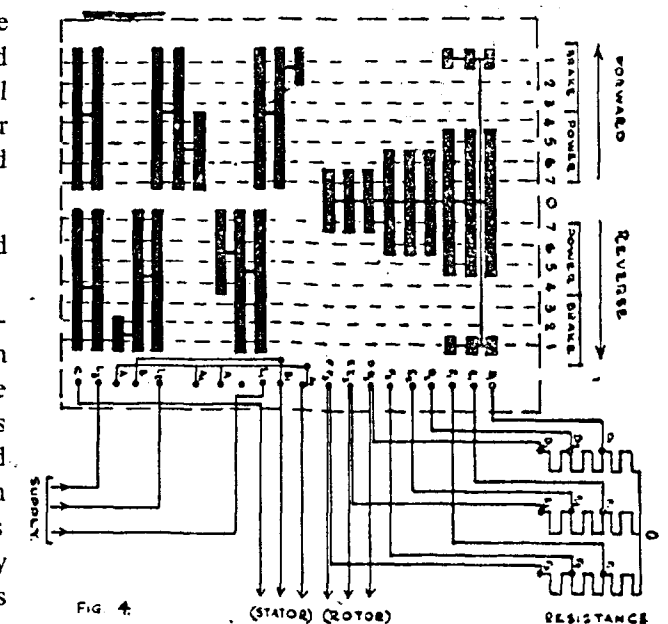
This method is generally used in wood working machines.

3. *Rheostatic Braking*—(Fig. 3): The maximum speed at which an induction motor (both squirrel cage and slip ring motor) can rotate will be slightly lower than the synchronous speed for which it is designed. The speed within this maximum limit, is dependent on the rotor resistance of the motor. There is no possibility of adding or subtracting any resistance in a squirrel cage motor, but this can be achieved in a slip ring motor by providing



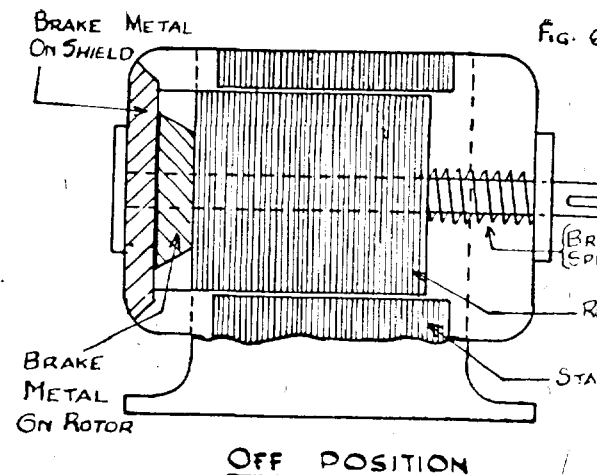
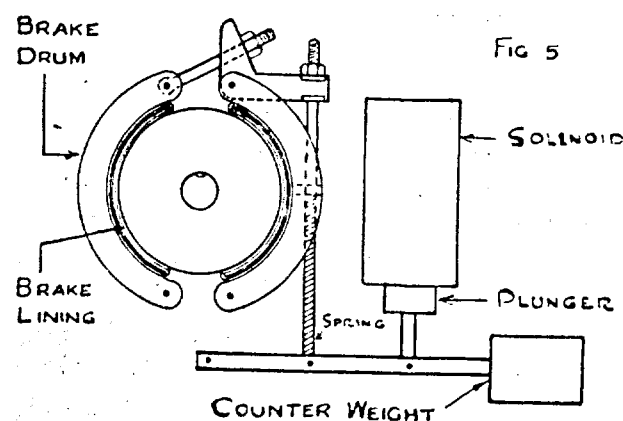
a drum type of controller. Fig. 3 shows the usual arrangement to regulate the speed of a slip ring motor.

There is still another type of drum controller as shown in Fig. 4, where both speed changing and braking can be effected in steps. When



the motor is required to be started, upto the first power point, the handle is moved fast and then slowly over the rest of the power points, to get the particular speed required. While stopping the motor, the handle is moved over the brake points in steps and the motor is completely brought to stand still. Here, under braking conditions, one phase of the three-phase supply to the stator, is cut-off and only the remaining two-phase supply is fed to the three-phase leads of the stator while the rotor is instantaneously connected to a suitable resistance-bank. The driving torque in the motor is of negative value then and the motor comes to rest.

4. *Magnetic Braking*—(Fig. 5): These are applied to crane and hoist motors. Here a suitably designed plunger, operated through a solenoid is provided. The movement of the plunger is transmitted to the brake shoes through a system of levers. The solenoid is connected across the phases of the motor supply. When the motor is energised, the solenoid gets automatically energised and releases the brakes against the pull of the counter-weight at one end. When the motor is switched off, the solenoid loses its magnetism and the counter-weight pull comes into action and the brake is applied instantaneously. This type of braking can be used both for slip ring and squirrel cage motors.



*Built-in brake in motor*—(Fig. 6): In this type, the rotor is capable of sliding over the shaft in line with it over a key. There is a spring over the shaft at one end and the rotor at the other end is provided with brake metal which can engage on a similar brake metal provided at the end shield, of the motor. When the motor is at rest the spring moves the rotor towards the brake on the end shield and when the motor is energised, the rotor is drawn against the spring due to flux set in and the whole rotor rotates with the shaft. When the supply is switched off, the spring pushes the rotor out and the brake is applied instantaneously. This type of brake is very much used in small crane hoists and where small movements are often required.

5. *Regenerative Braking*: A typical installation of this method comprises of a D.C. generator driven by an A.C. synchronous motor. The D.C. generator in turn is connected electrically to drive a D.C. motor. Decreasing the field of the generator, reduces generator voltage and when this voltage falls below the counter-voltage of the motor, there is a feed back of power to the system with the regenerative braking effect.

## MARCH OF SCIENCE

(This article of the U.S. Satellite the Explorer, which is of topical interest, is released through the kind courtesy of the United States Information Service—(c) 1958 TIME, Inc. This article may be quoted from or reprinted in part, provided clear indication is given that the article has not been reprinted in full.—Ed.)

### 1958 Alpha

Even while on its Florida launching pad, the Army's satellite Explorer (official scientific name: 1958 Alpha) insistently broadcast its hoarse radio cry. Ten minutes after take-off Antigua in the British West Indies heard it roar triumphantly overhead. Fifteen minutes later it was radio-tracked in Ghana on the West Coast of Africa. Around the earth it swept, but not until it passed homebound over California—nearly two hours after it had left the ground—were the scientists sure that their bird was in a stable orbit.

The launching vehicle that put it there was a special, four-stage version of the Army's test rocket, the Jupiter-C. Its first stage, which contributed most of the push into space, was the familiar, well-tested Redstone, fitted for the occasion with slightly longer fuel tanks and burning a hydrazine-based, exotic fuel called hydyne, which gave more thrust than its motor's usual diet of alcohol. Stuck on its nose was an awkward-looking cylindrical "bucket" mounted on a bearing so that it could be spun, and containing a cluster of 14 small, solid-fuel rockets 50 inches long and six inches in diameter. Atop the bucket was a single, 80-inch solid-fuel rocket with the satellite proper forming its forward part.

As firing time approached, the bucket, driven by a small electric motor, began to rotate. This motion had the same purpose as the spin of a rifle bullet: to "spin-stabilise" the upper stages of the rocket. It would also check any

tendency to veer off course if any of the small rockets in the bucket should ignite later than the others, or burn erratically.

### Bird at Peak

When ready for firing, the whole assembly weighed 65,000 pounds, so the 83,000-pound thrust of the first-stage rocket motor lifted it off the ground at a fairly fast clip. The first stage burned for 150 seconds. When its fuel was gone, about 60 miles above the earth, most of the Redstone dropped away, leaving only a short section of the nose attached to the spinning bucket. As it zoomed upward at several thousand miles per hour, a gyroscopically-controlled device turned the missile's attitude toward the horizon by blowing jets of compressed air through nozzles. This process took about 240 seconds. By that time the bird was at the peak of its first-stage flight, and pointing in the direction of its intended orbit.

