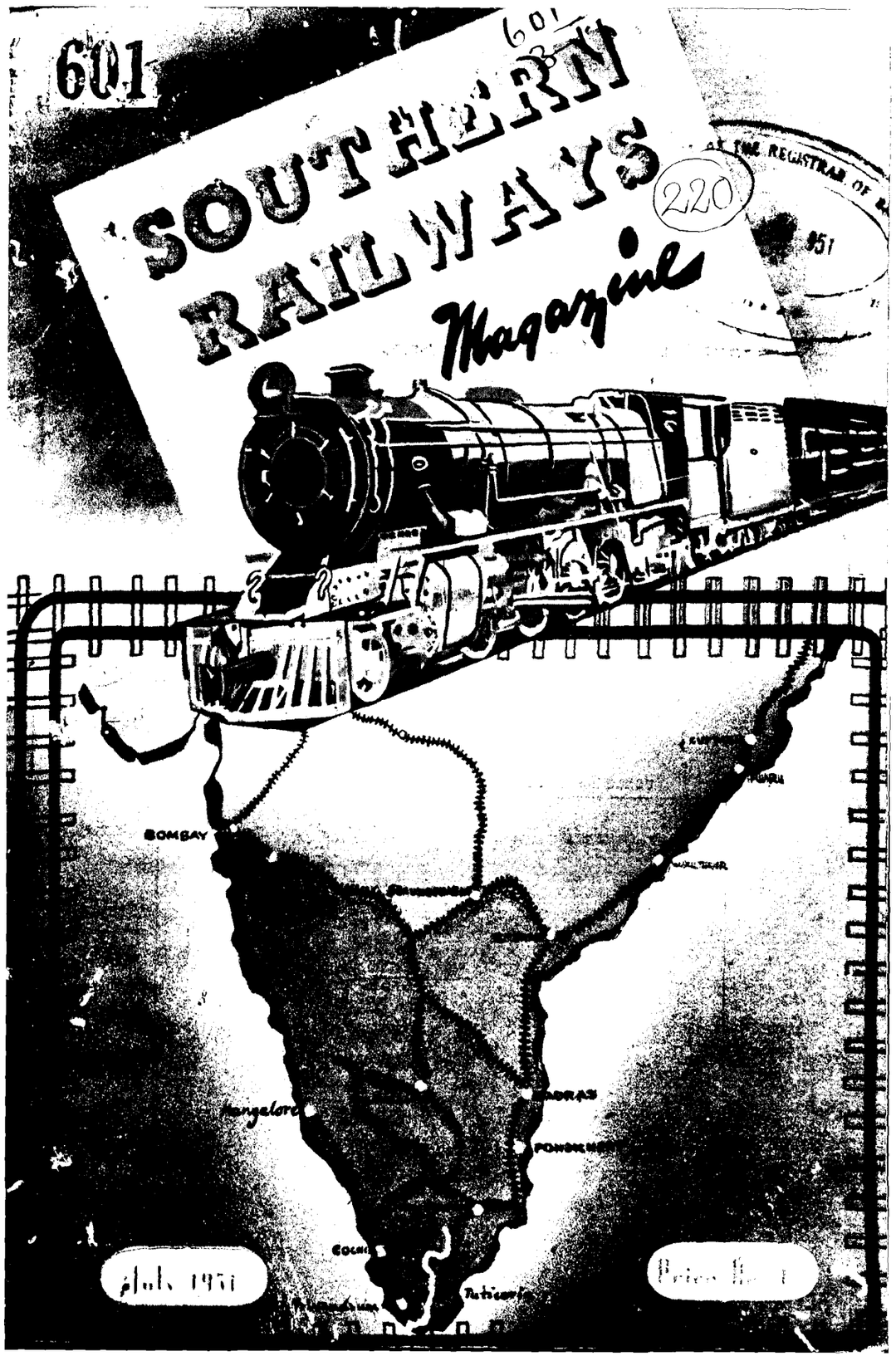
Southern Railways
Magazine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SOUTHERN RAILWAYS
Magazine
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Editorial Notice

The Editor invites contributions to the Magazine on a variety of topics—short stories, technical features written in simple English understandable to the layman, humorous articles, historical notes, &c. All copy should be brief and typed as far as possible.

Photographs illustrating social function, sports events, picnics, scenic spots etc. are also invited. All contributions should reach the Editor not later than the 25th of each month. Rejected Mss. will be returned provided sufficient stamps for postage are enclosed. No responsiblity will be borne for copy lost in transit.

Views Expressed in this Magazine should not be taken as having official authority.

All correspondence should be addressed to "The Editor, Southern Railways Magazine" Post Box No. 17, Tanjore.

Messages of Appreciations

Message from Hon'ble Minister of Transport & Railways

NEW DELHI

July 24, 1951.

One useful function which publications such as the "SOUTHERN RAILWAYS MAGAZINE" can perfrom is to put out, in popular language, salient features and facts regarding the working of Railways and the results thereof, and regarding the rights as well as the duties of railwaymen and cognate matters. They can also help the travelling public to assess and appreciate the achievements of railwaymen, the conditions under which they have to work, their peculiar problems and so on. In other words, they shoul dserve as a link between the Railways and the general public and bring them closer together. I have no doubt that, in running his monthly, the Editor is keeping this aspect constantly in view. I wish his magazine success.

Message from Hon'ble Minister of State, Transport & Railways

NEW DELHI,

14th May, 1951.

I have great pleasure in sending my good wishes to the Special Transport Souvenir of the "SOUTHERN RAILWAYS MAGAZINE." In the present transition stage it is the duty of all sections of the Indian people to realise their primary task of building up the resources of the country and to lay emphasis on their duties rather than the rights. I hope this journal will bring this home to the Railwaymen of South India.

Message from the General Manager, Southern Railway

CAMP : BOMBAY
11th August 1951

A publication like the "SOUTHERN RAILWAYS MAGAZINE" has great potentialities for bringing about a happy and cordial mutual understanding between the Railway Administration and the travelling public, by

drawing the attention of the former to the needs of the latter and at the same time bringing to the notice of the travelling public the difficulties that the Railway Staff have to face and the limitations that the Railway Administration has to work under. While healthy and constructive criticism by the Press is to be encouraged, the criticism will lose its value if it is made without an appreciation of these difficulties and limitations. I am very glad to see evidence of such appreciation in the comments of the "SOUTHERN RAILWAYS MAGAZINE" in its last few issues. I am confident that if the Magazine will pursue its present policy, it is bound to get increasingly popular.

I wish the Magazine all success.

Message from Commander-in-Chief of Indian Army

ARMY HEADQUARTERS,

NEW DELHI, 24—7—51.

I am glad to hear that you are bringing out a Special Number on the Second Anniversary of the "SOUTHERN RAILWAYS MAGAZINE," at the end of this month. I hope you will put over in this Magazine to all those working on our Railways what an important duty they have to the millions of the travelling public of our country. Their duty mainly lies in courtesy to travellers of all classes at Railway Stations, in the booking offices, on trains and everywhere within the precincts of Railways generally. I hope you will emphasize the need for clean and smart :— (*a*) Railway Platforms (*b*) Refreshment and Waiting Rooms (*c*) Food Vendors who hawk their foodstuffs on platforms.

I hope also that you will emphasize the need for good discipline and smart turn out of all Railway Staff from the Station Master down to the junior-most porter and sweeper working at every Railway Station. It is so unseemly to see packages of all kinds thrown about in a disorderly manner at Railway platforms. If the staff who deal with the receipt and despatch of packages by rail are efficient, they should arrange to stack these packages at their appropriate places neatly thus presenting a smart appearance to the platforms generally.

I wish your Magazine all success.

Message from the High Commissioner for United Kingdom

A publication such as the "SOUTHERN RAILWAYS MAGAZINE" can do much to foster interest and spread knowledge among the Railway Personnel for whom it is published not only in the transport sphere but in the wider subjects with which it deals. It is a very satisfactory thing that there are always men initiative to be found in every sphere who will undertake the considerable responsibility of producing staff magazines of this type and they deserve every encouragement both from their readers and from outside.

I have pleasure in taking this opportunity of congratulating the "SOUTHERN RAILWAYS MAGAZINE" upon its Second Anniversary and wishing it every success.

Message from Hon'ble Minister of Commerce and Industry

NEW DELHI,

21st May, 1951.

I am glad to hear that a special number of the "SOUTHERN RAILWAYS MAGAZINE" is being published on the occasion of its second anniversary. The magazine, I imagine, has been trying to inculcate a sense of responsibility in the minds of the Railway workers of all ranks. As an educative journal, I hope, the "SOUTHERN RAILWAYS MAGAZINE" has been or will be found useful to all concerned.

Message from H. E. Governor of Madras

GOVERNMENT HOUSE,

OOTACAMUND,

12th May, 1951.

I would like to congratulate the authorities of the "SOUTHERN RAILWAYS MAGAZINE" on the completion of two years of public service through their Magazine. Railways are a public utility service and they bear a very heavy responsibility. I hope the "SOUTHERN RAILWAYS MAGAZINE" will continue to serve the interests of the public as well as the railwaymen whose welfare is its primary objective. I wish the Magazine all success on the occasion of the Second Anniversary.

Krishna Kumarasinhji Bhavsinhji

Message from H. E. Governor of Bombay

GOVERNMENT HOUSE,

OOTACAMUND,

21st May, 1951.

I am glad to learn that the "SOUTHERN RAILWAYS MAGAZINE" is bringing out a special number to commemorate its second anniversary. The journal has done useful work in the interests of railwaymen of South India. I wish all success to its promoters.

Message from H. E. Governor of Bihar

GONVRNMENT HOUSE,

PATNA,

10th May, 1951

The special number of the "SOUTHERN RAILWAYS MAGAZINE" to be published on its second anniversary will, I am confident, attain the same high level in its external get up and internal contents as the first annua l number published last year. Mr. Krishna Rao, the Editor, has

established a reputation in the journalistic world by his publications, and his name is a guarantee of punctuality, efficiency and thoroughness. I wish this effort great success.

Message from H. E. Governor of Punjab

BARNES COURT,

SIMLA,

23rd May, 1951.

I send my felicitations to the "SOUTHERN RAILWAYS MAGAZINE" on the occasion of its second anniversary. I have been a reader of the "SOUTHERN RAILWAYS MAGAZINE" which is performing very useful service. I wish the Magazine all success.

Message from H. E. Governor of Assam

GOVERNMENT HOUSE,

SHILLONG,

22nd May, 1951.

The Railways constitute one of the main pillars of the nation's economic structure. On their efficiency depends in more ways than one the welfare of the people. The movement of human beings and of goods needed by them or the State is vital for the proper functioning of organised society. Those therefore who are running the Railways and keeping their performance up to the mark are doing a great public service. At the same time the Railway Department is one of those organs of the State which comes into close intimate contact with the life of the people from day to day and the people judge the goodness or badness of governmental administration by the comfort or discomfort they experience when using the Railways. It therefore lies in the hands of the vast number of India's Railwaymen to build up a great reputation for themselves, their department and the State and contribute to the well-being of the people by maintaining a high standard of efficiency, by decorous behaviour and by sympathetic approach towards the people and their problems.

Message from H. E. Governor of Madhya Pradesh

GOVERNMENT HOUSE,

PACHMARHI,

24th May, 1951.

I am pleased to hear that the "SOUTHERN RAILWAYS MAGAZINE" is bringing out its Second Anniversary Number. As they say, the price of freedom is eternal vigilance. India soon after attaining her freedom has been faced with problems never before known in history and in solving almost each one of these—be it of food, defence, or rehabilitation of displaced persons—the Railways had to play an important role. Our critical times are not yet over and let the Railwaymen, as every other Indian, put service before self in his every day life. I trust the SOUTHERN RAILWAYS MAGAZINE will continue to inspire Railwaymen with this noble ideal which is in keeping with their past tradition.

Mangaldas Pakvasa

Message from Hon'ble Chief Minister of Mysore

BANGALORE,

18th May, 1951.

It is gratifying to note that the "SOUTHERN RAILWAYS MAGAZINE" is bringing out a Special Number to commemorate its Second Anniversary. The SOUTHERN RAILWAYS MAGAZINE has been doing good work to maintain the morale ahd the well-being of the railwaymen in India in general and the railwaymen of South India in particular. I hope that this Magazine will guide the railwaymen on proper lines and help the progress and prosperity of the Railways and its employees.

K. C. Reddy

Message from Hon'ble Chief Minister of Hyderabad

HYDERABAD-DECCAN,

15th May 1951.

The "SOUTHERN RAILWAYS MAGAZINE" has maintained a high degree of excellence both in its production and also in its matter. It is still in its infancy. As one belonging to South India, I am particularly proud of this effort and wish the Magazine all success.

M Laik Ali

Message from Hon'ble Chief Minister of Madras

CAMP, GOVERNMENT HOUSE,

OOTACAMUND,

17th May, 1951.

I am glad that the Special Number of the Second Anniversary of the "SOUTHERN RAILWAYS MAGAZINE" is to be brought about shortly. It is a matter of gratification that this magazine serves as an effective organ promoting the interests and well being of the Railwaymen of India. The efficiency of our Railways as the nationalised system of transport and the lifelines of our country's Commerce and Trade, depends largely on the whole-hearted and devoted work of the Railway service men. The service men should realise the great responsibility resting on them. I hope that this Magazine will serve largely in arousing such responsibility in them.

Message from Hon'ble Chief Minister of Bombay

"CRESENT HOUSE"

GOVT. GUEST HOUSE,

CAMP: BANGALORE, 12-7-51

On the efficiecy in working of the railway transport system depends the very existence of our country, with her long distances and backwardness in the means of surface transport.

The shadow of famines with their tragic toll of human life and indescribable destruction and suffering of the old days has retreated with the advent of our railways. But the goal of prosperity for the nation can be reached only when the existing system is expanded and developed and keeps pace with our national effort that is being made towards social, economic and cultural progress.

Since the country achieved freedom, Indian railwaymen have shown by their patriotism, devotion to duty and sense of service that they could successfully carry out the tasks imposed on them despite the railway rolling stock and equipment having been worn out under the over load of World War II. It is an achievement which deserves the nation's recognition and gratitude. I hope it will not be marred by any resort to an entirely unwarranted strike for higher salaries or allowances.

We are passing through difficult times during the period of transition and these are times also of great progress and constructive effort. I have no doubt the gallant men of the "SOUTHERN RAILWAYS MAGAZINE" will play their role and rise to the occasion of national endeavour. It gives me greatest pleasure to send them my greetings and good wishes.

Message from Hon'ble Chief Minister of Punjab

PUNJAB,

8th June, 1951.

I am glad to learn that a Special number of the "SOUTHERN RAILWAYS MAGAZINE" is being brought out by the end of July this year. I hope the venture will succeed in creating better understanding between the railway worker and the authorities and make this national concern more useful and productive.

Gopichand Bhargava

Message from General Manager, G. I. P. Railway

GENERAL MANAGER'S OFFICE,

VICTORIA TERMINUS,

BOMBAY.

25th May, 1951.

I note with pleasure that a Special Number on the Second Anniversary of the "SOUTHERN RAILWAYS MAGAZINE" is being brought out, shortly.

I have been reading the "SOUTHERN RAILWAYS MAGAZINE" quite regularly, with considerable interest, and I am glad to say that the aims and objects with which this Magazine was inaugurated have been ably fulfilled, and the Magazine is serving well both the Railways and the general public.

I wish the "SOUTHERN RAILWAYS MAGAZINE" every success.

Message from General Manager, O. T. Railway

GENERAL MANAGER'S OFFICE,

GORAKHPUR,

22nd June, 1951.

I offer you my congratulations and greetings on the occasion of the Second Anniversary of the publication of the "SOUTHERN RAILWAYS MAGAZINE" and wish you all success in your efforts to serve the best interest of the Railwaymen and the travelling public. I am sure that the usefulness of your publication will further increase in the coming year and thereby contribute in our onward march to prosperity through disciplined effort.

SOUTHERN RAILWAYS MAGAZINE

VOL. III NO. 1 — JULY 1951 — ISSUED MONTHLY

"To Strike or Not to Strike"

THE ideological battle of the strike is on. And the tempo is increasing. The present shape of the scene of operations is a sort of triangular sector. At one point of the triangle is the voice of the Railwaymen's Unions affiliated to the All-India Railwaymen's Federation. At another point are those Unions affiliated to the I. N. T. U. C. And the third point is the Government represented by the Ministry of Railways. The A. I. R. F. group are busy taking strike ballots, and from the voting figures published by them, it appears that their adherents are all in favour of a strike unless their demands are met. The additional grant of Rs. 5 Dearness Allowance conceded by the Government is considered a mere palliative and not enough. I. N T. U. C. group are not in favour of a strike, and have sounded a note of caution on the disastrous outcome if a strike did materialise. In a recent statement the Minister of State for Railways, representing the third group, was of the opinion that he did not think a strike would materialise, as the general body of Railwaymen were not so aggrieved as to consider a strike worthwhile. And the Prime Minister himself in a statement issued early in July appealed to Railwaymen and Transport Workers "to avoid precipitate action which might do untold harm to the community and to them," and assured Railwaymen that the Government would gladly consider any outstanding grievances and try to settle them by the methods of negotiation and discussion. The Prime Minister further emphasized that no grievance should be allowed to interfere with the transport of foodgrains to those parts of the country where they were so badly needed to feed famished and under-nourished men, women and children.

And what is the attitude of the common man to this battle of ideas? His problems to meet the rising cost of living, the food and other shortages, are as perplexing and bewildering to him, as it is to the Railwaymen, who is asking for more. Perhaps, because of this common ground, the average man's sympathy may lean more towards the Railwaymen. Then again, when he thinks calmly over the problem, and of the consequences of what a major Railway Strike will bring, especially if he happens to be living in any of those parts of the country where food is needed so badly, and which he will not get if there is a strike, obviously his sympathy will not be with the Railwaymen.

To strike or not to strike? That is the question for the Railwaymen, and for the average man the question looms large and

(Continued on next page bottom)

"BLOWING BUBBLES"

The Government has sanctioned an increase of Rs. 5/- Dearness Allowance for Railway Staff drawing a salary of Rs. 250/- and less.

ominous with uncertainty. Will those Railwaymen who have voted in favour of using the extreme weapon of the strike, think merely of themselves and their own demands being met by this threat? Or will they consider seriously the common good of their fellowmen who need the transport facilities provided by them to give them the necessities of life and take the wiser course of settling their differences by negotiation and discussion? Every right-thinking man will hope that the Railwaymen will adopt the wiser course.

The act of imagination is ever attended by pure delight. It infuses a certain volatility and intoxication into all nature. It has a flute which sets the atoms of our frame in a dance. Our indeterminate size is a delicious secret which it reveals to us. The mountains begin to dislimn, and float in the air.—EMERSON.

Notes and Comments

OUR CHIEF OPERATING SUPERINTENDENT

IN India the Railway Transport touches the life of the Community at so many points if anything gets wrong at any point the Railway organisation is blamed. Primarily it is the responsibility of the Operating Department to maintain this contact with the community through its net-work of staff and has to bear the brunt of criticism. It is, therefore, no easy task to be the Chief Operating Superintendent much less to be the Chief of three Railways re-grouped recently with a track mileage of 6000 and carrying 27 crores of passengers, 299 crores of goods ton miles and having a gross earning of 42 crores of rupees. Yet this task has been assigned to fifty-year-old Sri S. Ramaswami Sarma, M. A. by our National Government and every Indian should be proud of having an Indian of Sarma's capacity to run the show. With only 50% transport capacity we want men who have 50% tact but we can say without refutation that Mr. Sarma has 100% capacity and 100% tact. The definitions of genius or the capacity for taking pains, the intuitive talent for labour and as nothing else than an aptitude for a quite abnormal patience are good as far as they go. The capacity for pains and labour, however, must also be defined and it is clear that it is the inheritance of *character, courage, grit,* and *persistence* which makes genius win. Mr. Sarma who entered Ex-M.S.M. Railway service as an ordinary Traffic Inspector rose this present position through all the above qualities. No other tribute can be paid to the rank and file of Railwaymen than this fact that it has been able to produce giants in rail transport. But an Operating Head must have a special quality of giving commands. It is stated

Mr. S. R. Sarma
...fittest man for the fittest job...

that late President Roosevelt of America when as a boy was digging a fort with a friend and both were covered with mud. "My son," said Mrs. Roosevelt: "Don't give all the orders" Why not let the other boy take charge from time to time." "Mummie," he said, without guile and utter truthfulness. "If I don't give the orders nothing will happen at all."

Today we want men who can give orders and Mr. Sarma is the *fittest man for the fittest job.* Under our patriotic General Manager, the work of Mr. Sarma will be made easy. We are publishing his photo with this small note so that our future generation may remember him with glee and tell stories "Here is a great Operating man who built up the Railway for us."

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THIRD ANNIVERSARY CELEBRATIONS AT SHORANUR RAILWAY INSTITUTE

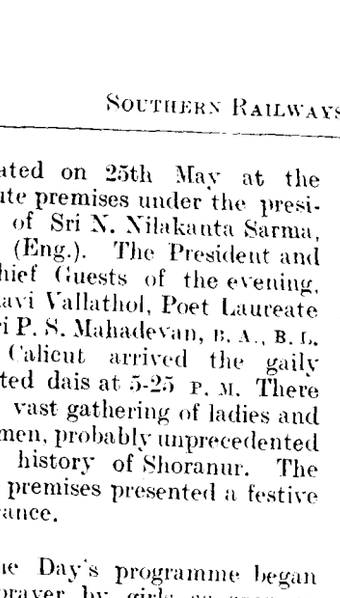
The Third Anniversary of the Shoranur Railway Institute was

celebrated on 25th May at the Institute premises under the presidency of Sri N. Nilakanta Sarma, B. Sc. (Eng.). The President and the Chief Guests of the evening, Mahakavi Vallathol, Poet Laureate and Sri P. S. Mahadevan, B. A., B. L. AOS, Calicut arrived the gaily decorated dais at 5-25 P. M. There was a vast gathering of ladies and gentlemen, probably unprecedented in the history of Shoranur. The whole premises presented a festive appearance.

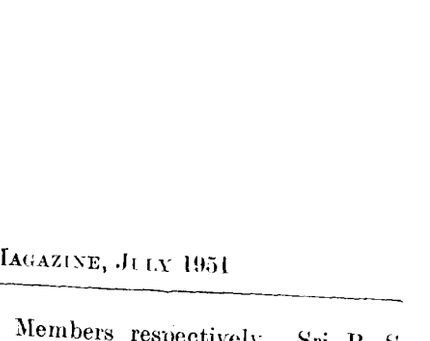
The Day's programme began with prayer by girls as soon as Sri C. V. G. Menon garlanded the President and the Chief guests. Then Mr. M. J. Mathews sang a poem welcoming the public, the President and the Chief Guest. Next was President's introductory speech which was followed by an interesting and comprehensive talk for sixty minutes by Mahakavi about Gandhiji's life and ideals. The Secretary then read the Annual Report. Mrs. P. I. Mathew and Mr. A. Haridas spoke on behalf of the Ladies' Section and the Hon. Members respectively. Sri P. S. Mahadevan then opened the 'Mahatma Memorial Library.'

Later on Kumari Vatsala, daughter of Sri K. Raman Menon, Crop Sampling Officer, Coimbatore, entertained the audience with her delightful dance, punctuated by '*kummi*' dance by girls of the Ladies' Section and Comic acts by students. The ten year old Vatsala's dance was so entertaining that Messrs. P. S. Mahadevan and the President awarded her with gold medals. Sri Mahadevan distributed prizes and medals to those who took part in the various tournaments conducted under the auspices of the Institute.

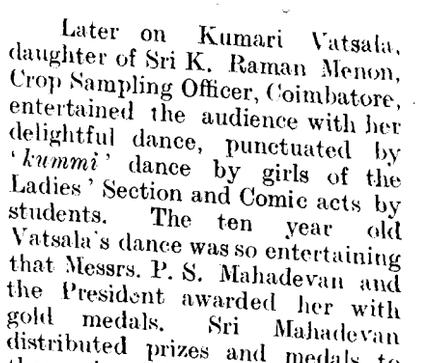
In conclusion, on behalf of the Committee of Management Sri K. N. Narayanan Nair read and



Vatsala in Siva Parvathi Dance



A view of the gathering



Kumari Vatsala as snake charmer

presented an Address of Congratulation to Kumari Vatsala. With a vote of thanks the function came to a close at 9-30 P. M.

Mrs. T. C. Krishna Cup for Tennis Singles :
Winner : H. Augustus — Runner Up : P. P. Krishnan Nair

Mrs. A. Haridas Cup for Tennis Doubles :
Winners : T. J. Cherian & V. V. N. Nair — Runners Up : P. P. Krishnan Nair and C. G. Kumaran

Mrs. C. V. G. Menon Cup for Badminton Singles :
Winner : M. P. Bharathan — Runner Up : P. P. Krishnan Nair

Mrs. K. P. N. Menon Cup for Billiards :
Winner : H. Augustus — Runner Up : Edward Cherian

Mrs. N. Nilakanta Sarma Cup for Table Tennis Singles :
Winner : T. J. Cherian — Runner Up : K. Maruthamuthu

Mrs. Dass Bros. Cup for Badminton Doubles :
Winners : M. P. Bharathan and K. N. Narayanan Nair — Runners Up : P. P. Krishnan Nair and C. G. Kumaran.

Carrom :
Winner : A. Naraynaswami Pillai — Runner Up : V. P. Nair

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G.I.P. NEWS

LOCOMOTIVE OPERATION

An event of outstanding importance is the receipt by the G. I. P. Railway of 21 "WG" locomotives from the United Kingdom out of a total of 40 locomotives of this class allotted to the Railway. These locomotives have been assigned to the Bhusaval Division where difficult working conditions are met with and are employed on working goods trains with medium loads. Except for some minor teething troubles, these locomotives have given satisfactory service.

The improvement effected in locomotive usage in 1949-50 as compared to 1948-49 a year immediately following the partition of the Country was maintained during 1950-51. The engine miles per engine day in use on all services in 1950-51 was 130, same as the figure in 1949-50.

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DISTRIBUTION

The year 1950-51 marked the beginning of a period during which large scale rehabilitation measures were proposed to be undertaken for both Traction overhead and sub-station equipment. The overhead and sub-station equipment particularly in the Bombay suburban area was commissioned in 1925-26 and is now due renovation.

Mention may be made of the renewal of the high tension 22 KV Switchgear equipment at the Thana, Wadi Bandar and Kurla sub-stations and replacements of 22 KV oil circuit breakers by air-blast circuit breakers of Messrs. Brown Boveri (the first equipment of its kind) to be erected in this country. A number of items of overhead equipment such as contact wire, insulators, bird guards etc. is also being rehabilitated on a programmed basis subject to availability of material.

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RECONDITIONING OF RAILS

The reconditioning of rails consists of cropping the rail ends and providing new fishplates, which results in giving a new lease of life to a rail, which would otherwise have to be condemned on account of battered rail tables and worn fishing planes. Worn crossings are being reconditioned by Oxy-acetylene welding and this has effected considerable economy on replacements with new standard types of layouts.

Portable petrol driven rail saws and rail drills continue to be heavily used in cropping ends of battered rails and rendering them fit for re-use on relayings. Work is nearing completion in connection with the installation of a Flash Butt Welding Plant to undertake the welding of rails. It is expected that trial welds will be made by about the middle of 1951 and after satisfactorily completing these trials, it is intended to operate this plant on a production basis.

* * * * * * * * *

INSTALLATION OF WATER SOFTENING PLANTS

To assess the economic advantages of using treated and softened water for boiler feeds, Water Softening Plants have been installed on the GIP Railway, Poona-Raichur Section, a length of 323 miles on the South East Line, at a cost of about Rs. 7,10,000. The work has been completed at almost all the watering stations. The "Lime Soda" type of plant has been installed at some stations and the "Base Exchange" type at others. At one plant, boiler feed water is dosed with tannin and soda ash through a bypass chemical feeder. The effects of using treated water for boiler feed as well as the cost of working the plants are being carefully observed. On the basis of these results, it will be decided whether to extend water softening to other sections of the Railway.

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WHAT THE PUBLIC SAY ABOUT THE PROPOSED RAILWAY STRIKE?

At a meeting of the Mayavaram Railway Passengers' Association, a resolution was passed criticising the decision of the All-India Railwaymen's Federation to launch a rail workers' strike on August 27. It was stated that the proposed strike was *unjustifiable* and *unreasonable* in the present circumstances in the country.

At a meeting of the Coimbatore Podunala Sangam, Mr. P. Jaya Ramarathinam, President, presiding, a resolution was passed appealing to Railway Workers to give up the proposal to go on strike, in view of the present shortage of yarn and food. *The meeting appreciated the measures taken by the India Government to meet the threatened strike and offered its co-operation and support to the Government.*

A meeting of the Central Executive Committee of the M. & S. M. Railway Running Staff Association was held recently at Madras, when the Association decided not to participate in the general strike in the Railways, if it materialised.

At the General body meeting of the S. I. Railway Station Masters' Council Sri V. Subramaniam, M. P., President in the chair, a resolution was passed stating that the Council dissociated itself from the proposal of the All-India Railwaymen's Federation to resort to strike and paralyse transport at this critical juncture in the history of the country and urging all rail-

Hon'ble Sri N. Gopalaswamy Iyengar, Minister for States and Transport, replying to a speech made by the President of the Indian Railways Accounts Officers' Association at a Tea Party held in his honour by the Members of Indian Railways Accounts Service at the 'TAJ', Bombay.

Hon'ble Sri N. Gopalaswamy Iyengar, inaugurating the conference of the F. A. and C. A. Os. of Indian Railways held in Bombay on 14th July 1951.

Hon'ble Sri N. Gopalaswamy Iyengar, inaugurating the Conference of the F. A. and C. A. Os. of Indian Railways held in Bombay on 14th July 1951.

Mr. A. K. Chanda, Financial Commissioner for Railways speaking during the Conference of the F. A. & C. A. Os. of Indian Railways held in Bombay on 14—7—51.

Southern Railway News Letter

By G. Moorthy

LAST month I Wrote that the integration is working to schedule. The public will be glad to hear that our General Manager, to whom the interests of the travelling public are more paramount, has reconstituted the Advisory Committees to suit the integration. In the future set up there will be three Local Advisory Committees, one at Trichinopoly, another at Madras and the third at Mysore at the three regional Head Quarters on the basis of the existing standard constitution. These Committees would ordinarily meet at the Head Quarters of each region as often as necessary subject to a minimum of four meetings in a year. Once a year or more often if considered desirable a joint meeting of all the three Local Advisory Committees would be held at Madras. The reconstitution of the Committees on this basis would be undertaken with immediate effect and it is expected that the new Committees would start functioning by October 1st 1951. This proposal is in accordance with the undertaking given by Hon'ble Minister Sri N. Gopalaswamy Iyengar at the inauguration ceremony who stated *inter alia:* "A consultative council manned by knowledgeable persons at the Zonal Head Quarters federating a number of branches at district and regional Head Quarters and meeting twice or thrice a year should be of immense value in making recommendations to the administration in respect of matters brought to their notice from time to time by railway users in general and in submitting an annual report to the Minister in charge of Railways." It is up to the public represented by their Chambers of Commerce, Passenger Associations and other bodies to come forward and cooperate with the Railway Administration in making the Railway Transport efficient and productive. It is for these organisations to name in the Committees *knowledgeable persons* so that they may be of real service, to the people. The Administration on the other hand should place before the members precise datas vis-a-vis the capacity of the Railway to undertake passenger amenities suggested by members. At present there is no dearth for suggestions from members and travelling public. Every day hundreds of letters are written by the public suggesting to the Administration to provide covered ways at stations, increased accommodation for third class passengers, better sanitary arrangements, provision of upper class waiting halls, supply of cool drinking water and so on. Apart from this alteration in timings and other numerous suggestions are being made. But these suggestions are not either co-ordinated or effectively tackled. The Traffic Department consisting of the operating and commercial branches are the brain power of a Railway Administration. An Engineer may lay a rail road, construct a building while a mechanical or power Engineer may provide power but it is the Traffic Superintendent, who is to say when the power is required and how to lay a rail siding and what should be the lay out. *In short the sine-quo-non of a Traffic Officer is to take correct decisions at the right movement.*

It is most unfortunate that in the organisational set up of these departments, they inherited a legacy from the Ex-Company Managements which paid the least heed to public demands. Added to this, there is a Finance Department who have no *Technical experience* to adjudge the proposals put forward by these departments.