All the while, it was being tracked from the ground in four different electronic ways, and Dr. Ernst Stuhlinger, German-born rocket expert, was waiting for a complicated instrumental set up to tell him the exact time to ignite the second stage and "inject" the satellite into its orbit. When the shortened assembly reached about 200 miles altitude and was pointing in the right direction, he pressed a button.

Obedying his electrical command, eleven of the small rockets in the bucket fired, bursting away the nose of the Redstone. They burned

for six seconds. Two seconds after that, three more rockets fired, pushing free the empty shells of the first eleven. The central rocket carrying the satellite fired last. It spurted ahead and alone, and reached orbital velocity of more than 18,000 miles per hour.

That was it. Everything worked perfectly without the slightest hitch, and the first U.S. satellite was in orbit.

#### **Southerly Swing**

Unlike the Russian Sputniks, which swept close to the Arctic and Antarctic circles, the Explorer follows a sinuous orbit around the earth's middle, crossing the Equator at an angle of about 34 degrees and coming only as far north as Altanta. At its highest point (apogee), the orbit rises to 1,700 miles above the earth, descending to about 200 miles (perigee). The round trip takes 114 minutes. This is a "safe" orbit, above nearly all the drag of the atmosphere, and higher than the orbits of the Russian satellites.

None of the scientists wants to predict how long the Explorer will cling to space, but Major General John B. Medaris, head of the Army Ballistic Missile Agency, thinks it may stay up for as long as 10 years.

Dr. William H. Pickering, director of the Army's Jet Propulsion Laboratory in Pasadena, California, which developed the upper stages of the launching vehicle, says that the orbit is almost exactly the intended one. The only deviation is that the satellite goes a little higher than was expected. "A splendid orbit," says Dr. James Van Allen, of the University of Iowa, who designed the instrument package for the satellite. "We are delighted with it." He points out that the principal scientific purpose of the Explorer is to study cosmic rays at various distances from the earth, and it could not do this so well if its orbit were more clearly circular.

The chances are that only people with very good eyesight, who live in favourable places,

will ever see the Explorer with the naked eye. It is too small. In any case, says Dr. Fred Whipple, head of the Smithsonian Astrophysical Observatory at Cambridge, Massachusetts, it will only be visible while its elliptical orbit is carrying it over the United States at low altitude. When the high part of the orbit has shifted over the United States, the satellite will be too faint to be seen without instruments.

Those who do see it as a faint, speeding star will notice that it does not wax and wane like the conspicuous rocket that accompanied Sputnik I. This is because its spin stabilisation keeps it from tumbling. Its direction, like that of a free gyroscope, is fixed in space. As it rounds the earth, its axis points at the same distant star.

#### **Sophisticated Instruments**

The orbiting body, including the burned-out rocket, is 80 inches long, six inches in diameter, and weighs 30.8 pounds. The satellite proper weighs 18.13 pounds; of this, its steel outer skin weighs 7.5 pounds, and the rest, nearly eleven pounds, is the payload of instruments. These weights do not compare with Sputnik I (184 pounds without its rocket) or Sputnik II (1,120 pounds with dog and rocket) but the Explorer's instruments are so light and sophisticated that they may send as much information from space as their Russian rivals.

The "Van Allen" package of instruments assembled by the Jet Propulsion Laboratory is designed to measure three things: cosmic rays, micro-meteorites, and the temperature of the satellite itself. The cosmic-ray counter is a Geiger-Mueller tube that gives a signal whenever 32 rays have passed through it. It began performing normally as soon as the bird was launched.

Micro-meteorites, the tiny specks of high-velocity dust that infest space, are detected in two ways. A delicate microphone listens for vibration set up in the steel skin when it is

hit by a micro-meteorite. The strength of the vibration is a measure of the impact. The other detector, on the outside of the satellite, is a set of 12 grids, wound with extremely fine wire. When one of the wires is hit by a particle more than five micromes (one five-thousandth of an inch) in diameter, it will break and tell about the damage. This set of instruments was designed and supplied by the Air Force Cambridge Research Centre.

Sensing devices, (small, highbrow thermometers) take the temperature of the satellite at four places as it orbits in and out of the cold shadow of the earth and the blazing glare of the sun. Two of them are in the skin, fore and aft. One is in the instrument section, and the fourth is inside the nose cone. The reports from the four sensing devices will help design space vehicles that men can live in without too much temperature trouble.

Information from the instruments is sent to earth over two tiny radio transmitters, which weigh two pounds each with their batteries. The more powerful one, which radiates 60-thousandth of a watt on 108.03 megacycles, is expected to stay on the air for two or three weeks. The low-power transmitter (20-thousandths of a watt on 108 megacycles) draws less current, so it will probably broadcast for two or three months.

#### **Microlock**

This is feeble power indeed, but the signals, which are not Sputniks style beeps but continuous tones only slightly moderated, have been picked up widely by radio amateurs as well as by the official satellite-tracking stations. Instructions on how to receive them and how to interpret the information that they carry were given freely in advance to all interested parties. The U.S. satellite, unlike the Soviet Sputnik, talks to all the world.

The frequency of the signals is rather high for most radio amateurs, but it was picked up because it can give more accurate data on the

satellite's position than the Sputnik frequencies on the 20 and 40-megacycle bands. Special "microlock" detecting stations designed by the Jet Propulsion Lab have been set up at the Florida launching site and Earthquake Valley near San Diego, California. Two more, operated by the British, are at Ibadan in Nigeria and at Singapore.

Since the Explorer moves at 18,000 miles per hour or better, the Doppler Effect makes the frequency of its signals change considerably as it approaches and recedes: when it is approaching a listening point, its frequency is higher; when it is moving away, its frequency is lower. The new microlock receivers freeze to the signal, measure the shift of frequency, and use it to estimate the satellite speed. Their wide directional antennas pinpoint its position. After this system has been in operation for a while, the Explorer's orbit should be known more accurately than the Russians know the orbits of their now-silent Sputniks.

If the Explorer stays up as long as expected, the slow shift of its orbit will give information about irregularities in the earth's gravitational field. Its radio signals, coming down through the atmosphere, by their fading and bending will describe ionised layers of air they have passed through. As the satellite spirals toward earth, very slowly at first, it will measure by its loss of energy the density of the air at the top of the atmosphere. It may even tell, merely by crossing the oceans at known speed, how far the continents really are from each other—a question that still defies the more meticulous mapmakers. If the instruments are accurate enough, *i.e.*, down to the last foot, it may answer in time the old geological argument about whether continents are drifting apart.

#### **Tomorrow the Moon**

Perhaps the most remarkable thing about the Army's satellite is that its success was not due to new and startling equipment. The Jupiter-C

Version of the Redstone, with its spinning bucket of small rockets, is not new, either. Neither are its internal guidance instruments, its attitude control device or its tracking systems. Nearly everything except the satellite itself and perhaps the rocket attached to it was "off the shelf."

According to Dr. Wernher von Braun, the same equipment plus a few more tricks can put fifty per cent more weight on orbit. But he and other Army men point out that the Redstone is a comparatively small rocket, not nearly so powerful as the ones that launched the Russian Sputniks, or as military rockets—Atlas, Thor, etc.—how being tested in the

United States. Dr. Jack E. Froelich of the Jet Propulsion Laboratory says that the Army's Jupiter Rocket (not to be confused with the Jupiter-C) could boost a much bigger satellite into an orbit, or even send it around the moon.

Another announced Army project is a rocket motor with one million pounds of thrust, 12 times the power of the souped-up Redstone. Meanwhile, said Dr. Ven Braun, a second Jupiter-C is being made into a satellite launcher. Sometime between now and April it will toss another small satellite, probably equipped with different instruments, into its round-the-world orbit.