Thus if regrouping is to be a success and if it is to command the support of the latest users of Railway, a liaison between the people and the Railway should be maintained. How this is to be done is an organisational matter to be decided by the Traffic and Operating heads. But every one patriotically interested in the success of the re-grouping, must come forward and give his co-operation to the present Operating

Major S. R. Sharma,
our C.O.P.S.

Head who is a pride of our nation and can stand most favourably to the best Railway Administrators of England and America. It is stated in para 36 and 37 page 17 of the Memorandum on the formation of the Southern Zone published by the Railway Board :—" In order to ensure efficient administrative control in the three regions, deputy heads of departments of the three major departments, viz., Operating, Mechanical and Civil Engineering, will be posted at the regional centres. The deputy heads will be individually responsible to their respective heads of departments. The Operating deputy, who will be responsible for both commercial work and general operation in the region, will be entitled to demand such assistance from other deputies as would enable him to discharge his responsibilities.

The regional deputies, vested with adequate *financial* and *other powers* are expected to deal expeditiously and effectively with most of the work arising in the region. The delegation of enhanced powers, commensurate with the responsibilities is expected to lead to more efficient and quicker disposal of the work in the region. This would relieve heads of departments from the large volume of work now referred to Head Quarters and thus free them for more intensive inspection work and for concentrating on major problems of policy ".

By 18th of this month the three regions viz., Trichinopoly, Madras and Mysore would have been formed and the following Officers have been posted as Regional Deputies :

Mr. K. Basheer Ahmed, B.A.B.L. — Trichinopoly Region.
Mr. M. C. Sivasankar — Madras Region.
Mr. B. T. Singh — Mysore Region.

It is hoped that the financial and other powers mentioned by the Railway Board would be settled soon and the Deputies will function effectively. But the greatest single weakness of the Traffic Department is the want of proper men at the secretariat level. Any organisation worth the name either in Head Office or at the region should have a proper Secretariat manned by intelligent and patriotic Officers and staff and only if good material is obtained to man these posts. We can hope to achieve some success. The Head Office

Secretariat should plan co-ordinate and initiate moves and check up results while the Regional Secretariat should execute them. *It is gratifying to note that in the new set up, the operating and commercial heads are men of organising talents but it is doubtful if they will be allowed to have their say to pick up the right man for the right job breaking through the wooden barrier of the Finance department* and *out-moded Personnel Branch machinery in the General Manager's Office.* The integration is an organisational problem for the whole nation and the Southern Railway is a laboratory from which results are to be broadcast. In the matter of actual operation we have to take the experience of our friends in England. Mr. A. K. Ashbury writing on Railway's Role in National Life and Faster Freight services to ensure Industrial efficiency said :—

Mr. L. D. Robson,
Our Controller of Stores.

" It is in the sphere of actual control and operation, however, that the greatest opportunities for improvement are being taken. Railwaymen are becoming increasingly alive to the possiblity of a completely united Railway transport system and a beginning has been made, for instance on the re-routing of goods traffic, sending it on to new and shorter routes which cut across the boundaries of the old companies. Traffic 'flows' too, have been merged, so that loads can be sent in bigger and plus more economical " blocks " than formerly.

" Another interesting aspect of the work of control is what is known as time census. At frequent intervals every station checks the time taken in transit by every wagon received during the day. This data is summarised and sent on to the Railway Executive where a nation-wide summary is prepared. This census quickly shows where and how any delay occurs, and how best they may be avoided."

To sum up the integration will be a success or failure on the machinery created to implement the Railway Board's directive. But this battle that is being fought everywhere and we can expect the Southern Railway can hope to give a lead to all India in this direction.

Trust not those who are unworthy of credence. Do not repose unbounded faith even in the trustworthy, lest they might bring about your ruin and overthrow by betraying it.—GARUDA PURANA.

Our London Letter

By a Correspondent

A story has come to light about a huge piece of coal. It is situated in a park at Tredegar, in Monmouthshire, Wales.

It is so large that it is placed on a special wooden platform, on wheels, and has a sloping, corrugated roof to protect it from wind and rain. One hundred years ago this piece of coal was intended for the Great Exhibition of 1851 but nobody had thought how it was to have been taken there. It weighed nearly ten tons and the Railway was not capable with dealing with such loads in those early days. So it was left in the park at Tredegar and it is there today. Another piece of coal, but not so large, is being sent from the same mining town of Tredegar to the South Bank Exhibition of the Festival of Britain.

Quite a number of small branch lines have been closed down by the Railway Executive on the grounds that they are not remunerative. The last train to run on the Crab and Winkle line was packed and this was considered to be a record for the fifty seven years of the Railway's existence. The little train stopped at all the five halts where the villagers gave it an affectionate farewell. The Railway runs from Kelvedon, Essex, to the fishing village of Tollesbury.

A novel system of transport has been devised by Messrs. J. Brockhurst & Co. of England. This is known as the Uniline system and the oil engine locomotive and trucks run on pnuematic tyres. A three foot concrete track is used and there is a centre guiding rail. The vehicles are fitted underneath with steel rollers on vertical axes set on both sides of the rail, the clearance between rollers and rail being about $\frac{1}{8}$th of an inch. All the weight of the train is carried on the pnuematic tyres and there is no vertical loading on the guide rail.

Among the advantages claimed for the Uniline system are greater tractive effort with substantially reduced static axle loads compared with the conventional light railway, superior hill climbing capabilities and better braking. Although the rolling resistance is somewhat higher than that of railway vehicles, the curve resistance is claimed to be much lower. The weight of steel used in Uniline track is about 16 tons per mile compared with more than 60 tons per mile for light railways using 35 lbs. rails. It is pointed out that the Uniline system has not been designed to compete with existing road or rail transport but is intended to provide a link in areas where the conventional systems are not ideally suitable.

The Indian State Railways Annual Dinner was held last month in London. Intended as a reunion for past and present officers on India and Pakistan there is always a record attendance this year 171 being present. Sir Leonard Wilson was in the chair and the principal speakers were Mr. W. G. W. Reid, General Manager of the Madras and Southern Maharatta Railway and Mr. W. A. Hewitt, General Manager of the North Western Railway. Mr. Hewitt, who was returning to duty in Pakistan, gave some interesting facts and figures about Pakistan Railways including the decision to turn over to diesel electric traction as new locomotive stock was acquired.

On the Malayan Railways revenue from passenger traffic is increasing in spite of the difficult working due to terrorist activity. Amongst other rehabilitation schemes consequent upon Japanese occupation the Crown Agents for the Colonies have placed orders for a large supply of new rolling stock. These will comprise air conditioned passenger coaches for day and night travel and also air conditioned buffet cars.

On the 27th May a memorial plaque to John Aiton Kay, Editor of the *Railway Gazette* from 1910 until his death in July 1949, was unveiled and dedicated in St. Martin's Garrison Church, Longmoor, England. The ceremony took place as part of a parade service for Railway units of Supplementary Reserve who were in camp at the week end. The unveiling was performed by Mr. George Rollason, Deputy Chairman and Managing Director of Tothill Press Ltd. and who had been closely associated with Mr. Kay for over forty years. The service was conducted by the Assistant Chaplain General.

In the May issue of this journal mention was made that the Great Hall of Euston Station was to be repainted. This has now been completed and it is to the colour scheme proposed by its designer P. C. Hardwick, 105 years ago. The flat portion of the coffered ceiling is in light blue, the remainder of the ceiling and the walls in shades of cream and the column shafts, which Hardwick intended to be marbled to represent red granite, are in Tuscan red with gilt capitals and bases. As a result of the renovation work, the sculptured panels around the Great Hall, which represent various cities and towns served from Euston, can now be seen clearly.

The German Federal Railways have placed 70 light railbuses in service. These buses seat 60 passengers on an empty weight of about 13 tons. Although the engine is only 110 b.h.p. they have proved capable of hauling a special light trailer car up a 1 in 35 grade. Hitherto the use of buses fitted with tyred wheels for running on Railway tracks has not been very extensive.

The major works carried out in the early days of Britain's Railways were so durable that today they need little more than strengthening to cope with present day traffic and loads. A major task just about to be undertaken is the rebuilding of Woodhead tunnel. This will replace the existing obsolete twin single line bores of 1839—52 which were driven under the Pennine Range. The pilot tunnel for the new work has just been completed. The new tunnel has been associated with but not actually occasioned by, the electrification of the Manchester-Sheffield-Wath lines of the former L. N. E. R. initiated before the war. Only the heavy maintenance costs of the present tunnels and heavy traffic, consisting largely of South Yorkshire coal for industrial Lancashire, for which no adequate alternative route exists, could justify the capital expenditure during a period of financial stringency. The contrast with a century ago is great. Not only will the speed of work be high due to the use of modern tools but there will be a difference in the living accommodation and amenities for workmen. The new tunnel is scheduled to take three years to complete. The original tunnels took six years and five years respectively.

Mr. John Elliot, the Chairman of the Railway Executive, has just returned to England after an extensive tour of the Railways of the U.S.A. He informed a Press Conference that apple pie, as

(Continued on next page bottom)

"The History of Railways"

By Mr. E. B. Smart, Asst. Secretary to General Manager, O. T. Railway

ONE of the great inventions is the steam-engine which was the final outcome of endless efforts through centuries of trails and experiments, the records of which have been lost. Each new inventor had to develop his own line of research *ab initio* instead of being able to commence where others had left off, for the information passed on by word of mouth was frequently inaccurate and few were able to possess the hand written books to learn from the earlier experiments. It is, however, interesting to know that the first developments of which we have any knowledge should have occurred in the East, the seat of civilisation, two thousand years ago, where Hero invented a very crude turbine. Nothing is known of its potentialities; nor it was utilised to perform any work.

The real successful development reached some 300 years ago when in 1655 A. D. the Marquis of Worcester whilst a prisoner in the Tower of London was sitting one cold night in a small room and watching a kettle of water boiling over the fire. He sat watching the steam which was lifting the lid of the kettle and rushing out of the spout. He thought of the power of the steam, and wondered what would be the effect if he were to fastenen down the lid of the kettle and block the spout. He came to think that the effect of this action would be to burst the kettle. "How much power, then, there must be in the steam" he thought. As soon as he was let out of prison he made a trial of the force of steam. He wrote, "I have taken a cannon and filled it three-quarters full of water, stopping firmly up both the touch-hole and the mouth; and having made a good fire under it, within 24 hours it burst and made a great crack in the cannon." After this experiment, the Marquis formed a machine which, by the power of steam, forced up water to a height of forty feet. This was followed by the invention of a "fire-engine" in 1698 by an army engineer named Captain Savery for use in the mines, but its lifting-power was poor. In 1705 another model was produced by Newcomen in which steam from the boiler forced a piston upwards until, the cylinder being cooled by cold water, the piston descended again by reason of the agencies of its own weight d of atmospheric pressure. The gine proved very effective for mping.

Another most important disvery was made accidentally by a y named Humphery Potter, who s engaged to open the taps adtting steam and water alterely to the cylinder. In order relieve him of this monotonous sk, Potter tied the taps to a am connecting the piston and e pump, thus allowing the gine to open and close the taps its own accord.

Again another accidental disvery was made by a little boy ho lived in Scotland and whose me was James Watt. One y he sat looking at kettle of boiling water and holdg a spoon before the steam that shed out of the spout. His aunt ought he was idle and said, "Is not a shame for you to waste our time so?" But the boy was ot idle; he was thinking of the ower of steam. After an undistguished school career, he found n instrument-maker who was illing to give him a year's insuction, and after completing his ontract, he procured a room with the Glasgow University and rned his living by making uadrants, musical instruments, tc., and by repairing the Univerty's scientific apparatus. In 759, Watt undertook to repair he Newcomen model-engine beonging to the University. He ound that the loss of efficiency vas due to the alternate cooling nd reheating of the cylinder in he process of condensation, and lesigned a special condensing hamber, separate from the ylinder, in order to obviate the ecessity of using water to keep he piston airtight. The cylinder vas operated entirely by direct team pressure. He then set himelf the task of constructing a ull-size engine and until the end of the eighteenth century monopolished the construction of steam-engines. It will, therefore, be seen that James Watt grew to be a good and a great man, and made those wonderful improvements in the steam-engine which have made it so useful in our day. From so small a beginning as the steam of a tea-kettle came the steam-engine which drives the railway trains of to-day with such pulling power and speed.

The advantage of a firm and even road for carriages led to the laying of stones and wood tracks, and later to the laying of iron rails—the wheels of the carriage being flanged on the inside to keep them on the track. Special tracks had been built for horse-drawn wagons and had been in use since the early seventeenth century, but first steam engine to run on a *railway* was constructed in 1804 by Richard Trevithick to replace horses on the tramway. In 1808, a circular track was installed by him in London, on which a locomotive weighing 8 tons ran at 12 miles an hour with passengers behind it. Since a small fee was payable for this privilege of travelling, this had the distinction of being *the first passenger-carrying railway in the world.* Hedly's "Puffing Billy" however, was the first successful steam-locomotive patented in 1813, and was worked in a colliery at Northumberland, England.

The credit for bringing the locomotive through its early "teething" stages goes to George Stephenson. He was the first to overcome the difficulty of keeping a sufficient 'head-of-steam' in the locomotive; he built his first engine in 1814 to run on the plateways and was capable of drawing 30 tons at 4 miles an hour. He ran an 8-ton engine at 15 miles an hour on the Stockton and Darlington mineral line in 1825 when the Stockton and Darlington Railway

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served in American refreshment cars, was decidedly superior to its British counterpart. No doubt there will now be an all round improvement in the tariff provided by the hotels department of the Railway Executive!

On May 14 the Talyllyn Railway was reopened. A crowd at Towyn Wharf cheered when the tape was cut to mark the reopening of the world's oldest steam hauled narrow gauge passenger line. Introduced by Mr. Edward Thomas, a Director of the newly formed Talyllyn Railway preservation Society, who has been connected with the little line for 54 years, Mr. M. G. Trinder of Banbury, on behalf of the Society, said that the line had been running practically continuously since 1865 and it was hoped to run a full service after June. The Railway is 7 miles long of 2 ft. 3 ins. gauge, has two locos, 4 carriages, and 90 wagons.

was opened on the 27th September, 1825. The Liverpool-Manchester Railway was completed in 1829. On October 8, 1829 the "Rocket" which was designed by Stephenson ran in the Rainhill trials along with several locomotives, for which a prize of £500 was offerd by the Directors, and was successful in hauling 12¾ tons at an average speed of 13·8 miles hour and running light at 29 miles an hour. The Stephensons won the prize of £500. The first passenger railway (carrying goods also) was run on 15th September, 1830. THE RAILWAY ERA HAD COMMENCED.

Now the first railway line opened for traffic in India was a section 22 miles of Bombay-Kalyan line in April 1853. Two other lines opened after this were Calcutta to Raniganj (120 miles), and Madras to Arkonam (39 miles). The Secretary of State for India provided free land to the Railway Companies, and also guaranteed an interest of 4½ or 5 per cent on capital invested. The Railways were to be held by the Companies on leases for 99 years, but provision was made enabling government to purchase the lines after 25 or 50 years on receiving in return their capital at par. The construction of Railways was, therefore, left to Private Companies with borrowed funds on which the Government of India guaranteed the interest. The Government next tried to construct and operate railways as a State concern but were unable to raise sufficient capital. In 1870, therefore, they returned to the 'Guarantee System' with a lower rate of interest and with closer Government supervision of construction and running. The right to terminate the contracts of guaranteed companies began to be widely exercised by Government, beginning with the East Indian Railway in 1879. With the introduction of the 'purchase system' Government introduced the principle of Company Management of State owned lines. Thus, as soon as the E. I. Railway was purchased it was entrusted to the Railway Company itself under a new agreement for its management. This procedure was adopted later in respect of several other lines, including the S. I. Railway in 1890 and the G. I. P. Railway in 1900. The system of 'Company Management' was, however, objected to by the Indian public opinion on various grounds. The main terms, therefore, of the Acworth Railway Committee in 1920 for decision was "State *vs.* Company Management;" and it decided that the system of management by a Board of Directors in London should not be extended beyond the terms of existing contract. The Indian Legislative Assembly in 1923 passed a resolution in favour of 'State Management.' So, from 1925, almost all the Railway lines have gradually come within State Management. Already Government now owns more than 95 per cent of the railway systems. Since then the State has invariably exercised this option, so that the system has gradually passed into the possession of the State. The companies are paid in terminable annuities, so that eventually the Railways become the outright property of the State.