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## NEWS FROM SWITZERLAND

(Published through the kind courtesy of the Consulate-General for Switzerland in Bombay)

### The most powerful rail cars in the world operated in Switzerland

The most powerful rail cars in the world, operated by single-phase current, are running in Switzerland, on a small line in the Berne region. There are three such machines, of 2,000 H.P. each, weighing seventy-three and a half tons and capable of a maximum speed of 110 kilometres per hour. They have, of course, been built by two Swiss firms, one in Schaffhausen for the mechanical part and the other in Geneva for the electrical part.

### 6,800 million francs invested in Swiss tourism

The total capital invested in tourism in Switzerland, i.e., in the accommodation and catering business, public and private transport (as far as it serves tourism), educational institutes and colleges, clinics and sanatoria, as well as the allied trades, is estimated at about 6,800 million Swiss francs. The annual gross takings amount to about 1,800 million Swiss francs, of which 650 millions go to the hotel industry, 400 millions to the transport organizations, garages, etc., 360 millions to the catering trade, 195 millions to the retail-trade (purchases by tourists) and 60 millions to the private educational establishments, etc. The foreign exchange accrued to Switzerland from tourism amounted to 1,070 million francs in 1956, whereas Swiss tourists spent 435 millions abroad. The net income from tourism, therefore, amounts to

635 millions which means a decisive item on the credit side of Switzerland's trade balance. Tourism provides the daily bread for about 120,000 persons, as well as for 30,000 seasonal workers.

### 25,000 miles of motor roads

There are 606,753 motor vehicles with Swiss licence plates, i.e., some 320,000 passenger-cars, 2,594 motor-coaches and 235,207 motor-cycles, motor-scooters and motor-bicycles, which means that every eighth Swiss owns a motor vehicle. In 1956 more than 8 million foreign motor vehicles entered Switzerland. 2,135,000 of which carried licence-plates of overseas and distant countries not bordering on Switzerland. The country's road network totals approximately 25,000 miles of which about 10,600 miles are cantonal highways. During the last 30 years some 3,000 million Swiss francs have been spent on the extension and improvement of these cantonal roads. The Swiss Alpine roads are world-famous. They have a total length of 962 miles of which close to 40% have been completely modernized and over 650 miles are paved or dustfree. Upto 1970 a road-building programme costing almost 3,000 million francs is to be carried out within the national highway network, including over 460 miles of four-lane super highways, 155 miles of Alpine roads, 47 miles of lowland highways and numerous city express-highways.

## FURNISHING APPRENTICES COMPLETE BASIC TRAINING

Shri K. Sadagopan in his address to the Furnishing apprentices exhorted them to emulate the Shell factory apprentices by living up to the expectations and not only achieving but also exceeding the targets set for the Furnishing factory.

A colourful function was held in the Technical Training School on the evening of 26-2-1958 to mark the passing out of the first batch of Furnishing apprentices after their basic training.

The function was presided over by the Chief Administrative Officer, Shri K. Sadagopan and Shri K. Swarup, Deputy Chief Mechanical Engineer-I also kindly graced the occasion with his presence. Shri R. Rajagopalan, Deputy Chief Mechanical Engineer-II could not attend the function due to indisposition.

After group photograph, the gathering adjourned to the auditorium for tea. After tea, the Principal, Shri K. Santhanam, welcomed the Chief Administrative Officer and Deputy Chief Mechanical Engineer-I and gave details of the training of first batch of Furnishing apprentices. He mentioned that in spite of the batch being the first one and a number of teething troubles, due to the co-operated effort of the Instructional staff and the eagerness on the part of the apprentices to learn the trade, it was possible to attain a good standard of proficiency. He also indicated that the batch showed considerable promise and that the apprentices are likely to turn out as first rate craftsmen. He then presented the apprentices, who distinguished themselves in basic training.

Shri Swarup, Deputy Chief Mechanical Engineer-I, speaking next explained the need for trained personnel in industry and mentioned that the apprentices should make full use of the factory training to become experts

in their trade and serve the country by giving off their best in the factory.

Rising amidst cheers, Shri K. Sadagopan then addressed the gathering. He expressed that he was glad to be associated with the function and mentioned that if the production targets had been achieved and excelled in the shell factory it was because of the good work put in by the shell factory apprentices. He observed that he had no doubt that the furnishing apprentices will likewise apply themselves with zeal to their work and enable the furnishing factory also to achieve the targets set. He concluded by wishing the apprentices a bright future.

The function came to a close with a vote of thanks by Shri M. Thanigainathan, carpenter apprentice of the first batch.

The apprentices who completed the basic training with credit are :—

### General Proficiency

1. *Fitter (Electrical)* :
  - (1) Shri K. Ellappan.
  - (2) Shri R. Pattuswamy.
2. *Plumbers* :
  - (1) Shri Mohamed Ishaque.
  - (2) Shri M. Jayagaran.
3. *Carpenters* :
  - (1) Shri K. Shanmugham.
  - (2) Shri M. Thanigainathan.

### Proficiency in Practical Training

1. Fitters (Electrical). Shri K. Ellappan.
2. Plumbers ... Shri M. Jayagaran.
3. Carpenters ... Shri K. Shanmugham.

### Proficiency in Theory

1. Shri M. Thanigainathan.

## VISITORS TO THE I.C.F.

A Delegation led by Mr. Burke Knapp, Vice-President of the International Bank for Reconstruction and Development visited the Integral Coach Factory on the 5th February. Mr. Knapp and party were taken round the Technical Training School and the Workshops. At the conclusion of the visit Mr. Knapp observed that the factory was a most impressive achievement and it was inspiring to see how Indian Engineering talent and Indian workers combined here to serve their country.

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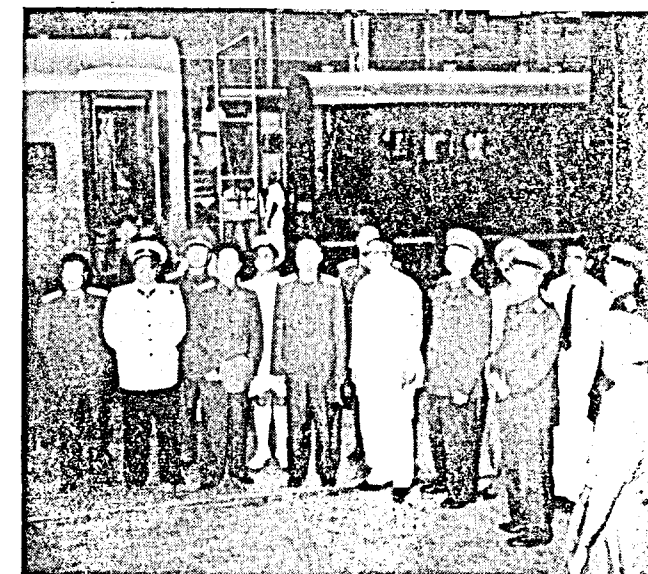
A Chinese Armed Forces Delegation, led by Marshal Yeh Chien Ying, Vice-Chairman of the Chinese National Defence Council visited our factory on the 21st February. On arrival they were received by Shri K. Swarup, Deputy Chief Mechanical Engineer in the absence of the Chief Administrative Officer. The principal officers of the factory were introduced to the Marshal and the lay-out of the factory and other pertinent details were explained to

the party. The Delegation was then taken round the Workshops, the Technical Training School and the staff colony. The Marshal was presented with a model coach as a memento of the Delegation's visit. On behalf of the Delegation the Marshal in turn presented to the factory a portrait of our revered Prime Minister, Shri Jawaharlal Nehru, woven on silk. At the conclusion of the visit the Marshal was pleased to record his impressions as follows :

“ This is a modern coach factory. It has very excellent equipment and facilities and very good management. We are particularly impressed by the worker's colony and the way you train your young apprentices.”

\* \*

Mr. Wilhelm Billig, Commissar for Atomic Energy, Poland and Professor Marian Miesowicz, visited the Integral Coach Factory on the 22nd February. They were taken round the Workshops and the Technical Training School.



Members of the Chinese Services Delegation in our Paint Shop.

## THE PHILOSOPHER

BY

M. V. B. S. SARMA

I must tell you all about Samson.

This Samson of mine has nothing to do either with Philistines or Delilah. Not at all. As a matter of fact he prides himself to be an alsatian instead of being an ordinary uninteresting mortal. He has utter contempt for mankind and he doesn't disguise it. Probably it is due to this reason, he walks with a measured non-chalant air, looking this way and that and if he finds a timid human being, he just bares his teeth for the fun of it.

In minor disputations with the local canine fraternity, always he has the final say in the matter. He summed up his case as a practising barrister of the Inner Temple. Very neat and precise. He was the Defence Counsel, Attorney-General and the deciding Judge. You can understand "what law he was unto others." He not only dispensed justice but made the accused feel that justice was given. You could easily guess it, when you saw a pack of yelling dogs running for life with tails, tucked in between their legs.

He was a very clever chap. A jealous master, punctilious about the sanctity of the precincts of the house. He did not like individuals to come and disturb him or for that matter his master, without prior appointments. He could sort out easily the desirables and undesirables among the visitors. In all this matter, he went more by instinct than by judgment and his instinct was more accurate than many of our judgments.

His day started quite early in the morning. Before he went into the garden for a stroll just to appreciate the panoramic loveliness in the stillness of an early morning, in the spring, he would peep into my bedroom to check up whether I was up or snoring among the blankets. In case I was up, he would come up to me and give a look which enquired if I did not like to keep company. Quite often I said, "I shall come along my dear fellow." I squeezed the paste on to the tooth brush and tucking it up in a corner of the mouth, stole into the garden in the company of Samson. I use the word 'stole' deliberately. I wanted to give a surprise to the missus; Samson would understand these delicacies instantaneously. He would go to the kitchen and take a stealthy peep just to assure himself 'that all is well in the state of Denmark.' On all such occasions, he was a very good companion, decidedly better than any human being with their incessant chatter and inconvenient questions.

Once inside the garden, he never liked any one to disturb his reveries nor he disturbed mine. After thoroughly exhausting ourselves, by going hither and thither, I would go to the tap, wash my face and comfortably sit on the cement bench which was cold and moist due to the morning dew, while Santha brought me a cup of steaming coffee. Samson would hastily snatch a biscuit from Santha's hand and leave us as though he said "Don't I know, my friends that two is company and three is crowd. Have a jolly good time."

He very easily fitted into the pattern of our lives. I was given to silence; certainly, volubility was not one of my virtues. In contrast Santha was garrulous. She had an analytical mind and like a doctor which she was, she was not content until she dissected and vivisected every subject under the sun all the time describing, explaining, annotating and dramatizing. She had a laboratory mentality; rather a casualty ward mentality. But I always looked at problems with a poetic approach; an approach full of comprehensive, imaginative nothingness. I looked at the whole and did not worry about the parts, properties or dimensions. I never cared to know the chemical formula; mine was not an inquisitive mind. I was a poet, a lover of moon and stars, valleys and cliffs, rivers and seas, flowers and fruit. I always managed to have a bubbling, superfluous and often hyperbolic appreciation of things and imagination was the key word. As regards Samson, he was a philosopher. He indicated by the very tenor of his existence that he solved systematically and satisfactorily, practically almost all the problems that confront a troubled and bewildered humanity, "just look at me. Am I not happy? Do I not love everyone that comes my way and do I not enjoy all the love and affection lavished on me? Why don't you lead a hermit-like life like me caring neither for abuse nor praise, neither sorrow nor joy? Why don't you strike a balance? Is it such an impossibility?" This was the sort of questioning that I found in his looks. In a way I envied him.

All was well in the garden, with Adam and Eve till the serpent introduced ideas into the latter's head. A Viswamitra, fired with an ambition to become the unquestioned Lord of the universe goes to the forest to undertake a terrible penance. To thwart his plans, some mischief-monger creates a wily enchantress Menaka. A similar accident was to happen to Samson. His complacency and

saintliness was not to last long. Profound disturbance came into his life which made him topsy-turvy and lose his mental balance, when a friend of Santha arrived in my house for a short stay. She brought with her a she-dashhound.

She was very young; a very tiny one. When Samson saw her, at first, he mechanically growled at her, and latter turned his growl into an appreciative murmur. The fellow had a sense of beauty.....like me. But the lady was a worldly dame and had seen a preponderant number of males. She had an arrogant confidence in her looks, which permeated her whole being. This in turn made her cold. But our saint was captivated and it was more than 'love at first sight.' I was worried about the outcome. Having been brought up in the strictly 'Vanasramadharm' tradition, I could not look upon this unequal intercaste match even if Samson was able to succeed in winning his lady love.

Samson, this erstwhile misogynist, began to take a lively interest in the visitor. He took her round the garden for a walk. He showed her the roses, the marigolds, the zinnias and the chrysanthemums. He cleared the hedge gracefully, showing that hedges did not make a prison. From outside the hedge, he put in a terrible spurt, an average of 45 MPH and finished like a sprinter. The lady dog, simply looked, and when he came near, merely flapped her ears and winked. That was all the response he could get.

This cold and highly conceited Virgin, completely ignored him. She behaved as though, so far she was concerned, everything was finished and that all his attentions have been duly accepted and filled. Samson was a very proud chap. He realised he lost his heart a bit too soon. His love was bound to be unrequited and would end in a tragedy.

After a week's stay, she went. When she went, she left behind a different Samson. Ah! what a difference! It took considerable time for Samson to come to normalcy. I watched him with anxiety. But he recovered and recovered with a stout heart as though saying 'It was silly of me. However it is all over. Over for good.'

It is not given to everyone of us to be always successful in these matters. It is not everyone that builds up an empire of happiness. Birth is an accident and the life which evolves from and around this incident is a series of further accidents, some pleasant and some unpleasant. We have no control over these things. We believe in our ignorance, that we mould our lives. But in reality, we drift and if we successfully land on a shore, we attribute the success of the voyage to the skill of our navigation. There is neither the skill nor the navigation. It is all illusion. Right from the process of germination from the cradle to the grave—we are helplessly in the hands of an inexorable destiny which always retains the last say in the matter. In such a helpless existence, what is the purpose of this life? Why should all beings relentlessly strive towards an elusive happiness consciously or unconsciously? Why these eternal springs in everybody's bosoms, of desires big and small, egging, motivating violently pushing towards an incoherent goal shrouded in a hazy mist? These are all the doubts, questions and questions, interrogations and interpellations. Not that there are no answers. But my answer would not be yours,

## A. R. & BROS.

(STATE AIDED)

DOORS, WINDOWS AND

THEATRE FURNISHERS

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FOR

LORRY BODY

AND

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84 Sydenhams Road

MADRAS 7

## PRIZES TO THE I.C.F. GARDENERS

As already reported in these columns, the I.C.F. secured the First Prize for Gardens for the Factories and Industries Establishments in the Garden Competition organized by the Agri-Horticultural Society, for the third year in succession. In addition, a number of prizes were awarded for the entries in the Flower Show itself.

In recognition of the good work put in by the gardeners, the Administration was kind enough to award prizes to gardeners of outstanding ability. The prizes were in the form of Silver Medals, with the names of gardeners and the I.C.F. neatly engraved on them. The presentation took place at an informal ceremony held at the I.C.F. Nursery on the evening of the 14th February. The C.A.O. (R.) and the other senior officials present evinced a keen interest in the various sections of the Nursery and the manner in which plants are raised, scientifically, and at very low cost.

The guests were welcomed by Shri M. V. B. Menon, Horticultural Supervisor. Shri S. G. Iyer, XEN/I.C.F., in a short speech, explained to the gardeners the significance of the distribution of prizes and exhorted them to vie with one another in producing still better results in the years to come. He also apprised

them of the very keen interest taken in their work by all the top officials of the Project.