It will be seen that the first Railway in India was constructed about 100 years ago. Now, over 80% of goods and 70% of passenger traffic is carried by rail and today the Railways constitute the biggest nationalised industry in the country.

And in other countries of the world—at the beginning of World War I in 1914, there was invested in the World's Railways over Rs. 60,12,00,00,000 (Sixty Arabs and 12 Crores *i. e.*, £ 9,250,000,000), Europe accounting for about half the total capital, and the United Kingdom for over £ 1,300,000,000. The railways in Europe represent an investment of 22,950 *per mile* against the rest of rhe world which average £ 11,402 *per mile*. The then total railway mileage of the world was about 720,000 miles, *i. e.* the U. S. A. leading with 267,000 miles, Russia 46,000 miles, Germany 39,000 miles, India 38,000 miles, France 31,000 miles, Australia 23,000, Austria-Hungary 28,000 miles, the United Kingdom 23,400 miles, Canada 20,750 miles, Argentine 20,000 miles. Mexico 16,000 miles, Brazil 14,000 miles. Italy 11,000 miles, Japan 7,500 miles and Switzerland 3,500 miles. (The straightest railway in the world is in Australia where 330 miles of railway line run *in a perfectly direct and straight line across the* Nullabor.)

The above is only a very brief and cursory survey of the progress made by the Railways in the world. And still more progress is being made.

In so far as the Railways in India are concerned a matter of tremendous significance is the question of the regrouping of Railways. This has been under the consideration of Government for a considerable period and which has been necessitated, *inter alia*, on account of the taking over the working of the Railways in States by the Government from 1st April, 1950.

A tentative plan, which envisages six administrative units has been drawn up, and a memorandum on the regrouping of Railways together with a map showing the proposed zones has been sent to the State Governments, the various Chambers of Commerce, the Railway labour Organisations and the public with the request that their considered views may be sent to the Railway Board. The Government of India's decision is awaited with keen anxiety and interest.

OTHER IMPORTANT RAILWAYS IN INDIA

BENGAL AND ASSAM RAILWAY SYSTEM:—The date of registration of the late "Eastern Bengal Guaranteed Railway" was 1857. The lines owned by this guaranteed company were acquired by the State on the 1st July, 1884, with which the: "Northern Bengal State" and the "Calcutta and South-Eastern" Railways were amalgamated for working the State as one undertaking under the new name of the "Eastern Bengal Railway."

The "Bengal Dooars Railway" System, which was constructed for opening out the Western Dooars and for the development of the Tea Industry, was amalgamated with the Eastern Bengal Railway System with effect from the 1st January, 1941.

The construction of the "Assam-Bengal Railway" as a State line was sanctioned in May 1891. The Assam Bengal Railway Company was formed in England in April 1892 and took over the works commenced by the State. The late "Noakhali (Bengal) Railway which was worked by the Assam-Bengal Railway Company up to the end of 1905, was purchased by the Government and amalgamated with the Assam-Bengal Railway from the 1st January, 1906.

The Assam-Bengal Railway was acquired by the State from the late Company and was amalgamated with the Eastern Bengal Railway with effect from the 1st January, 1942 under the name of the "Bengal and Assam Railway."

Changes of far reaching consequence took place as a result of the partition of India from 15th August, 1947, and the creation of the Dominions of Pakistan, and the Union of India. With effect from

15th August, 1947, the late Bengal Assam Railway was divided into the Pakistan and India sections.

The India Section consisted of the B. G. Section South of Chandmari, and was attached to the E. I. Railway; the portion of the Western M. G. Section falling outside the Pakistan area, and was attached to the O. T. Railway (but transferred to the newly constituted Assam Railway on and from 1st February, 1950); and the remaining portion of the M. G. Sections of the late B. A. Railway falling within the Union of India were re-designated as the "Assam Railway."

A very important outcome of the result of the partition was the construction of the "Assam Rail Link Project" of 142 miles in length traversing across the natural drainage channels of the Himalayas. This project became one of national strategic importance on account of the partition to provide direct rail access through Assam to Indian territory. The project was estimated to take at least three working seasons to complete it. Yet the work progressed so well that by the 9th December, 1949 the "link" was ready to carry through goods traffic and the line was opened to passenger traffic on the day when India was proclaimed a Republic under the new constitution, viz., on 26th January, 1950.

BENGAL-NAGPUR RAILWAY SYSTEM:— The "Bengal-Nagpur Railway Company" was formed in 1887 and took over the "Nagpur-Chattisgarh State Railway" and constructed other lines, embracing in all a system of Railways known as the "Bengal-Nagpur Railway.

The Railway was taken over by the State in October, 1944.

BOMBAY, BARODA AND CENTRAL INDIA RAILWAY SYSTEM:— The property vested in the old "Bombay, Baroda and Central India Guaranteed Railway Company" was purchased by the State on the 31st December, 1905 from which date all contracts, then subsisting between the Secretary of State and that Company, were determined as from the 1st January, 1906. The Railway was worked by the reconstituted "Bombay, Baroda and Central India Railway Company" up to 31st December, 1941 when all contracts, then subsisting between the Secretary of State and the Company, were determined and the line was brought under State Management with effect from the 1st January, 1942.

EAST INDIAN RAILWAY SYSTEM:—The property owned by the old guaranteed "East Indian Railway Company" which was purchased by the State in 1879, was worked by a reconstituted Company to the end of 1924 when all the contracts, then subsisting between the Secretary of State and the Company, were determined and the line was brought under direct State Management with effect from the 1st January 1925.

The "Oudh and Rohilkhand Railway" was acquired by the State from the late Guaranteed Company on the 1st January, 1889, and this Railway was amalgamated with the "East Indian Railway" with effect from the 1st July, 1925.

As a result of the partitioning of India from 15th August, 1947, the late B. A. Railway was divided into Pakistan and India Sections. The broad-gauge section south of Chandmari was constituted into a separate division, and was attached to the East Indian Railway as "Sealdah Division."

GREAT INDIAN PENINSULA RAILWAY SYSTEM:— The "Great Indian Peninsula Railway" comprises the line formerly owned by the old Guaranteed Company of that name in amalgamation with that of the late "Indian Midland Railway Company."

The property owned by the old guaranteed "Great Indian Peninsula Railway Company" was purchased by the State in 1900 and the contract between the Secretary of State and the Indian Midland Railway Company, dated the 22nd October, 1885, was determined by the Secretary of State on the 31st December, 1910. The amalgamated lines formed part of the Great Indian Peninsula Railway Company undertaking which was worked by the reconstituted "Great Indian Peninsula Railway" up to 30th June, 1925 when all the contracts then subsisting between the Secretary of State and the Company were determined and the line was brought under State Management with effect from the 1st July, 1925.

MADRAS AND SOUTHERN MAHRATTA RAILWAY SYSTEM:—The contract of the former "Madras Guaranteed Railway Company" having expired on the 31st December, 1907 the lines owned by that Company were purchased by the Secretary of State for India, and on the 1st January, 1908 the then existing Madras Railway (with the exception of the Jalarpet-Mangalore section) together with the 3'—3⅜" gauge section of the "South Indian Railway" from Katpadi to Gudur and Pakala to Dharmavaram, was made over to the "Southern Mahratta Railway Company" for working, the enlarged Company being styled the "Madras and Southern Mahratta Railway Company."

In addition to the lines now comprised in the system, the Company, up to the 30th September, 1919, worked the lines Birur to Shimoga, Mysore to Nanjangudi and Mysore to Bangalore all of which were made over to the Mysore Durbar on the 1st October, 1919.

The "Bangalore-Harihar" and "Hindpur-Yesvantpur" Railways worked by the Company were transferred to the "Mysore State Railway" with effect from 1st January, 1938.

The "Bezwada-Masulipatam Branch Line" which was the property of the "District Board of Kistna" was purchased by the Government on the 4th February, 1938 and is worked as an integral part of the M. and S. M. Railway (Metre Gauge).

The existing contract with the Madras and Southern Mahratta Railway Co., Ltd. was terminated, and the M. and S. M. Railway was brought under the management of the Government of India on and from 1st April, 1944.

NORTH WESTERN RAILWAY SYSTEM:—The old "Sind, Punjab and Delhi Guaranteed Railway Company" was registered in 1855, and was taken over by the Stage from the 1st January, 1886. It was then amalgamated with the "Punjab Northern the Indus Valley, the Eastern Section Sind-Sagar" and the "Southern Section Sind-Pishin State Railways," and had worked ever since as one undertaking under the name of the "North Western Railway."

As a result of the partition of India from 15th August, 1947, the then North Western Railway was divided into two sections, i. e., the Pakistan and the India sections. The Pakistan section was allowed to retain its old name as "North Western Railway (Pakistan)" and the India section was redesignated as the "Eastern Punjab Railway."

SOUTH INDIAN RAILWAY SYSTEM:—The lines formerly owned

(Continued on next page bottom)

Railway Accounting—Its Scope and Purpose

By "Argus"

ACCOUNTING is "the science which treats of the systematic record, compilation and presentation, in a comprehensive manner, of the financial operations of a business organization for administrative purposes."

Book-keeping, which records the financial operations, is described as "the art, method, or practice of recording business transactions distinctly and systematically in blank books provided for the purpose, so as to show the goods and moneys received, disposed of, and on hand, the credits given, and the assets, liabilities, and general status of the business."

Science is knowledge gained and verified by exact observation and correct thinking. It is based on certain fundamental laws and includes an exact knowledge of facts, causes, and results and the relationship between them.

Art is the method followed to obtain an end. It is a system of rules devised to obtain a practical result.

The science of accounting gives a picture of the financial position of a business at any time or financial results for any particular period. It enables one to know the financial position of any particular transaction and the

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and worked by the "Great Southern Indian and Carnatic Railway Companies" were amalgamated on the 1st 7uly, 1874 under the title of the "South Indian Railway" which on the 1st January, 1891 was purchased by the State and handed over together with the "Villupuram Guntakal State Railway," for working as one undertaking, to a new Company—the "South Indian Railway Company." The portion of the Railway from Dharmavaram to Guntakal was made over to the former "Southern Mahratta Railway" in 1893.

With effect from the 1st January, 1908 the Jalarpet-Mangalore section of the former Madras Railway including the "Tirupattur-Krishnagiri, Morarpur-Dharmapuri and the Nilgiri Railway" was incorporated in the undertaking of the South Indian Railway Company who, from the same date, relinquished and made over to the amalgamated "Madras and Southern Mahratta Railway Company." The 3'-3⅜" gauge lines from Katpadi to Dharmavaram, and from Pakala to Gudur obtained running powers over the Madras-Bangalore section of the Madras and Southern Mahratta Railway. The "Shoranur-Cochin Indian State Line" was on the same date, also transferred from the former Madras Railway Company to the South Indian Railway Company for working. The Tirupattur-Krishnagiri and Morarpur-Hosur Narrow Gauge lines were dismantled on 1st August, 1941 and 1st November, 1941 respectively.

Note : The South Indian Railway Company's Principal contract was terminated on 31s March, 1944 in advance of the date of first option, viz., 31st December, 1945 and the working of the South Indian Railway was taken over by the Governmen of India on and from 1st April, 1944.

results obtained from that transaction in the form of profit or loss. This is possible because of the laws and principles that have been evolved by practical experience, observation and correct analysis. Certain fundamental laws must be followed to achieve the purpose of accounting. These laws are known as the principles of accountancy.

Professor H. C. Adams has stated that "accounting is a process of reasoning and, as such, is subject to the strict rules of formal logic. The language which the accountant makes use of is the language of figures. His underlying conception is that of Mathematical equation. For this reason, the responsibilities of an accountant demand an exactness in classification and definition equal to that which is required in any field of scientific enquiry."

The art of book-keeping—the keeping of books and records according to a systematic plan—is one of the means by which accounting can achieve its purpose. The following of certain rules and methods in the keeping of books is necessary to show the financial results, or position of any business.

Proper book-keeping is a part of accounting as it is the basis of accounting. The work of an accountant commences after the book keeper has recorded the facts and balanced the accounts. The accountant takes the figures, analyses them, classifies them and presents them in a form to be used as a guide in the management and regulation of the business.

Accounting as an art is in a constant process of evolution because of ever changing conditions that surround the business. This brings about the changes in classifications, forms, accounts and the procedure adopted. The basic principles do not change except to the extent that new laws are discovered and old principles expanded.

For instance, the principle of debit and credit and the classification of accounts is a part of the science of accounting. These principles are unchangeable as used in any business. The method of indicating debit and credit, the contents of the accounts the procedure followed in collecting the figures, and presenting the accounts are part of the art of accounting because these change constantly and are not uniform even in the same business, each Company using its own methods.

Railway accounting may be defined as "the recording, presentation, and analysis in a systematic manner of the financial and operating transactions of a Railroad Company for investment, administration, operation and regulation purposes."

Railway book-keeping methods, otherwise known as the Railway accounting procedure, are the methods and rules followed in recording the revenues received, expenditure incurred, the costs of services, the profit and loss and the general financial position of the carrier.

The purpose of Railway accounting is (1) to furnish information regarding the credit required aud given, the financing of the company and the investment in the property of the carrier; (2) to collect and tabulate the data required for railway management including the formulation of plans and policies, the utilisation of Capital and current funds and supervision of the operations of the carrier; (3) to furnish the costs, both of the physical plants and of the transportation production and service; (4) to safeguard the assets of the

carrier by helping in the elimination of waste and pointing out instances of efficiency and inefficiency; (5) to show the condition of the business, the physical and financial position of any operation; (6) to supply the data as to the position of any financial or contractual relationship; and (7) to provide the means for adequate budgeting and accurate forecasting.

II

DIFFERENCE BETWEEN RAILWAY ACCOUNTING AND COMMERCIAL ACCOUNTING.

Fundamentally there is not much difference between Railway accounting and commercial accounting. But in its scope, in its procedure, and its accounting organization Railway Accounting differs largely from commercial accounting. These differences may be stated briefly.

1. Railway accounting procedure is more involved and extensive because of the nature of the business transactions, the wide extent of the territory over which they focus and the number of individual items handled. These factors show why Railway Accounting is complicated and require the use of more forms, accounts, symbols and more wider supervision than a commercial concern doing business at one place or through a few agents.

Railway revenue is spent for different purposes—for wages, purchase of materials, rents and taxes, and for a number of miscellaneous purposes. So the expenses should also be carefully accounted. The wide extent of a Railway's operations prevent that close supervision, personal contact and association that is common in an industrial or a manufacturing concern.

(Continued on next page bottom)

2. The initial records are entirely different from commercial accounting. This is particularly true of revenue and expenditure accounting. Goods revenue is based on the invoice and passenger revenue on some form of ticket. The industrial field has no counterpart to the accounting process and records necessary to audit and collect the figures shown on these documents. The consolidation of these figures requires forms and records peculiar to the Railway business because of the detailed classification of revenue and expenditure.

3. Railway accounting and procedure is more uniform than that of any groups of related industries because of the uniform system of accounts prescribed by the Railway Board.

4. The system of accounts prescribed is more definite and exact and much more rigid than any system of commercial accounting. The Railway Accountant has to know more accounting rules and follow them more rigidly than the commercial accountant.

5. The scope of Railway Accounting is much wider than commercial accounting. In a commercial concern accounting is mainly for the use of the owner and to a lesser extent for the purpose of management. Railway Accounting is widely used by administrative, operational and regulating agencies as well as by the investors.

Railway Accounting includes operating and traffic statistics as well as financial accounts. These statistics relate not only to the finance, but to its production in the form of passengers carried, goods handled, to the physical units of the property and to the personal units relating to the hours worked. The primary

Signalling and Safety Devices

By C. A. White, Chief Signal Engineer, Southern Rly.

IN the early days there was no signalling as trains were very slow and infrequent, and the safety of a train depended entirely on the watchfulness of the driver. It was not long before it was found that some protection over and above the driver's vigilance was necessary, and on British Railways a man called a policeman was given the job of hand-signalling the driver. This again was found inadequate as traffic developed, because the policeman could not be in more than one place at the same time, and therefore it was necessary to install some apparatus which would exhibit a danger signal to the driver whether the policeman was there or not. After many changes and variations of signals, the semaphore signal which is familiar to all travellers in India became the standard. This signal was originally placed convenient to the policeman, now-a-days called the signalman, but it was soon found necessary to place it in rear of the station or obstruction it was protecting. As track arrangements became more complicated and more signals were required, it was found impossible for one man to control these signals which led to their being connected up by wire to levers in a central place. At the same time as the signalling apparatus was developing, necessity arose to protect trains between stations Originally trains were so infrequent that the likelihood of one overtaking another was very

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function of a Railway Accounting Department is the compilation of traffic and operating statistics.

6. The Railway Accounting Departments are larger due partly to the size of the industry, partly to the complexity and requirements of the business and partly to the demands of the regulating bodies.

7. The relationship between carriers is closer from an accounting stand-point than that of commercial concerns. A commercial concern usually works as a single unit while the carrier, very often, works jointly with others. This may consist in the joint working of a station or joint use of a track. Combined revenue is a major source of a carrier's income.

Commercial concerns do not share their revenues with others in the same way as a carrier does in apportioning the revenue on through traffic transactions among other carriers participating in the haul.

In the joint use of the rolling stock, in the joint share of certain expenditures, such as claim payments, Railway Accounting includes many features that are not found in commercial accounting.

In no industry has greater care and thought been given to scientific accounting than in the Railway business.

Three primary causes account for these differences.

1. The great size of the Railways, the extent of their operations, the nature of their product-transportation—and the vast number of individual transactions to be recorded and accounted for.

2. The effect of government regulation on the carrier's accounts and activities.

3. The existence of joint accounts, operations, and agreements between carriers.

remote, but as the frequency and speed increased, so the likelihood of collisions increased and in order to protect a train from a following train, the following train was not allowed to leave the station until a certain interval of time had elapsed after the departure of the first train. This time interval system was unsafe as it did not cater for a breakdown of a train between stations, but the advent of the electric telegraph rendered it possible to introduce the space system which is used practically universally on the Railways in India. This space system is worked on the principle that a train is not permitted to leave the area controlled by a signalman, called a block post until the preceding train has arrived at the next block post, and this principle holds good in every system of signalling, except that, with modern automatic signalling, the space interval is from signal to signal and not from signalman to signalman so that several trains can be admitted on to a line between stations without risk of one overtaking another.

Another important aspect which arose in the early days of Railway development was that there was no protection against a signalman, through inadvertence, clearing two signals permitting conflicting movements or clearing a signal without the points being properly set, and this has given rise to what we call interlocking which in ordinary mechanical signalling is carried out between levers in such a way that the lever for a particular signal cannot be operated to clear the signal unless the levers controlling conflicting signals and the point levers are set in their correct position. With modern signalling and interlocking installations this interlocking is worked by electricity.

We have therefore two separate but interlinked functions to control the movement of trains, one—the signals and interlocking to protect any train from being fouled by another train, and, two—the block instrument, of in some cases the tract circuit, to prevent trains from overtaking each other, or on single lines meeting each other.

The method of working trains, therefore, is as follows: Imagine a train runs from Station A to Station B. Before the train can leave Station A, the signalman has to offer it by means of the Block Telegraph to Station B. The signalman at B, provided the line is clear for a certain definite distance, normally ¼ mile past his first stop signal, accepts the train and operates his block instrument which will be indicated to the signalman at A, who then clears his signal. As soon as the train leaves, he replaces the signal to danger, and sends a message to the signalman at B that the train has left his Station. The signalman at B, provided the line is clear up to the next signal or up to the Station and a certain definite distance beyond it, clears his signals for the reception of the train. As soon as the train arrives he replaces his signals and informs the signalman at A through the block telegraph that the train has arrived complete and restores his block instrument to normal, ready to deal with the next train.

There are various refinements on the block instruments which it is possible to install, but naturally they all cost money and take time. The original block was merely a block instrument with indicators and had no direct connection with the signals. As experience was gained it was found that more safeguards were necessary, as signalmen, sometimes due to rush, were liable to forget to follow the prescribed procedure, and it is now possible to make the block instrument control the signal permitting

entry into a section and make it impossible for the signalman at the receiving end to release his block instrument to accept another train before the first train has arrived. It is also possible to arrange that the signalman at B must return his signals to the danger position before it is possible for him to accept a following train. All these extra safeguards are used on the S. I. R.

The foregoing is the normal procedure on double lines, but on single lines we use what is called a token instrument. The block operations are very similar to those on double lines but in this case the signalman at B releases a token from the instrument at A which may consist of key, a ball, a tablet or a staff which is labelled with the section to which it applies, and this token is handed over by the signalman at A to the driver. The driver is not allowed to proceed into a section between block posts unless he is in possession of the correct token. The extraction of the token by the signalman at A locks up the instruments at both ends in such a way that no other token can be extracted and both instruments remain locked up until such time as the token already extracted has been returned to either one of them. This prevents more than one train being in one section at the same time so that collisions caused by one train overtaking another or two trains meeting in a section are impossible unless a driver is negligent enough to proceed into the section without a token. Where token instruments are used, departure signals are not always used, but with a non-token instrument a departure signal is indispensable as that is the only means of telling the driver whether he can proceed or not.

On the S. I. R. there are two systems of signalling, one known as the two aspect which has been in existence for very many years, and the other multiple aspect. Multiple aspect signalling using colour light signals was installed originally on the Madras Suburban area in 1931 and, with the advent of a more highly developed means of transmitting energy mechanically, it has been possible to extend this system on to the main line using semaphore signals. Colour light signals are out of the question usually due to the lack of an electric power supply, and are very expensive. The system of two aspect signalling consists of semaphore or colour light signals which have two aspects, danger and clear, but the disadvantage of this system is that a driver comes on a danger aspect without being previously warned and therefore is more liable to overrun it. In Multiple aspect signalling the driver invariably receives warning of a danger aspect sufficiently far back to enable him to pull up comfortably before passing the danger aspect, so that the safety afforded by the multiple aspect signalling system is very much greater than that afforded by the two aspect system. Another disadvantage with two aspect signalling is that it is unsuitable for fast and frequent suburban traffic, and therefore it is not possible to have one standard system throughout the Railway. Eventually therefore two aspect signalling will give place entirely to multiple aspect. When multiple aspect signalling covers the whole Railway which naturally will take many years, there will be one standard system throughout, which is calculated to simplify things for the operating staff.

The most elaborate and safest signalling, which is in use on the S. I. Railway electrified lines Madras and on certain lines in Bombay, is that known as automatic signalling. The essential feature of this kind of signalling is that the signals are controlled directly by the trains and it is

impossible for a signal to show a proceed indication when there is a train between that signal and the next irrespective of what the signalman if there is one, does. This is accomplished by a piece of apparatus known as the track circuit which consists of a relay or multiple-contact switch operated by an electro-magnet, the power supply for this magnet being fed through the rails of the track. Normally the electric current is fed from the supply point at one end of the section on to the rails, each rail taking the place of a wire in the circuit and the relay is connected to the far end. When the train comes on to that section, the current is short-circuited through the axles of the train so that the relay becomes de-energized, opens its contacts and puts the signal to danger. The advent of the tract circuit permits the working of signals automatically which achieves greater rapidity of operation and very much safer signalling. Manual control can be imposed on the signals, or even on the tract circuits, if so required, but, as mentioned previously, instead of trains being worked from signalman to signalman, they are worked from signal to signal, and even where more than one signal on the route is controlled by the same signalman, the block still remains from signal to signal. There are various supplementary uses to which tract circuits can be put, for instance, where there are points, the circuits are so arranged that when a driver has accepted a clear signal, the route cannot be changed until he has passed over it. This is done by providing a lock on the lever controlling the signal which, although it leaves the lever free enough to put the signal to danger if emergency requires it, prevents it from being put right back to its normal position, so that the lever inter-locking is not released. Sometimes a more complicated circuit is used so that as soon as the driver passes the signal, the lever can be put back, but another set of circuits holds the route in front of the train and at the same time releases the points in turn as soon as the train has cleared each one. Track circuits are also used for level crossing warnings so that the gateman receives automatically a warning when the train gets to a certain point, and once he has closed the level crossing and cleared the signals he cannot open it again until the train has passed it. Track circuits can also be used for various other purposes such as operating train description apparatus or the graph record on the controller's desk, but these refinements are not in use on the S. I. R., as they are very expensive and the nature of traffic in Madras scarcely warrants it at present. This system has been applied on several isolated junctions on the S. I. Railway, and it is likely that it will be more extensively used in the future. Unfortunately track circuits require the rails to be insulated from one another which implies timber sleepers and most tracks in this country are laid on steel owing to scarcity of timber in India. This is the greatest hinderance to the development of track circuiting because, even if available, the present cost of timber is so great that any large proposal has little chance of survival, unless the density of traffic is so great that it cannot be worked through on manual block.

(By courtesy of All India Radio, Trichinopoly)

Virtue forces her way, and shines through the obscurity of a retired life: and sooner or later, it is rewarded.—LORD CHESTERFIELD

Automatic Lubrication of Mechanical Signals

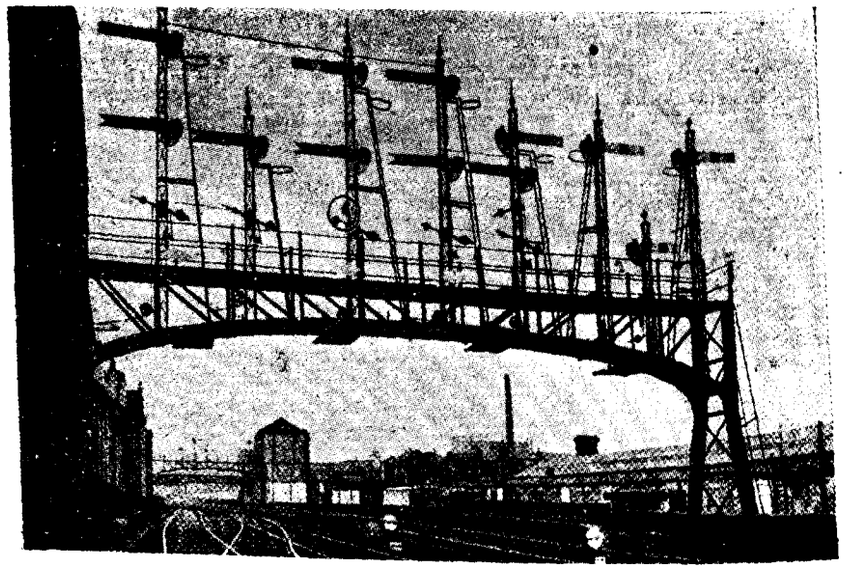
By A. Muir

The problems associated with the lubrication of Railway signalling equipment are of a complex nature and merit close study in their solution.

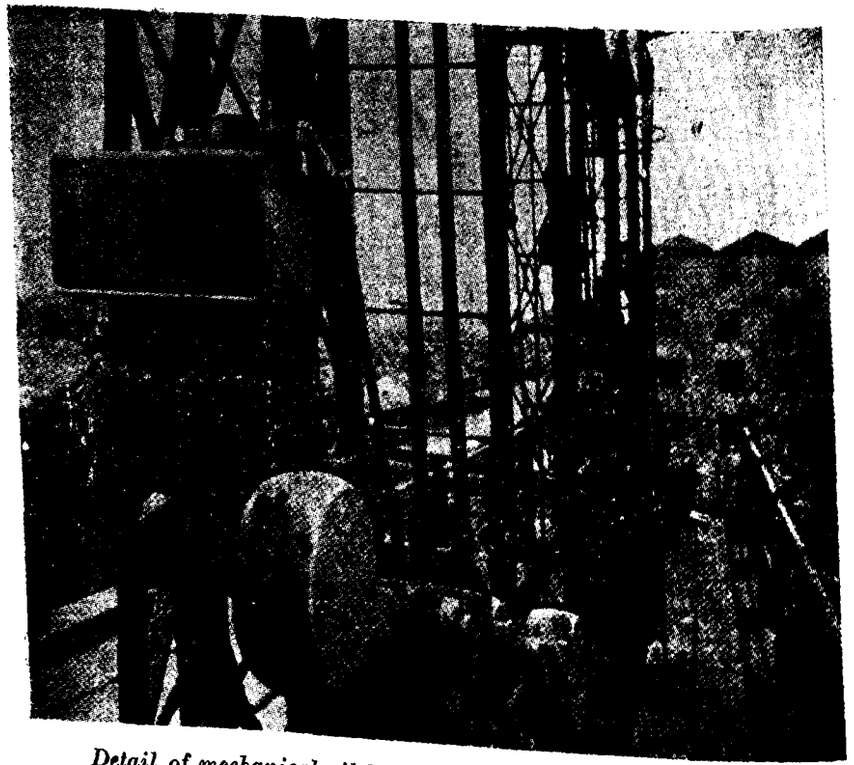
IT will be appreciated that the number of bearing points in wire wheels and point rod cranks between a signal box and the ultimate bearing point on semaphore signals is numerous, and unless these bearings are properly lubricated much wear and tear of pins and bushes can take place. However, it must be clearly understood that systematic inspections of signalling equipment must be ensured, and that this is the duty of the maintenance man.

The illustration shown on the reverse page is of bridge signals situated on the main line at Bridge Street, Glasgow, and it is interesting to note that 55 lubrication points are automatically lubricated from a central point by means of a mechanical oil pump, actuated by a lever linked to the balance lever on one of the signals.

A main pipe line is run from the pump along the side of the gangway. From this main pipe line, distribution pipes are run up the various signal lattice frames being then branched to each of the signal bearings which are fitted with meter valves to allow of a



Bridge Signals over main line, Bridge Street, Glasgow. Note the mechanical lubricator



Detail of mechanical oil lubricator mounted on one of the signal lattice frames

calibrated quantity of oil only to be passed in a given time.

Every time the signalman pulls the lever of the particular signal on which the pump is mounted, a definite quantity of oil is discharged into the system (in this case, approximately 200 operations per 24 hours).

The advantages of this system are at once apparent when it is noted that less than 2 pints of oil is required over a period of two weeks and that also the entire system is insulated against the ingress of foreign and abrasive substances. All bearings therefore automatically receive a regular quantity of oil, and the danger of overlooklng any of them is eliminated. The time factor is also another important feature as, apart from filling the oil reservoir at a scheduled time and routine inspection, no further attention is required.

Attention has also been given to the effective lubrication of all intermediate point and crank bearings from the signal box to the bridge signal, and these are fitted with Hydraulic grease nipples.

To enable large numbers of nipples to be serviced in a comparatively short time, and avoid undue loss of time due to continual re-filling of great guns, the Knapsack Compressor (which has a lubricant capacity of 11 lbs.) has been adopted for this purpose.

Thus is further proof given of the ability of Tecalemit equipment to provide for every type of lubrication requirement.

Mercury Arc Rectifiers in Australian Rail Electrification Scheme

By Charles Lynch

THE Gippsland Railway Line in the Australian State of Victoria which is to be electrified in 1953 has aroused considerable technical interest in overseas countries, as it is believed to be the first mainland railway in the world to use 1,500-volt direct current electricity through pumpless steel tank mercury arc rectifiers.

The line is to be electrified from Melbourne to Traralgon, a distance of 97 miles but it is expected that trains will run from Melbourne to Warragul, a distance of 65 miles, several months before the completion of the whole section.

Electrical energy will be supplied by the State Electricity Commission, and at each of four supply points on the route, transmission lines will run to supply traction sub-stations with alternating current at a pressure of 22 kilowatts, 3 phase, 50 cycles.

The Victorian Ministry of Transport has planned for 16 traction sub-stations (6 double unit and 10 single unit) where the alternating current, at 22 kilowatts, will be converted to direct current at 1,500 volts. This will be fed to the overhead contact wire system via high-speed circuit breakers.

The mercury arc rectifiers will be some of the first in the world to be used for such a Railway line. Before their use, rotary converters and motor generating sets generally were used to convert alternating current to direct. One of the advantages of the mercury arc rectifiers is their light weight and small size, compared with the rotary converters. One of these 1,500 kilowatt units will occupy a space of about 30 square feet, and will weigh about 30 cwt. A rotary converter of a similar capacity would take up at least 200 square feet, and would weigh about 34 tons.