Shri K. Sadagopan, C.A.O. (R.), then distributed the medals to the prize-winners mentioned below :—

- |                          |                |
|--------------------------|----------------|
| (1) Shri Subbarayan ...  | Garden Mistry  |
| (2) „ Vellaswamy ...     | Gardener.      |
| (3) „ Thirunavukkarasu „ |                |
| (4) „ Manickam           | Garden Khalasi |
| (5) „ Munuswamy          | „              |
| (6) „ P. Arumugham       | „              |
| (7) „ Palani             | „              |
| (8) „ K. Subramaniam     | „              |
| (9) „ A. Subramaniam     | „              |
| (10) „ M. Sambandam      | „              |
| (11) „ Vedachalam        | „              |

In his inimitable way, the C.A.O. (R) explained to the gardeners that their work should be taken more as a work of art than a mere bread-winning duty. The whole administration, he said, was very proud of the achievements of the Garden staff during the past 3 years and he was almost sure that this would become a recurring feature.

With a vote of thanks, the function came to a close.

# IN THE NEXT WORLD

BY

S. K. RAMANATHAN, INSTRUCTOR

I was dead. That was what people were telling each other. My body was just lying there on the bed. It looked quite innocent though pale. Even people who had grudge against me had nothing against it now, since it could do nothing by itself. Feelings were running high in that room and I timidly settled in a corner of the window sill and watched the proceedings. They carried away the body and instantly I felt relieved of a big burden. All along I was carrying that 130 lbs. of flesh, bones etc.! Now that it was not there, I was able to float, quite weightless.

I did not know what to do now. Somehow I managed to settle on a rafter in the roof and leisurely watched the surroundings. The spider family was busy there. Senior spider was busy spreading the nets. Mrs. Spider was cooking the food and grandma spider was rocking the cobweb cradle in which junior was asleep.

Slowly I felt something drifting and actually passing through me like smoke. I was startled and peered around.

"Don't you recognise me?" asked a clear voice.

"I don't see you" I said.

"Sure! You can't see! Because there is no sight in this world! Just think awhile you will feel me!" it said.

"But how do I see these spiders then?" I enquired.

"That is because you are haunted still by the previous birth. You will become alright after some time! But do you recognise me?"

I strained my thought for some time and it struck me now.

"Ah! You are K. R. Gopalan! You died in that car accident isn't it?"

"No, no! I am not K. R. Gopalan! But I was K. R. Gopalan!"

"Then.....what are you now?"

"Don't ask me, I don't know what I am actually now! There is no name in this world for anybody.....well, meet my friend here..." and he introduced a third soul.

"What was he?" I asked.

"He was a dog!"

"What? .....a dog?"

"Sure. He was a mongrel dog in Madras and was disposed off by the kind corporation."

"How can we make friends with a dog?" I protested.

"My dear!" said Gopalan, "the difference between man and dog is only in the body and not in the soul. This is the world of souls and here there is nothing like sex, caste, religion etc. All these notions have been carried away with your body."

I thought it should be correct. I have seen a number of dogs in human form and humans in dog forms.

"All right, I agree with you," I said. "But there is a difficulty. How will he talk? He can only bark! or is there any language for this world?"

"What language are you talking now?" asked Gopalan.

I was startled! I did not know what language I was talking!

"First of all" explained Gopalan, "you require a mouth and tongue to talk and you have none now. Your existence is purely spiritual and not material. When you don't have a body you don't need a language!"

"It is confusing" I said, "What are we doing now? Are we not talking?"

"You are wrong, my dear! We are not talking! We understand each other. Your mind simply transmits your ideas and I receive it without any modifications. In the old world the contact was physical and you had to translate your ideas into sound to make others understand it. Now we have passed that stage! Our contact is now Spiritual!"

"That means you can hear anybody whether far or near and there is nothing like whispering and shouting?"

"What? are you still haunted by that dirty material existence? Wake up and don't ask such questions!" reprimanded my friend.

"Don't get angry with him!" interfered the dog friend, "his body has not been cremated. That is why he gets such doubts!"

"I did not mean any offence my dear! The concept of space is only for the material world and not here. You are neither far from me nor near me! If you tune your mind in harmony with mine we merge together into one. Then we understand each other, not otherwise! Now can you understand this?" asked Gopalan.

"O.K.! I hope to get used to this state of affairs quite soon! But what are we to do now? and where to go?"

"Ah!.....ha.....ha.....!" laughed the friend "what are you doing now? and where are you?"

"I think I am sitting on a rafter and looking at the spider family?"

"So you are on the rafter and looking at the spiders! Now think that you are somewhere else and doing something else. You will be there and doing that!"

"What?..... I do not understand you at all!"

"You will understand it now. In the material world the ideas of your mind were translated into action by the body. It is only the active mind that moved the body. The mind is independent of the body for its action. As a matter of fact it is the body that is controlled by the mind and not the mind by the body!"

"Ah! Now I understand!" I exclaimed "You mean just by thinking you can go anywhere and do anything!"

"You are not fully correct. Just by thinking you have gone anywhere and done anything! The moment you think the action is fulfilled!"

"O.K.! Then where shall we go now?"

"You can go anywhere, but there is no good in going here and there. Actually there is no movement for anybody here! As a matter of fact your mind did not sit, run or fall when your body did! you simply think, everything will come to you!"

"Then you mean there is no name, form, space, sight, speech, movement, etc. in this world."

"You are not fully correct. Of course, there is no name or form in particular for anybody. They are reckoned with reference to the old worlds only. All other actions are fulfilled just by thinking!"

"This is really very interesting," I said "How long should we be like this?"

"There is nothing like time also here..... Everything is done just the moment you think about them. We don't know anything like present, past or future! You will be here until you are transferred to other worlds."

"Then what will happen! Will I die?"

"No! You won't die! Because you are not alive now. You will simply forget this world and go to the next. Look, that soul there was a money-lender in the old world."

The burden of attachment to money is pulling him down back to the world of Vermins !”

“ I don’t like to go back there ” I said.

“ It is not your choice to go here or there. This is the place from which you are transferred to the higher or lower worlds.”

“ When is this selection done ? Who does it ?”

“ It is being done every moment. The moment you get qualified for a transfer you go up or down. Regarding selection it is nobody else other than your own self that does it. You go up or down by your own self.”

“ What is the other world like ? Can you tell me ?”

“ I don’t know, Don’t ask me ! But I know there are still a number of worlds beyond that also !”

“ Which is the final world ?”

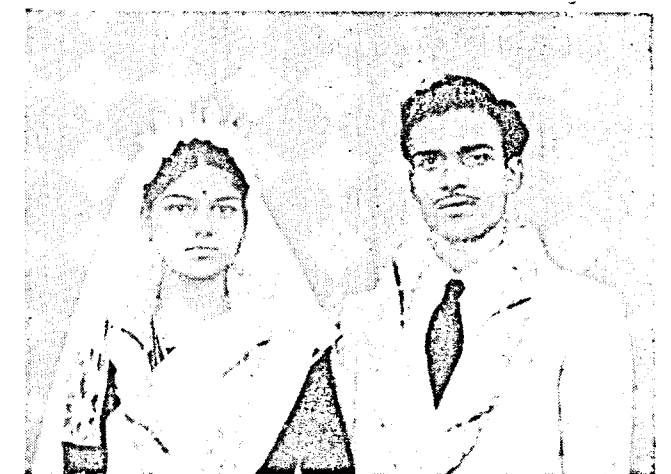
“ I don’t know ! Because the moment I know it I will be up there and not here ! I have heard that there is no “ I ” in that world. The moment you are released from that notion you go there. Now I feel that there is no distinction between you and me because mind in its pure state is a common faculty and assumes to be limited only by illusion !”

So saying he vanished.