The 1,500-volt overhead contact wire system will be sectionalised at sub-stations, and in some cases at intermediate points between sub-stations where tie-stations will be installed. It is planed to have 12 tie-stations, in which high-speed circuit breakers of the same type as used in the sub-stations will be provided. These circuit breakers operate at sufficiently high speed to clear the overhead circuit they feed, in the event of fault, before any appreciable damage can be done.

All the sub-stations and the stations will be unattended and the equipment in them will be automatic. The equipment will be under the control and supervision of a power operations engineering located in a central depot which is to be erected at Warragul.

Each sub-station and tie station will be connected to the power operations room by means of two telephone wires through which supervisory equipment will be operated.

In the power operations room there will be a control desk and control diagram. Small red and green lamps in the diagram will indicate the condition of all rectifiers and circuit breakers to be controlled or supervised. Keys on the control desk will enable the power operations engineer to open or close any of the circuit breakers or rectifiers on the system.

Initially the power operations engineer will have control of 22 rectifiers, 71 high-speed circuit breakers and 22 high tension feeder oil-circuit breakers.

Telephone facilities will also be provided between the power operations room and all sub-stations and tie stations.

(Continued on next page bottom)

Track Maintenance

By M. Sundararajan, B.E., A.M.I.E., (Ind.)

Dy. Chief Engineer, Southern Railway

ACCIDENTS on Railways are reported in the papers and in certain instance the details of the enquiry conducted by the Senior Government Inspector of Railways are also published. But the public do not know much about the elaborate precautions taken by the Railways to ensure safe travel and about the latest methods and developments in regard to the various aspects on railway working.

Accidents to passenger trains are, in many instances caused by defects in the Engine and rolling stock, signalling and interlocking arrangements and in the permanent way or, by a combination of causes. Elaborate arrangements are made by the Railway to maintain the permanent way so as to ensure the maximum safety in Railway travel.

The permanent way track consists of rails with fastenings laid over wooden, steel or other sleepers which in turn are laid over a firm bed of good granite gravel, sand or other ballast. The efficiency of the track depends to a very large extent on the ballast which must be capable of draining the rain water without causing stagnation in any portion. The ballast should also be clean and should be kept in a loose condition without becoming caked up, as otherwise the track does not stay resilient.

Modern conditions demand faster travel and naturally heavier class of engines with increased power have come into existence necessitating a very high standard of efficiency in regard to maintenance of the track. Heavier class of engines require heavy sections of rails, closer spacing of sleepers and special methods to prevent the movement of the rails over the sleepers by the provision of anti-creep chairs, creep stoppers and other special devices. The length of the rails varies considerably and longer the length of the rails the greater is the travelling comfort. Short lengths of rails are welded together at site as it will be inconvenient to roll very long length of rails and also transport them.

With rails of lengths 36, 39 and 42 feet which are at present in use, expansion gaps varying from a quarter to three eighth of an inch are allowed depending upon the variations of temperature in the localities. Due to the tractive force of the engine and the vehicles the expansion gaps tend to close up in certain places and increase in other places. The hammer blow effect of the driving wheels of the engines in places where the gap is wide causes the ends of the rails to be hogged resulting in the top table of the rails not being in a uniform level. Hogged joints cause great discomfort to passengers and the removal of hogged joints is one of

the important problems for Railway Engineers. Hogging of rails is avoided in many cases by closer spacing of sleepers at the joints by the provision of special joint sleepers and also by welding top surface of the worn out ends of rails. Due to the side thrust of the wheels of locomotives and vehicles the sides of rails particularly in sharp curves are worn out to a considerable extent. With a view to minimise this side wear of rails, the sides of rails are lubricated by manual labour or by special Mechanical lubricators which are fixed to the rails and are operated by the glanges of the wheels of vehicles passing over them.

Wooden sleepers are usually very resilient and afford greater travelling comfort. The life of the sleepers is, however, limited and is less than that of steel or cast iron sleepers. Steel and cast iron sleepers are therefore preferred in view of their long life and maintenance. All sleepers and fastenings are regularly inspected and renewals carried out to ensure a safe track.

In regard to ballast, cleaning of the ballast is essential at intervals which depends upon the nature of the ballast and the condition of traffic. It is usual to screen the dirty ballast and re-use the same by manual labour only, but on certain Railways on the continent, special mechanical appliances are used which greatly facilitate the removal, screening and re-insertion of the ballast.

The main items of work in regard to track maintenance are :—

Maintaining the top table of the rails truly level.

Keeping correct alignment on straight portions and on curves.

Maintaining proper gauge and cross levels.

The top table of the rails is maintained truly level by constant attention by the gangs by packing the sleepers up with the ballast. Mechanical contrivances are in use in other countries which greatly facilitates and speeds up the work. The levelling of the top surface may be done by using sight boards but is commonly carried out by the eye. The maintenance of the correct alignment on straight portions of the track is usually carried out by slewing the track wherever required ; the alignment being judged by the eye. In the case of curves, however, special reference pillars are provided on the side walk at suitable intervals at a fixed distance from the running face of the rail. This enables the gangs to check up the alignment at frequent intervals and maintain the correct alignment by slewing the portions where they are out.

On straight roads the gauge or the distance between running edges of the mails is kept slightly tight to ensure steady running. The gauge does not remain fixed but varies due to the lateral thrust of the wheels of the engines and vehicles passing over the rails at high speed. In the case of wooden sleepers the tendency for the widening of the gauge is more than on steel or cast iron sleepers. Even with the steel sleepers, the gauge is likely to vary due to wear and tear of the fastenings and also due to the widening of the jaws of the steel sleepers. The maintenance of the proper gauge may necessitate the renewal of the fastenings or even the renewal of the sleepers in certain cases. On curves an extra allowance is given to the gauge depending on the degree of curvature subject to a maximum limit based on the maximum speed of trains so as not to cause undue lateral movement and consequent discomfort to passengers.

On curves the outer rail is usually kept raised above the level of the inner rails to compensate

for the centrifugal force, and with a view to distribute the load of the train equally over the two track rails. The extent to which the outer rail is raised is called the 'Super-elevation' of the curve. The ends of the curves are provided with transition curves so that the super-elevation may be increased at a uniform rate till the maximum for the curve is reached with a view to avoid discomfort to passengers while entering the curve from the straight track. The provision of transition curve and maintaining correct super-elevation at the prescribed rate is one of the essential duties of the maintenance gangs.

The permanent way track by virtue of its construction requires regular and systematic examination and maintenance to ensure safe travel. The arrangements made for this purpose on the various Railways are very elaborate and extensive precautionary measures are also taken to ensure safety. The maintenance gangs form the nucleus for the maintenance organisation and these gangs are the back-bone of the Railway. The gangs usually consist of (1 mate, 1 keyman and 7 or) more men depending on the number of trains per day, nature of formation, number of points and crossings and various other items of work involved. Each gang is, generally in charge of 4 miles and all maintenance works in that length are attended to by the gang. The main items of works are :—

To maintain the top surface of the track without dips or slacks,

To maintain proper gauge and cross levels,

Attend to renewal of rails, sleepers and fastenings,

Clearing weeds and keeping ballast clean,

Pulling back rails and adjusting creep.

The gangs are assisted by extra labour for works which cannot be easily attended to when the renewal of rails and sleepers is excessive or when the new ballast had to be inserted.

The keyman of the gang walks over his entire length every morning and also in the evening examining all fastenings and tightening or rectifying any loose parts. So as to facilitate free expansion of the rails due to variations of temperature, it is necessary to remove the fish plates and oil them as also bolts and nuts annually or at least once in two years. This work is usually carried out by the keyman of the gangs on a systematic basis. If changing and oiling of fishplates is not carried out properly, there is likelihood of the buckling of rails which might in certain cases lead to accidents.

The work of the gangs is supervised by Assistant or Sub-Inspectors who are in charge of 15 to 20 miles gang lenths. These Assistant or Sub-Inspectors are expected to walk over the gang lengths working with each gang for some time and instruct them as to what they should do and ensure that they attend to the works properly. These Assistant Inspectors cover their lengths by foot systematically every week and thereby carry out a close inspection of the track regularly. The Assistant or Sub-Inspectors are under P. W. Inspectors who are in charge of 35 to 45 miles. These Permanent Way Inspectors are provided with push trollies and are expected to inspect their entire length twice every week and inspect the work of the gangs. The gangs work on regular and systematic basis according to the works detailed in a gang chart and the charts are maintained in the custody of the Assistant or Sub-Inspectors. These charts are checked by the Permanent Way Inspectors and also by the Engineers to ensure the works allotted to the gangs are regularly carried out. An Assistant Engineer is in charge of a Sub-Division of 150 to 200 miles and has generally four Permanent Way Inspectors under him. They are expected to inspect the entire sub-division by trolly once every month. The District Engineers who have a jurisdiction of 300 to 400 miles are expected to inspect the track by inspection carriages and by push trolly or motor trolly and normally cover their jurisdiction once in about 3 months. It will thus be seen that a very careful and systematic inspection and maintenance of the track is carried out to ensure safety. Over and above all these, the Chief Engineer of the Railway also inspects by train carriages or motor and push trolly as often as conditions permit. In addition to all these the Government Inspectors inspect the Railways under their charge once every 2 years or 3 years with a view to ensure that the maintenance of the track is up to the standard required and also satisfy themselves that all safety precautions are taken to avoid accidents.

During monsoon periods when the track is likely to be washed away by rains, thereby causing interruption to traffic every portion of the track in the entire length of the system is watched by special men posted for the purpose at nights. These are called 'Night patrolmen.' The night patrolmen walk between stations obtaining the signature of the Station Masters regarding the time of arrival and departure. Thereby a good check is had on their movements to ensure that they actually patrol the line. Permanent Way Inspectors and Assistant Engineers have also to carry out surprise inspections by trolly at night to check if the night patrol is carried out properly.

In regard to the steel work in bridges, very detailed and systematic examination is carried out by Bridge Inspectors specially appointed for the purpose. The rivet connections are specially examined and the condition of the steel work is also noted very particularly. Action is taken on these inspection reports to renew the corroded rivets and carry out repairs by welding of the steelwork in the pitted portions. To prevent corrosion, the entire steelwork is painted on a systematic basis once in four years but patch painting of corroded parts is also done to suit actual conditions.

To assist the Engineers and Inspectors correctly to gauge the condition of the track in regard to alignment, cross levels and gauge, a special mechanical contrivance called Hallade Track Recorder is used. The Hallade Track Recorder is a small compact machine which is placed on the floor of a special carriage which is attached to a fast moving train for purpose of conducting tests over the various portions of the Railway. A special Assistant Inspector is in charge of this Hallade Track Recorder and the track Recorder Coach is attached to trains on the various sections on a programme so that the entire system is covered twice a year. Copies of the charts taken by this instrument are sent out to the Permanent Way Inspectors to enable them to take action on the points as noted in the chart. The Track Recorder charts show actually the mileages which are bumpy or where there is too much of oscillation and also places where the super-elevation is incorrect. Inspectors carefully study these charts and give detailed instructions to the gangs through the Assistant or Sub-Inspectors so that all the portions are attended to as early as possible.

(By courtesy of "All India Radio," Trichinopoly)

British Standard Locomotive

By Saroj B. Biswas

BRITISH Railways with a route mileage of 22,000 possess at present 19,000 Locomotives of 400 types. The maintenance and repair works of such numerous varieties present a task which is very often racking and expensive as well. The diverse spare parts are not often available easily. To achieve economy, simplicity and uniformity in repair and maintenance, the British Railway Executive decided upon standardization of the motive power. With the object of embodying the maximum ease of access for repair and servicing, economy of coal consumption and high degree of inter-changeability of parts, the Railway Executive studied with thoroughness the best locomotive practices of the six Regions of the British Railway. Prior to preparing any design of the Standard Engines, there were intensive inter-regional trials which established and confirmed that on British Railways there existed no Geographical limitation to the use of any particular type of engine and for operational purpose like signalling, strength of the track and soil etc. There prevailed uniformity in all the six Regions. So the standardization of the locomotive was fixed upon and the British Railway Executive in place of the existing 400 types of locomotives evolved the designs of 12 Standard Types for all classes of traffic. The designs are as follows :—

1.	Type	7,	4-6-2		mixed	traffic	20½ tons.	Axle Load.
2.	,,	6,	4-6-2		,,	,,	18½ ,,	,,
3.	Class	5,	4-6-0		,,	,,	19 ,,	,,
4.	,,	4,	4-6-0		,,	,,	17 ,,	,,
5.	,,	4,	2-6-4	(tank)	,,	,,	18 ,,	,,
6.	,,	3,	2-6-2	,,	,,	,,	16¼ ,,	,,
7.	,,	4,	2-6-2		,,	,,	16¾ ,,	,,
8.	,,	3,	2-6-0		,,	,,	16 ,,	,,
9.	,,	2,	2-6-0		,,	,,	13 ,,	,,
10.	,,	2,	2-6-0	(tank)	,,	,,	13 ,,	,,
11.	Heavy Express Passenger						22½ ,,	,,
12.	Heavy Freight						17 ,,	,,

The last two types viz., Heavy Express Passenger and Heavy Freight will not be required for sometime to come as the existing P_1 and P_2 2-8-2 and W_1 4-6-4, engines suffice to meet the traffic requirements regionally.

Those ten types (Nos. 1—10) will be built at the Railway workshops at Derby, Crewe, Swindon and Brighton. On 30-1-51 Rt. Hon'ble Alfred Barnes, the Transport Minister, performed at Marylebone the Christening ceremony of the First of the British Standard Engine of Class 7 which has been fittingly named "Britannia." In 1951, 159 British Standard Locomotives of the First Six Classes designed by Mr. R. A. Riddles, Member for Mechanical and Electrical Engineering, British Railway Executive, will be constructed of which 25 locomotives of the type 7 "Britannia" 4-6-2 are to be built and all at Crewe. The type 7 engine is meant for Fast Passenger and Freight Services worked at present by such types, Southern Region "West Country" 4-6-2 weighing 87·1 ton, Eastern Region V_2 2-6-2 weighing 93 tons 2 Cwts., Western Region "Castle" Class 4-6-0 and L. M. R. Class 6 P 4-6-0 weighing respectively 81 and 86 tons (in all cases the weight of the Engine in working order is noted). The boiler of the type 7 Engine is of normal design with rivetted joints and the shell is of high tensile carbon manganese steel. The boiler barrel consists of 2 rings; the second one is tapered and forms a true cone. The outside diameter of the second ring is 5′9″ at the front and 6′5½″ at the fire-box end. There are 40 flue tubes, and 136 small tubes and the length between the tube plates is 17′. A Malesco centrifugal drier in the steam dome separates the water from the steam prior to entering the steam pipe, thereby increasing its dryness before the steam enters the super-heater. The boiler is fed with water through 2 separate clack valves on two inclined trays which deflect water round the inside of the barrel clear of the tubes. A Belpaire fire-box with a wide grate area is fitted. The steel wrapper plate is ½″ thick and the inner fire-box is fitted with ⅝″ thick wrapper plate. The fire-box is 57′ long outside and its width tapers from 7′ 8″ at the front to 7′ 4″ at the back. The boiler and the fire-box are insulated with fibre glass mattresses. The rocking grate comprises 12 rocking sections, 6 (six, on each side of the centre line. The smoke-box which is self-cleaning is cylindrical resting on fabricated saddle. The main frames are of 1¼″ thick plates with spacings of 3′ 2½″—the centre line coincides with the centre of the axle-box guide faces.

A single draw-bar transmits the tractive effort to the tender through rubber springs. Further the "Engine" is equipped with Timken cannon-boxes on bogie and driving axles and with Timken outside journal axle-boxes on the trailing truck and tender axles. The engine and the tender springs are laminated with plates of carbon steel secured to the spring buckles by a vertical centre rivet. The slide bars are of 3-bar type with under-hung cross-head. Lubrication of motion pins is by grease gun and nipples as is done in our W. P. engine. The piston-head incorporates a bronze spring-loaded slipper which carries the head clear of the cylinder barrel liner and assists in distributing wear evenly in the cylinder liner. All the boiler fittings and pipes are isolated from the main frames to avoid differential expansion and possible fracture. The steam and water controls for both injectors are worked from the Fire-man's side of the engine. The leading dimensions are furnished below; —

1.	Height of the engine from the rail level to the top of the Chimney	13′1½″
2.	Maximum width of the engine	8′8¾″
3.	Wheel base of the engine	35′9″
4.	Wheel base coupled	14′0″
5.	Engine and tender wheel base	58′3″
6.	Length over buffers	68′9″
7.	Weight of the engine in working order	94 tons.
8.	Weight of the tender in working order	47 tons 4 Cwt.
9.	Total weight of the engine and tender	141 tons 4 Cwt.
10.	Coal capacity in the tender	7 tons.
11.	Water capacity in the tender	4,250 gallons.