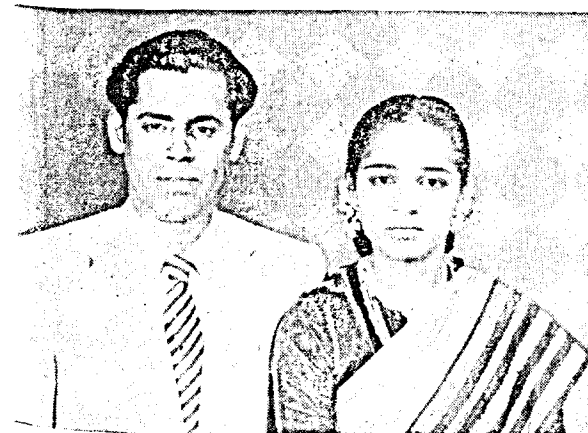
## WEDDING BELLS



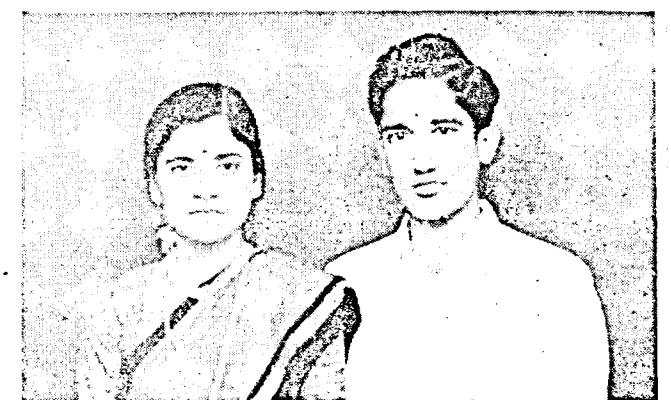
Kumari I. Kamakshi, Stenographer to P.O. was married to Shri Subramaniam on 3—2—58 at Madras



Shri G. Felix George, Clerk, D. C. O. S. (Depot) Office was married to Kumari Mary Stella on 22—1—58 at Madras



Shri D. F. Xavier, Mistry, Shop 21 was married to Kumari Mary Angela on 27—1—58 at Coimbatore



Shri Sethu N. Ramaswamy, Apprentice Mechanic was married to Kumari Rajammal on 26—1—58 at Kovilpatty



Shri S. G. Iyer distributing the sweets donated by H. E. the Governor of Madras to colony children

OUR BEST WISHES TO THE NEWLY WEDS!

## Short. Story

# DRAMA IN REAL LIFE

(contributed)

It was all strange the way I met Rajan. That was a Saturday evening. Shanti, my college mate and myself had planned to go that evening, to the film "The Greatest Show On Earth" which was creating a sensation and stir in the city then. The press and the public were all out paying tributes to the big director who made it really the wonderful show on earth.

It was so arranged that Shanti should come to my house and pick me up. I did not know what happened as Shanti did not turn up at the appointed time. She came late complaining bitterly against her father who had taken the Car for his use and had not returned home till then. Then we hurried fast to the bus stop and to our dismay found a big queue waiting for the bus. We had no other alternative except to go in for a taxi lest we miss the film. Soon a taxi whirled past us quite fast and it took really some time for us to attract the attention of the driver and bring it to a stop.

We got in and slowly put in a few words of encouragement and praise for the driver, the effect of which brought us before the theatre the very next moment sparing no pains for us. We then congratulated him and paid him off and rushed towards the booking office. There much against our wishes we found all the upper stalls full and the theatre filled up to its capacity. We were too late! Shanti could bear it no longer. She found the theatre more bitter than her father. She started cursing the entire film world, for no fault of it, and abused the people for being so crazy in going to films in such a mad rage. Probably there she forgot she was also one among them. I had to find a few words to console her at the same time suppress my feelings of disappointment and

dejection. I suggested we should go to a good restaurant and call off the date. She agreed and we proceeded to a nearby cafeteria. There we had some dishes to our choice and we should feel happy here at least in getting what we wanted without being asked to choose alternatives.

While we were coming out of the hotel, a bright idea struck Shanti. She said we would better go to Marina Beach and spend the rest of the evening instead of going home directly. I too felt the need for fresh air to calm my nerves and so I gave my consent and before long we were there on the sea shore of the famous Bay of Bengal. A huge holiday crowd was present. I should say holiday because it was a penultimate Saturday and in Madras all the Government Offices close and as usual the Colleges and schools work only in the morning. They were all scattered throughout the beach, some in groups and some alone. There one could find different kinds of people from various walks of life assembled to get some leisure and peace from the everbusy and rattling city. Some people reach there to take important decisions on their business as well as in their private lives, working out all alone by themselves. There were children too all around building castles in sand and digging trenches. Quite a few of the children were enjoying themselves by throwing floats into the sea and watching them it being brought back to the shores away by the waves back to the shore. Elderly people who of course could not participate in that being too old for it, were witnessing and enjoying. There were another set of people who were trying to infuse courage and boldness in their ever timid children by making them stand in the sea close to the shore as the waves would wet their feet

at regular intervals. Some children cried and some faced the ordeal boldly.

It was all enjoyable to us and we slowly settled down in a remote place close to the shore. There were not too many people around us. We started talking. Of course one could understand if ladies start talking there was no end to it. Our topics ranged from the current debate on Kashmir to the latest Igatpuri accident and turned to sports. Shanti was a good tennis player and for my part I would not be a bad partner. We discussed so much that we failed to take notice of the time. The Sun had set, and the night had fallen. The Moon was slowly getting brighter and brighter and the stars were fading away as though they did not like the presence of the Moon with them. On the contrary the Moon intensified, ready to expose the sins committed in the nights taking advantage of its darkness.

Then we decided to go. But Shanti remarked a visit to the beach would not be full unless something was bought and eaten. I fell for the idea and accordingly looked for a vendor. A tall guy with a basket was approaching us. We called him and asked him for peas. He took a long nasty look at us and slowly turned his eyes towards the fancy bag which I began holding more firmly then. He took out something from his bag and pressed a button. And lo! to our horror there sprang a glittering knife. Shanti with a faint cry collapsed immediately. I wanted to cry and not a word escaped. I was dumb founded and petrified. He snatched the bag whose grip I had already loosened. He left the basket there and started walking briskly. Only after he had gone a considerable distance, I realised I had been robbed. I had Rs. 50 to my credit in the bag. I summoned up all my courage, woke up Shanti and tried to follow the vendor who was approaching a big crowd listening to the night programme in the radio. We were afraid to follow him close and at the same

time we were trying to keep him in sight. We looked here and there for help. The place was quite deserted except for one young man who was gazing at the sky vaguely. Luckily the vendor never looked back and did not take to heels either, probably trying to avoid suspicion. He knew that once he got mixed up in the crowd near the radio, he was safe.

We had no other alternative except to seek the help of the young man. Believe me I had not spoken to any young man so far who had not been introduced to me before. I picked up courage and approached the young man and told what had happened in quite a few words. The young man at once got up and ran in the direction we had pointed out the vendor. We followed him suit. Before long our youngman was holding the collar of the vendor. Soon there was a fierce fighting. There were quite a few heavy exchanges from both sides. The vendor had managed to inflict many injuries on the young man with his knife, before a crowd could collect and overpower him. In the meantime some one had gone to the police and soon they also arrived on the scene. The bag was restored to me and we three had to go to the police station to give an account of the incident.

At the station we came to know the name of the young man as Rajan and we could not find fitting words to express our gratitude. Rajan was given first aid and later was admitted into the hospital as an in-patient.

Shanti who was all nerves by the time she took leave of me, and I returned home. I narrated the incident to my father who scolded me for staying late in the beach and promised to do his best for Rajan.

The next day father came home after seeing Rajan at the hospital and disclosed that Rajan was a distant relative of ours holding a decent

(continued on page 45)

## Brain teasers

1. Gadhapur is a favourite place of punters for it has the distinction of having six famous stables. A total of 185 horses are being trained by the six trainers Buddhu Singh, Akaroo Singh, Ghora Singh, Bhagoo Singh, Darpok Singh and Khota Singh.

Akaroo Singh's stable has half the number kept by Bhagoo Singh more than Buddhu Singh's stable. Ghora Singh trains as many horses as are trained by Darpok Singh and Khota Singh together. Bhagoo Singh has one-quarter as many as the difference between the horses of Ghora Singh and Buddhu Singh. Khota Singh has one-third as many again as Darpok Singh.

How many horses are trained by each of the trainees?