12.	Cylinders (2) Dia. and stroke	...	... 20″×28″ stroke.
13.	Wheels coupled Dia.	...	... 6′2″
	,, ,, front truck Dia.	...	... 3′0″
	,, ,, trailing wheel Dia.	...	... 3′3½″
	,, ,, tender wheel	...	... 3′3½″
14.	Heating surface :—		
	(*a*) Tubes	...	... 2,264 sq. ft.
	(*b*) Fire-box	...	... 210 ,, ,,
	(*c*) Total evaporative	...	... 2,474 ,, ,,
15.	Super heater	...	... 718 ,, ,,
	(*a*) Total	...	... 3,192 ,, ,,
16.	Grate area	...	... 42 ,, ,,
17.	Boiler pressure	...	... 250 lbs. per sq. Inch
8.	Tractive effort @ 85% B. P.	...	... 32,150 lbs.

Though the new design does not embody any revolutionary feature but the combination of two cylinders with a wide fire-box stresses the policy of the happy blend of the mechanical simplicity with large steam producing capacity.

(With acknowledgement to the Railway Gazette, February 2, 1951 and the Railway Magazine, March, 1951.)

Miniature Railroad Models: An' American Hobby

By Bernice Bowser

Enthusiasts have formed railroad clubs throughout the United States where they exchange experiences and work on their models

In almost every large city in the United States, Railroad enthusiasts have organized into clubs and have made the building of model Railroads a popular American hobby. Little is known about model Railroading prior to 1919, although its origin seem to go back to the scale models built by locomotive firms as pilot models for full-size equipment. In that year, what was perhaps the first real model Railroad was built by John Swartzell in Washington, D. C. It had all the essentials present in the hobby today—scale locomotives and cars, scenery, structures, a double-track main line, yard, turn-table, and round-house.

Swartzell's model was far ahead of his day. Locomotive boilers and cylinder blocks were cast from aluminium, then a very costly metal, while cabs, pilots, and other fittings were of brass. The control was divided into blocks, as in modern model Railroading, and all blocks were tied together so that one person could handle the entire Railroad.

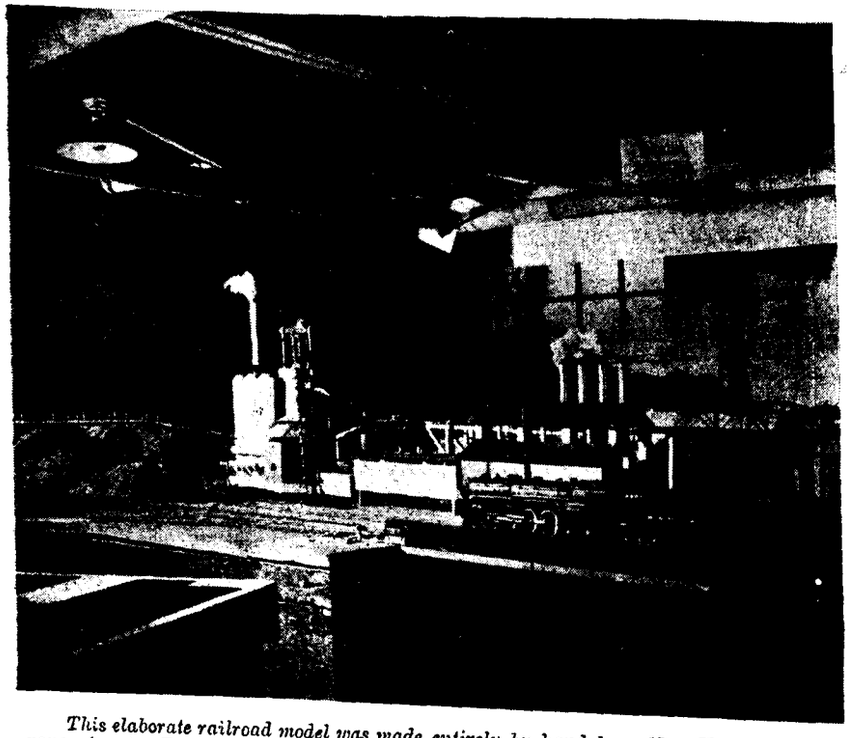
In 1924, a new age in model Railroading began. Then. two Englishmen published the first number of the Magazine, *Model-maker.* A high point was reached several years later with the first model exhibition sponsored by the New York Society of Model Engineers. Though various kinds of Railroad models were displayed, there was still little indication that this activity would become a popular hobby.

The outstanding event of the 1930's was the Chicago Century of Progress Exhibition, where model Railroad displays were a sensation. The Pennsylvania Railroad exhibit had four windows with a spring, summer, fall, and winter scene visible in each. A 4-track main line ran from window to window, and fine replicas of Pennsylvania Railroad trains ran on each track. The Chesapeake and Ohio Railway Company had a large yard with coal-handling facilities in a complex oval arrangement. After this fair, laymen began to show interest in model Railroading, and the hobby grew rapidly.

Following the fair, in January 1934, the American Model Railroad Magazine, *Model Railroader,* was published in Milwaukee, Wisconsin; and a year later, enthusiasts organized the National Model Railroad Association which helped solve such problems as the standardization of Parts. By the end of the decade, the *Model Railroader* had attracted over 13,000 readers, and hobby shops began to appear in every large American community. At the New York and San Francisco world fairs, elaborate Model Railroad exhibits—much more intricately developed than those at the Chicago fair—were displayed.

The war marked a 5-year break in the development of Model Railroading. But after hostilities had ceased, Americans returned to their normal club activities. In new York City, there are a uumber of railroad clubs, many of which pro-

A railroading hobby is fascinating for both father and son. Most American miniature railroad enthusiasts are members of hobby clubs which exist in almost every city.



This elaborate railroad model was made entirely by hand by a New York City Insurance Agent. Terrain is plastered screening, smoke plumes are cotton tufts. This model is an exhibit to the public on several occasions during the year.

vide exhibits and programs of interest to the public. One of the most interesting is the New York Society of Model Engineers. In a space 55-feet by 150 feet with a 35-foot ceiling and no columns, 7,000 feet of track, which run over rivers and rough land, are being laid. Drawbridges, car barns, a roundhouse—all the equipment of a regular railroad—are provided, in scale of $\frac{1}{4}$ inch to 1 foot. Operated from an official looking panel board, this railroad seems to do everything that a real railroad does. A practical workbench, where several men can work at one time, occupies one corner of the room.

The hundred men belonging to this club include doctors, engineers, educators, lawyers, bookkeepers, mechanics—men of all ages and interests. They work there either because they have no place at home large enough for their models or because they enjoy social contact with other men having the same interests. They come to the club from other various places of business and work at their own pace without thought of pressure. Twice a week, the public is invited in to see this Model Railroad in the making.

Although space limits of New York apartments curtail the activity of the Railroad fans, many men have devised plans which allow them to enjoy their hobby even under crowded conditions. One member of the New York Society of Model Engineers built a Model Railroad on a ping-pong table, in scale about half the size of that used in the club. It is so constructed that it can be taken apart and stored in a small space. Another New York fan displays his handmade models under the glass top of a coffee table which he designed and built.

The Model Rails Club in Chicago, Illinois, has the use of a large room, donated by the Baltimore and Ohio Railroad Company, which contains a well-organized model Railway system. In Milwaukee, Wisconsin, the model club is located in a discarded Railway Station. And so, all across the United States, Railroad model clubs are spreading pleasure in a hobby that "moves and has life."

The Williamson Library in New York City's Grand Central Station has a growing collection of more than 5,000 books, magazines, time-tables, pictures, topographical maps, and hundreds of numbers of the Official Guide, the monthly information magazine of the railroad business. Books may be borrowed by members.

There are no lukewarm Railroad enthusiasts. Whether a man covers rail history with photographs, collects tickets or maps, creates model trains, or runs a miniature railroad, he is intensely interested in his subject. Railroads open new avenues of interest and educate as they give pleasure. They are the lifeline of a nation and show her place in industry, in commerce, in international trade. Men who play with railroads are not limited in thought or vision to the article in their hands. Their inner eyes may be miles away.

(American Home)

All true remedy must begin at the heart: otherwise it will be but a mountebank cure, a false imagined conquest.—LEIGHTON.

Main-Line Diesel Locomotives for Siam

THREE 960 h. p. diesel-electric locomotives for long-distance service on the metre-gauge Siamese State Railways are now in course of delivery from the Winterthur works of Sulzer Bros. and are intended to haul main-line passenger trains from Bangkok to the Malayan frontier and return, a total distance of 1,250 miles. Grades on this line are as steep as 1 in 50, but trains are also to be operated on the 465-miles north-eastern route from Bangkok to Chienmai, where grades of 1 in 42 and 1 in 37 are encountered, but the load here is to be limited to 250 tons whereas 420 tons is the loading limit on the southern section. Throughout the Siamese Railways top speed is limited to 65 km. p. h. (40½ m. p. h.) and the axle load to 12 tons.

The design was prepared by Sulzer and that Company acted as main contractor, the mechanical portion being built by Henschel and the electrical transmission by Oerlikon to Sulzer requirements. The preliminary designs drawn up aimed at getting a low bridge loading unit which would give minimum deflection, and calculations showed that A1A-A1A wheel arrangement adopted to be preferable to certain others that were studied with the same maximum individual axle load.

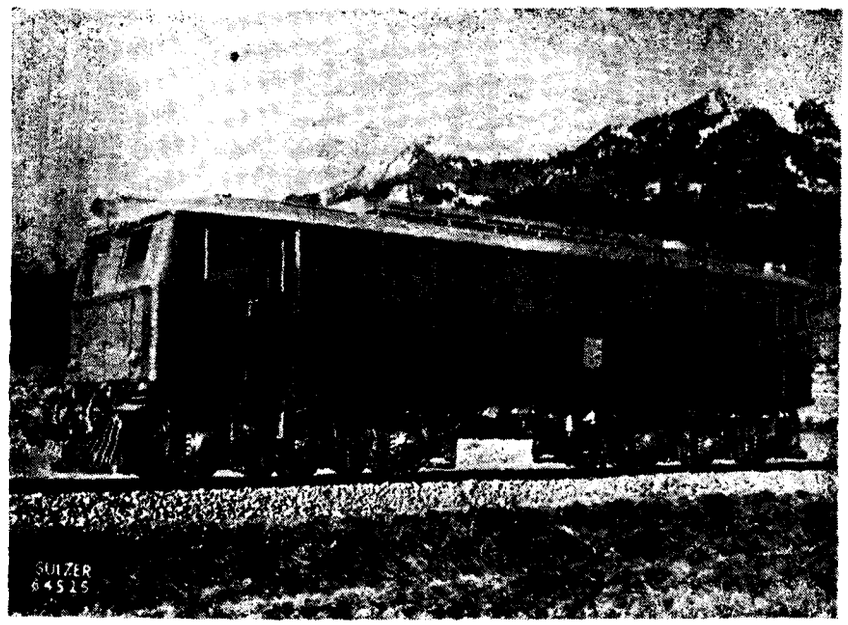
Leading characteristics of a complete locomotive are :

Empty weight	55.0 tons
Weight in full working order with 2,700 litres of fuel	59.2 tons
Minimum adhesion weight	44.6 tons
Maximum axle load	12.0 tons
Starting tractive effort	14,000 kg. (30,900 lbs.)
Tractive effort (continuous rating) ...	5,800 kg. at 31 km. p. h. (12,800 lbs. at 13¾ m. p. h)
Tractive effort (one hour rating) ...	8,000 kg. at 22 km. p. h 17,600 lbs. at 13¾ m. p. h.)
Tractive effort available at full power and speed ...	3,000 kg. at 65 km. p. h. (6,600 lbs. at 40½ m. p. h.)

Principal dimensions of the locomotive are :

Wheel dia...	914 mm. (36 in.)
Bogie wheelbase	3.00 m. (9 ft. 10 in.)
Pitch of bogie pivots	7.80 m. (25 ft. 7 in.)
Length over buffer beams ...	12.80 m. (42 ft.)
Maximum width	2.786 m. (9 ft. 2 in.)
Maximum height	3.815 m. (12 ft. 6½ in.)

A feature of these 960 b. h. p. locomotives is the degree to which constituents are standard with those of the preceding 735 b. h. p. Bo-Bo machines. The engine has eight cylinders as against six, but with the same dimensions, pistons connecting rods, main and big-end bearings, cylinder heads, valves and valve gear, fuel injection pumps and nozzles, governor and the like. The electrical control equipment details also are the same; and driving controls, wheel centres, tyres, axle boxes, springs, brake blocks and other mechanical portion details are the same in both types, and the general lines of construction are the same.



960 h. p. Sulzer main-line diesel locomotive for Siam.

The bogie frames are completely welded, and are suported on S. K. F. roller-bearing boxes through over-hung laminated springs. The springs of the outer and centre axles on each bogie are compensated on each side. Automatic vacuum brakes apply two blocks on each driving wheel through compensated rigging to the extent of about 74 per cent. of the braked weight, braking force being supplied from an independent cylinder on each bogie.

Accessibility of the engine, auxiliary and electrical equipment has been given a high order of priority; and the extraordinary amount of room inside the power-equipment compartments, found within the European loading gauge in Sulzer installations up to 2,200 h. p. per engine, has been repeated in the rather smaller dimensions of these Siamese locomotives of almost 1,000 h. p. There is ample room to work around the engine and main generator at all heights, the electrical contactor and control gear is grouped in cabinets adjacent to the vertical fuel tank, and can be inspected and adjusted in a normal standing position. Rear access to the control cabinet is gained from the cab. The main and auxiliary control equipments are in separate panels.

The oil engine is of Sulzer's pressure—charged 8LDA25 type of the type now being made at Vicker's Barrow, for Sulzer Bros. (London) Ltd., and is set to give 960 b. h. p. at 850 r. p. m. as a one-hour output and 860 b. h. p. at 800 r. p. m. as the continuous value. The cylinders are 250 mm.

by 320 mm. (9·85 in. by 12·6 in.). It is one of the special Railway range embodying the well-known Sulzer features of welded construction of cylinder block, crankcase and bed plate made up of mild and cast steel constituents and giving absolutely rigid and finely-adjustable main bearings. Despite the use of aluminium-alloy only for the forged pistons among the principal parts, the construction gives a robust engine with exceptional lateral rigidity on a dry weight of 19 lbs. per b. h. p. on the one-hour rating. Charging air is furnished by Sulzer's own exhaust-gas turbo-blower group and which is characterised by plain bearings for the shaft a feature which has given altogether better performance than the roller bearings in other types of turbo-charging groups.

On the common welded-steel sub-frame is mounted the Oerlikon main generator. It has continuous ratings of: (*a*) 800 r. p. m., 1,000 volts, 550 amp., and (*b*) 800 r. p. m. 630 volts and 860 amp.; the one-hour rating is 800 r. p. m. 497 volts, and 1,070 amp.; and maximum load is 850 r. p. m. 1,060 volts and 1,680 amp. The 33.7-kw. auxiliary generator of the over-hung type, and supplies the main generator excitation current, the motors for the cooling water pump, radiator fan, exhauster, air compressor and rotary voltage converter, and also charges the battery. Four self-ventilated nose-suspended traction motors are grouped in parallel, and the ventilating air is drawn in through special ducts leading from the driver's cabs, this arrangement ensuring clean air, free from track dust and water, and also continuous ventilation of the driving compartments.

Automatic field regulator control of the Sulzer type, permits the driving controller to influence the oil-engine governor so as to set the engine speed to certain predetermined values; and eight speed-torque loadings from 470 to 850 r. p. m. and from idling to 960 b. h. p. are provided.