2. The mathematics teacher Shri Theta, left a problem for his six sons, when he died, in dividing his property of Rs. 20,480. He wrote in the will that each of the brothers (excepting of course the eldest) should get one-third of what his elder or elders got, so that his most affectionate son could get the maximum amount. If the fourth son got Rs. 720 more than the third how much each of the sons received and who was the most affectionate of all for his father?

3. Devaraj and Samuel Raj while having a catch practice before a cricket match decided to find the normal speed with which a ball is flung in air for a catch. They both stood at two marked positions and started walking towards each other at the same time, throwing the ball back at each other no sooner it was received. They finally found out when they met that the ball had a normal speed of  $7\frac{1}{2}$  miles per hour in their throws. If their pacing rates were 3 miles and  $2\frac{1}{2}$  miles per hour respectively and the horizontal distance travelled

by the ball was 165 feet how far apart were they at the time of starting?

4. The father of three sisters, Alli, Malli and Valli was once asked about their ages at which the proud father replied, "Of course, two of them have now reached the double figures, but Alli is half as much more aged than Valli will be if Valli is half as Malli, while Malli is half as much more aged as Alli will be if Alli is half as Valli."

What are the ages of the sisters?

5. A fort on a seashore has a high wall along the seashore running from north to south. In the middle of the wall there is an opening for watching the sea for purposes of guarding. Fifteen feet north of the northern extremity of the gap a narrow path runs due inwards perpendicular to the wall. On this path the guard's seat is arranged thirty feet from the wall so that he has the widest view through the gap. How wide is the gap?

6. Pair off the three-letter words with the four-letter words from the following list to form by rearranging five seven-letter words.

(a) Ere, Art, Net, Ran and Nag.

(b) Gong, Rest, Trio, Lent and Torn.

### Solutions to last month's teasers

1. Ravi =  $10 + 6 = 16$ , Deva =  $4 + 7 = 11$   
Chandu =  $1 + 3 = 4$  Perumal =  $9 + 8 = 17$ ,  
and Kannan =  $5 + 2 = 7$

2. Naresh — Mechanical, Ramesh — Civil,  
Kamlesh — Chemical, Kapilesh — Sanitary,  
Suresh — Electrical and Self — Production.

3. Mama's age was 50.

4. Oranges purchased by each sister were :—

|       | 20 nP. | 15 nP. | 10 nP. |
|-------|--------|--------|--------|
| (i)   | 5      | 6      | 1      |
| (ii)  | 4      | 8      | ...    |
| (iii) | 6      | 4      | 2      |
| (iv)  | 7      | 2      | 3      |
| (v)   | 8      | ...    | 4      |

## Wit and Whistle

1. The city lady on one of her rare visits to the village told the farmer in astonishment, "Look at that cow; it has no horns at all!"

The farmer looked at the animal, thought for a while and said, "My lady, there are reasons for a cow not having horns. Some of them are born without horns, some of them are dehorned and some of them shed as they grow. But this cow has got a particular reason for not having the horns and that is, it is not a cow but a mule!!"

2. An actor, perhaps on account of becoming too obsolete for his profession was hard pressed for a job. At last he came across a circus company and promptly the actor asked the manager of the company for a job. The manager thought for a while and said, "Of course I can give a job for you to suit your previous experience. You see, we had two guerillas in our company, but unfortunately one died recently. All that you have to do is to act as a guerilla in its attire which will be provided to you."

So the actor was there in the cage from the next morning with all the attire. But to his surprise after some time the circus staff began to shove in the other guerilla in the same cage. Naturally our actor got frightened and began to shout for help. To his astonishment the other guerilla did not do anything but coming near him and whispering in his ear, "Shut up; Do you mean to say you are the only actor out of job?"

3. The manager of a theatre got a telephone call at about 2.00 a.m. only to hear the person at the other end say, "What time does the theatre open?"

"7 o'clock," the manager said and promptly put the receiver back.

Not even five minutes would have lapsed, the telephone rang again and this time the manager was too reluctant to answer. But as the bell was persistent he got up and listened.

Again the same question.

"I am telling you once and for all," said the manager, "the theatre will open only at 7 o'clock and nobody can get in till that time."

Immediately the voice said, "Who wants to get in?"

I want to get out!!"

4. Once a pedestrian happened to fall inside a manhole and was shouting for help. A person walking along the pavement heard it and wanted to help him out. In doing so he asked the man inside the manhole in a sympathetic way, "Oh! you fell inside the manhole is it?"

"No; No;" was the bitter reply, "I was standing here and they have built it around me!!"

5. The expectant mother asked her 8-year old son "You want a little sister or brother my dear?"

The boy thought for a while and finally said, "If it does not put you too much out of shape, Mum, I want a pony."

(Continued from previous page)

(The price of the costliest variety should have been 20 nP. each instead of 25 nP. as printed. The error is regretted).

5. Vanitha = 31, Vasanth = 29 and Shanta = 21.

6. Karunakaran was right.

## OUR FAMILY

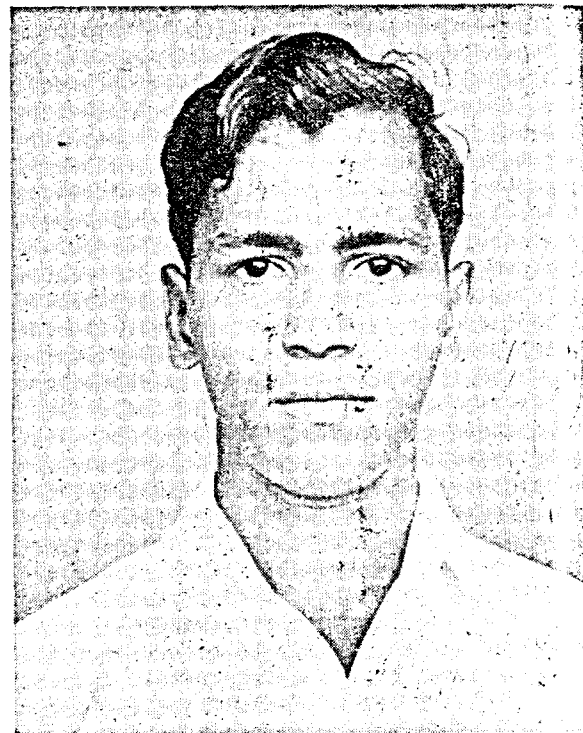


GILBERT IRELAND is a fine example of a conscious worker and sportsman of a high order. He comes from a Railwaymen's family, his father having served in the Traffic Department of the Southern Railway.

Born in Villupuram 37 years ago he had his early education there and later gained experience in welding in various private firms finishing up with the Burmah-Shell Refineries.

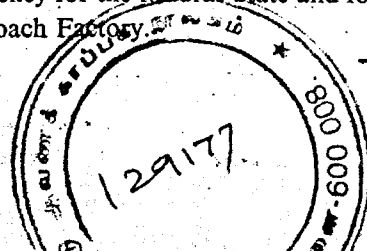
He joined the Integral Coach Factory in July 1955 as a Welder and by virtue of his hard work made a name for himself. He was promoted as Mistry Grade II in August 1957.

He has been a sportsman right from his school days and won a number of prizes. He has played Hockey for the Madras State and for the Integral Coach Factory.



RAMACHANDRA IYER VAIDYANATHAN, the young and unassuming Fitter of Shop 22, has put in good work in connection with the fabrication and erection of number of jigs in the B Shop.

Born in Tanjore District 26 years ago, he wound up his educational career obtaining a Diploma in Mechanical Engineering. After serving an apprenticeship in the Iron and Steel Roll Mills, Negapatam and later in the Lignite Project at Neyveli, he joined the Integral Coach Factory in May 1955 as a Trade Apprentice. On completion of his training in November 1956 he was absorbed as a Fitter in Shop 22. Being an ambitious type, he spends his leisure hours in preparing himself for the A.M.I.E.



## NEWS MAKERS

### Our Felicitations to :

1. Shri M. Sundaram, Foreman, Shop 21 in scale Rs. 300-400 promoted Foreman in scale Rs. 360-500.

2. Graduate Apprentices Sarvashri D. Veda-giri and R. M. Mahadevudu posted for training.

### Our Welcome to :

1. Shri G. A. D'Silva, retired Assistant Foreman of Southern Railway reappointed Chargeman (Inspection) in scale Rs. 260-350.

### Our Best Wishes to :

1. Shri O. Beeler, Swiss Expert returned to Schlieren on 1-2-1958 on completion of his contract period.

(Continued from page 41)

position in a big firm in the city. My joy knew no bounds. (I visited him that evening and why thereafter every evening and our meetings blossomed to the meeting of two lovers. After a fortnight, Rajan was discharged from the hospital.) The Government in recognition of his gallant act presented him with a medal and my father to show his gratitude presented me as his help-mate for time to come. Was it not strange!

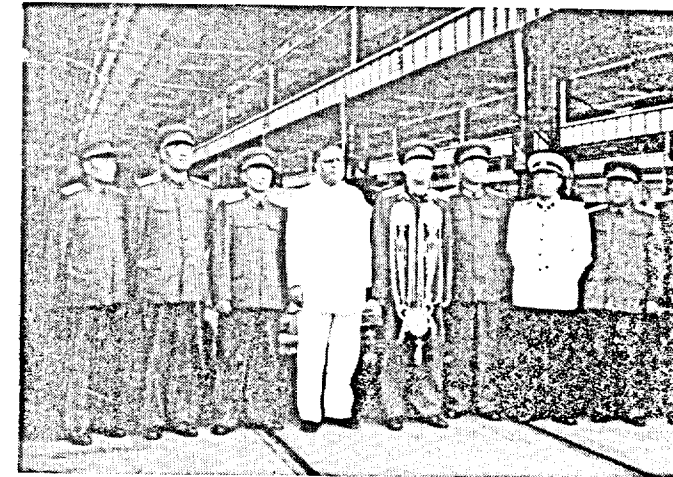
## DID YOU KNOW?



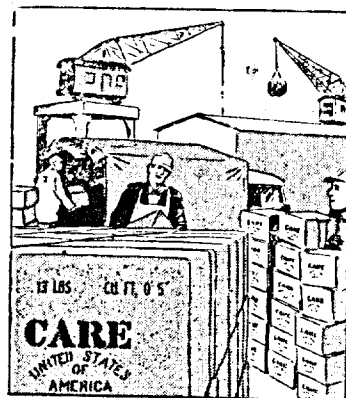
The Colombians are reported to be the heaviest sugar-eaters in the world with an average annual consumption of 125 pounds per person.



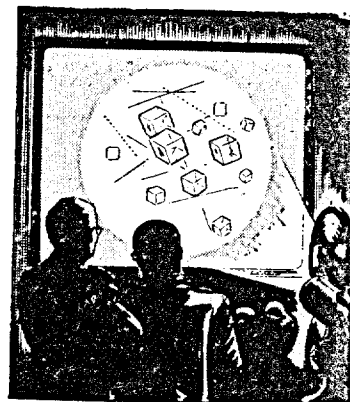
As far as is known, Britain is the world's heaviest smoking nation. Of the nation's 50 million, 21 million are smokers. The average Englishman smokes 7,500 cigarettes annually.



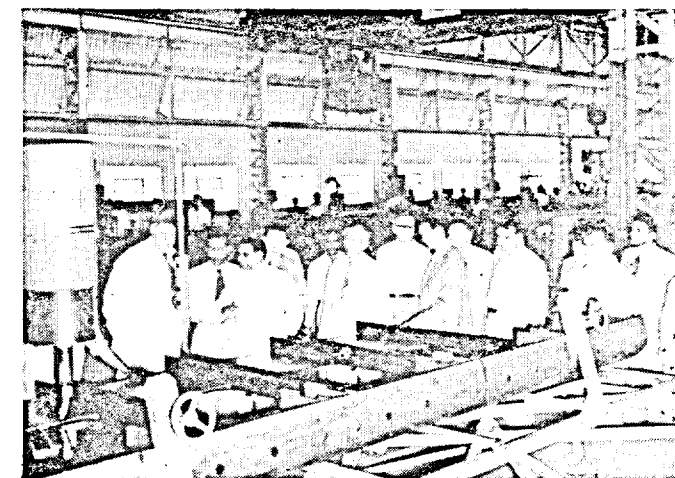
Members of the Chinese Services Delegation in 'B' Shop



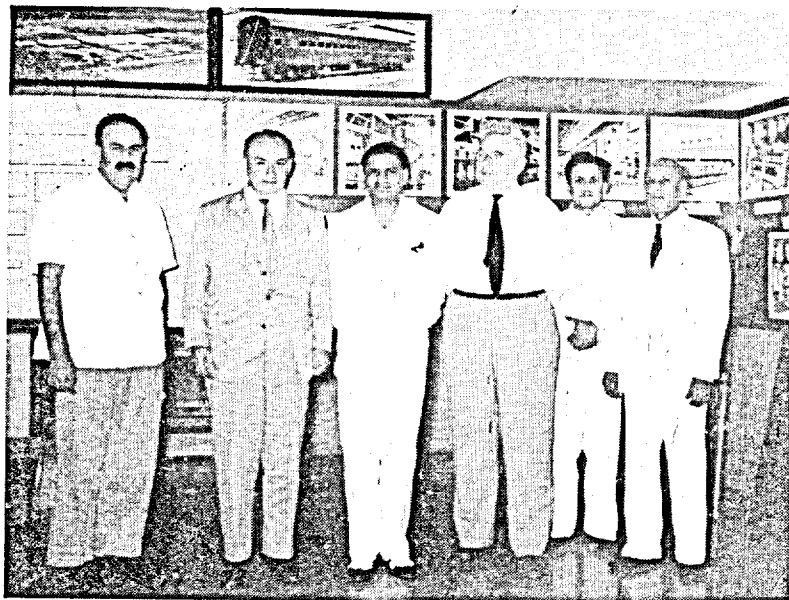
CARE (Co-operative for American Remittances to Everywhere), a private U. S. organization supported by contributions of American citizens, is supplying foods to nearly 8,250,000 persons throughout the world every day.



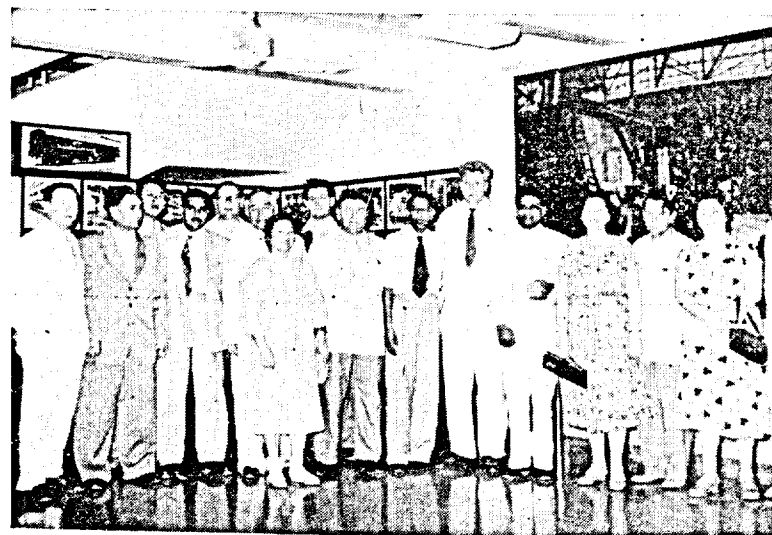
Scientists at the atomic power laboratory of the General Electric Company, U.S.A. have produced square bubbles while experimenting with lithium fluoride, a clear glass-like substance. Lithium fluoride is the only known material that will produce this phenomenon.



Members of the Russian Parliamentary Delegation in the Factory



The Commissar for Atomic Energy, Poland, with the CAO (R) in the lobby



Members of the Russian Parliamentary Delegation with the CAO (R)

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