Trial runs on the Rhaetian Railway were made first between Landquart and Ilanz, 42 km. (26 miles) with an average grade of 0·5 per cent. (1 in 200); and with a ruling grade of 1 in 100 for 8 km. (5 miles) curved almost throughout at 80 to 300 metres (265 to 985 ft.) and with only one short level stretch. Trailing loads up to 302 tons, made up of 16 bogie coaches, were handled, and with this load sustained speed up the 1 in 100 with curves of 80 to 300 m. (262 to 985 ft.) radius was 43 km. p. h. (26¾ m. p. h.) the engine working on its one-hour output. Further trials conducted between Landquart and Kublis, 21½ km. (13¼ miles) rising all the way at an average of 1·45 per cent. (1 in 69) and with a ruling grade of 4 per cent. (1 in 25), were with trains up to 155 tons trailing load.

The grand, and indeed only, character of truth is its capability of enduring the test of human experience, and coming unchanged out of every possible form of fair discussion.—SIR JOHN HERSCHEL.

No one is born without vices, and he is the best man who is encumbered with the least.—HORACE

Railway Side-Shows

By A Travel Agent

STRICTLY speaking, a Railway has no business to do anything apart from managing the trains and lines upon which they run.

2. But it was soon found that goods had to be brought to the Railway Stations or taken away from the Stations, which work was considered to be a bugbear by the merchant-owners, and which simply did not exist in the case of the rival forms of transport. So the Railways had to engage people to do these services. When these other people did not do the work satisfactorily, the Railways had to do the collection and delivery services themselves, with their own vans and lorries, though their customers were quite at liberty to do it for themselves. Passengers do not always want to carry all their luggage with them, and so for the passengers' convenience and to get the traffic for themselves, a railway van would call for it and deliver it at the other end. Thus, in course of time it was found necessary to cater for door-to-door traffic, as station-to-station catering did not attract traffic in full measure.

3. Very long journeys made it obligatory on the Railways to arrange for the food of the passengers en route. Thus sprang Refreshment Rooms and Restaurants at convenient intermediate Station run by caterers under contract with the Railways. Later on for one reason and another it was deemed necessary that the Railways themselves should do the catering in order to make it thoroughly satisfactory to the rail-users.

4. Passengers frequently desire to stay for the night close to the Station, especially when their business at the Station is of short duration in order that they may return to their places quick; and so Retiring Rooms at the Station and Railway Hotels came into being.

5. As in some places sheets of water intervened between long stretchesof Railway passengers they had to be ferried across by boats and steamers, to connect trains on either side of the ferry or cross-channel. Hence Railways had to possess and work their own fleet of steamers or boats.

6. At some ports ocean-going traffic had to be given several facilities both for the import goods and export goods, in the Railway's own self-interests of getting that traffic to or from inland over their own system; so much so, the Railways had to become Clearing and Forwarding Agents for the Shipping Companies.

7. At several ports so much had to be done to provide facilities and develop traffic that it has been thought best to take over or build docks.

8. Rail services in co-ordination with road services or steamer services, and in recent years with air services, it was deemed, would bring additional traffic to the Railways, besides becoming an important facility to the travelling public; and so it is not surprising if you find Railway Companies operating bus services, canal services or even air services. Of late separate bodies for this kind of business, i. e. liaison and co-ordination between the various forms of transport, are fast springing up, such as THOMAS COOK & SONS, THE TRAVELS LTD., etc. who

(Continued on next page bottom)

make all the through-booking arrangements between the different Transport Companies. Travel has been growing both in quantity and quality, and necessity has been dictating these improvements in arrangements.

9. A few Railways are running their own quarries, brick-fields and coal mines; their own printing presses, their own laundries and bakeries, their own gas works, power-house etc. There are Railway Orphanages and Hospitals too. We are already familiar with Railway Schools, Institutes, Churches, Theatre Halls, Co-operative Banks, Co-operative Stores etc. Indeed there seems to be no limit to these "side-shows," though of course many of them are intended for their own use, and not for competition with outside firms.

10. Remember here that every one of these subsidiary business taken up by the Railway Administration is to keep the main business going; *unless the main business is kept going, you and I cannot go on!*

Presenting Mr. Railwayman
"The Station Master"
by A. H. Pearson

EVERY Station on a Railway, be it a huge, incessantly busy junction or terminal humming with activity, or a small, sleepy looking, one-track roadside halt, has its Station Master. He is the Railwayman answerable for the smooth and efficient functioning of that particular Station. In this article we will leave the roadside Station Master to his peace and quietness—although he too has an important charge—and spend a little time with the Station Master of one of the larger Stations on a Railway System.

First let us take a rapid stroll around the Station, to get an idea of the jurisdiction of the Station Master. There are the platforms and Station Offices. Of the former there may be several, where many passenger trains keep coming and going, especially at junctions. Of the latter, there are the Station Master's own office, the booking offices where tickets are sold to passengers, the parcel office where luggage and parcels are booked, the goods sheds and office for goods train booking, the waiting rooms and waiting halls, the Assistant Station Master's Office from where orders are given for train and operational movements within the station and yard jurisdictions, the yard itself, on which will be seen standing long strings of wagons, and the various cabins from where yard and signalling movements are controlled. All this and more comprises the jurisdiction over which the Station Master must keep an ever-vigilant watch. And last, but not least, the staff subordinate to him—the Assistant Station Masters, guards, ticket collectors, booking, parcels and goods clerks, cabin signalmen, gunners, shunting porters, down to the men who help sweep and keep the station premises clean, whose numbers may go into four figures—these are his team, whom he must get to know fairly intimately, so that he can get the best out of them.

Now, how does the Station Master tackle his day's work. At about eight in the morning he is on

the Station, making straight for his Assistant's Office. Here the first thing he does is to check up on his yard position; what goods and coaching stock are on hand. Next he must check on his passenger train running position. He must know if the mail, express and passenger trains scheduled to stop at his station, are running on time. If detentions are occurring, he must know the reason why, so that he can take pompt action to eliminate delays at his Station.

Then he goes along to his own Office and sends for his Trains Clerk, whom he rgards as his vehicle stock barometer. The Trains Clerk is ready with all details of the daily stock position. Within a few minutes and with an expert eye, the Station Master scans the records and knows exactly how his station stands with regard to both coaching and goods stock.

Next comes a visit to the goods shed. After consulting his Goods Clerk, the Station Master makes a quick tour of the shed to ensure that the goods shed work is going on smoothly, especially with regard to the delivery and removal of inward consignments to prevent the shed becoming choked with freight. He also sees that all outward despatches are being loaded promptly into wagons, and the wagons being moved off into traffic for their onward journeys. When he is satisfied with the goods shed working, he goes back to his office for another spell of desk work.

His Head Clerk will now place before him the day's dak. First the correspondence from the divisional or district headquarters office is dealt with. The Station Master has to give his remarks on various problems of an operational or commercial nature, or perhaps some defects or irregularities have come to notice in the working, for which the explanations of the staff have to be obtained. After this has been tackled, the routine correspondence is done.

During his office hours the Station Master also has to answer innumerable telepohone queries. A call may come from one of the Officers at divisional headquarters perhaps a hundred miles away, for some information that is required urgently. The Station Master must get this information in as short a time as possible and pass it on. Then throughout the day there are people calling on him. Some passenger may have a complaint to make. The Station Master must give him a patient hearing, and then if possible give the complainant all the satisfaction possible by prompt enquiries. Merchants desiring to book goods will want to consult him on various problems, beyond the authority of his Goods Clerk to settle. So in the course of time the Station Master comes to know the local merchants, develops and maintains cordiality with them, and helps them in the despatch and receipt of their merchandise. Each day brings its different problems in his relations with the travelling and booking public, and the Station Master soon acquires a wise and judicious knowledge of human nature which helps him in his dealings with all sorts and conditions of men.

The Station Master is not an aloof god on Olympus looking down majestically on the men who must work with him. No, he must come down from those heights and get amongst those men, and know them almost as well as he would know a close friend. These men are all parts of the team working with him, and to get the best out of them he must know their strength and their weakness, their capabilities and their disabilities. The closer he gets to his men, the better team

work is done, to the good name of his Station. As he gets to know his men, they not only treat him as 'boss' from whom they must take orders, but as their help-mate. Get talking to a wise old Station Master, and he will be able to recount the innumerable times he has been a repository of his men's family troubles. And wherever possible he must offer not only lip-sympathy, but do all within his competence and power to help his staff get rid of their burdens and worries.

Besides his visits to the Office of his Assistant and his Goods Clerk, the Station Master pays almost daily visits to the ticket and parcels offices, the cabins in the yard, the refreshment rooms etc. and wherever he goes he must be alert for anything which will detract from the good name of his Station. Even after his regular duty hours, he must occasionally make surprise tours of his Station during night or early morning hours, as he is not only responsible for his Station during his office hours, but throughout the twenty-four hours of a day. His Station may be handling the most brisk passenger traffic between 5.0 and 10.0 p. m. when the important mail and express trains stop at his Station. So he cannot sit cosily at home during these hours listening to the radio, or enjoying a chat, but often be present at his Station during these hours.

Like so many Railwaymen of the Operating and other departments, the Station Master is 'on call' any hour of the day or night, and if his telephone jungles out an unwelcome call at 3-30 A. M. in the morning, when he is 'dead to the world,' he may awake with a mild 'damn it,' or even something stronger in the vocabulary of abuse, but if he is required to get out of his snug bed, perhaps to an accident call, within a few minutes he is out there on the spot, with all the sleep rubbed out of his eyes, and doing his job with a willing heart.

Important New Development of Material with Permanent Magnetic Properties

A difficultly which manufacturers of radio and television sets are encountering is the serious shortage of the metals: nickel and cobalt on the world market. These metals are *a.o.* used for the permanent magnets in the loudspeakers of these sets.

The Philips factories in Holland have been the pioneers in the use of permanent magnets in these loudspeakers. The Philips Research Laboratories, which developed the magnet steel "Ticonal" which is used now all over the world, today announce that they have found a new magnetic material outstanding by its quite new and interesting properties.

The new material is extremely suitable for the manufacture of permanent magnets having *a.o.* the advantage that the raw materials required can be obtained much easier than the scarce and costly metals nickel and cobalt.

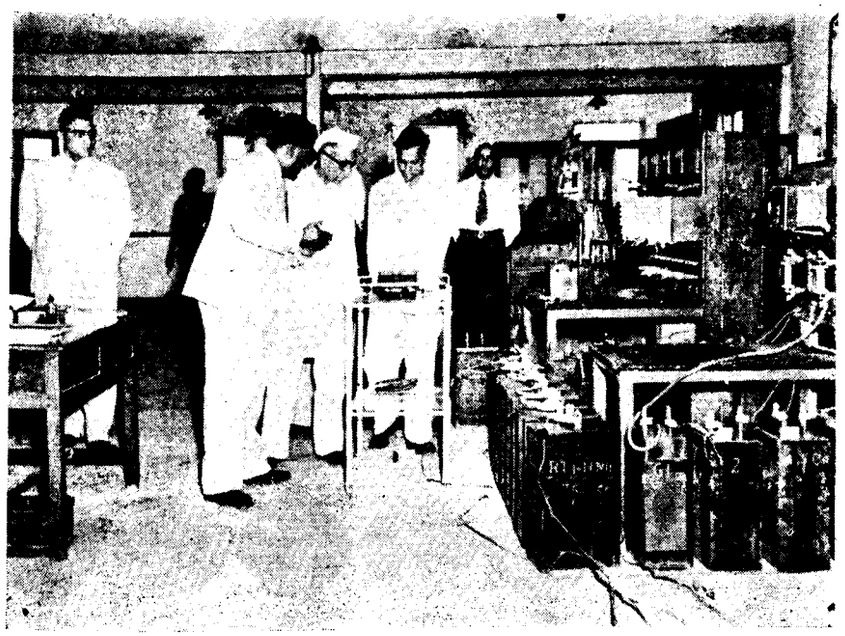
For some time already the new material is being manufactured in the Philip's factories. It may be expected that supplies to some extent will be possible in 1952.

Train Lighting Batteries Now produced entirely in India

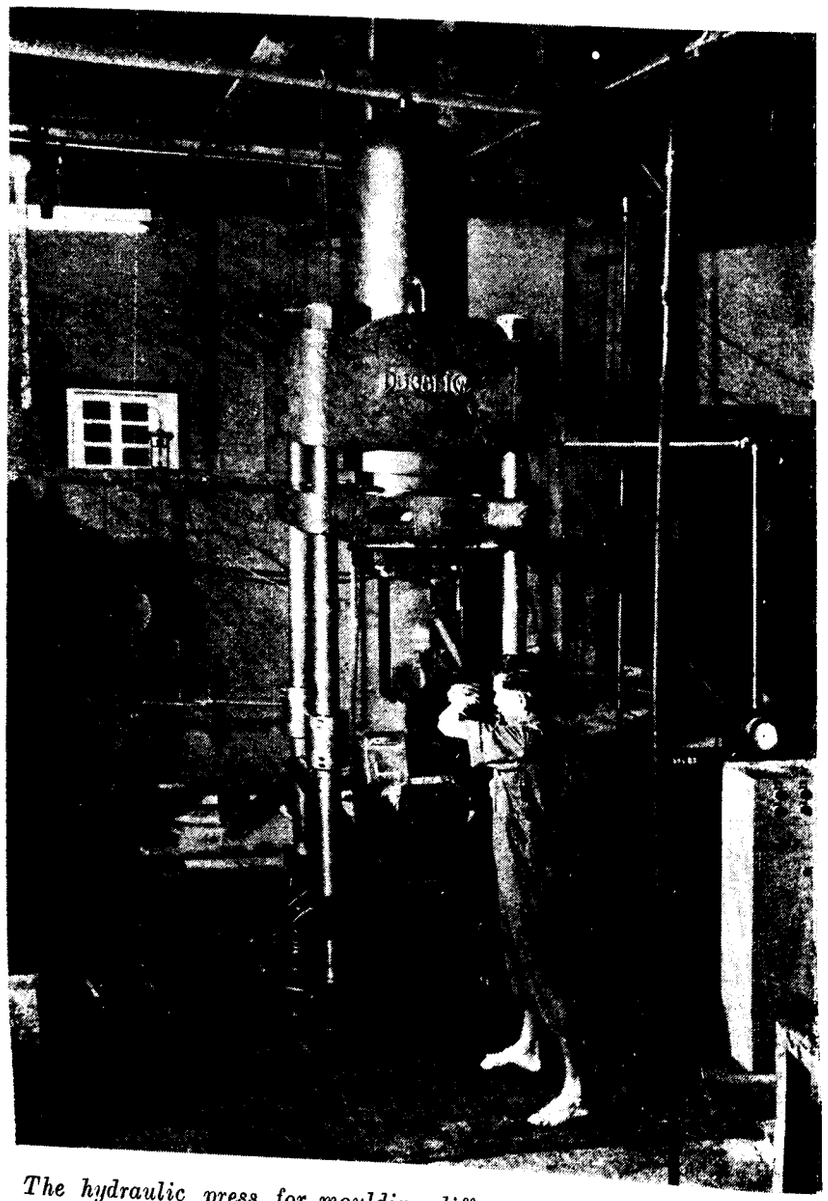
INDIA'S first plant for the complete production of train-lighting batteries was shown to the Hon. Sri K. Santhanam, Minister of State for Transport and Railways, when he paid a visit on the 24th June to the Standard Batteries Ltd. factory at Vakola, Santa Cruz. Bombay. The factory's newly enlarged train-lighting and special purpose battery section comprises facilities for manufacturing every component of a railway battery, including hard rubber containers, plates and accessories.

It is estimated that Indian Railways buy every year lead-acid batteries and spares to the value of Rs. 80 lakhs; this demand will further increase as the scheme for equipping third-class carriages with fans is implemented. Until recently, the entire demand, excepting a few experimental orders confined to battery plates, has been met by imports. Now, for the first time in India, the Standard Batteries Ltd. are manufacturing train-lighting batteries on a commercial scale.

Indian Railways generally use batteries ranging from 100 to 300 ampere-hour capacity at the 10-hour rate, working on the double-battery system; there are thus two batteries per train-lighting equipment, each consisting of 12 cells in series. When the coach is stationary, the batteries provide the entire power for lamps and fans; when it is in motion, the load is supplied through a low resistance



The Hon. Mr. K. Santhanam, Minister of State for Transport & Railways being shown round the Testing and Research Laboratories. Mr. R. D. Char, Chairman of Standard Batteries Ltd. is in the extreme left. (Foreground): Railway batteries undergoing test.



The hydraulic press for moulding different types of hard rubber containers for Train-lighting Batteries.

by the dynamo. With the single-battery system, the battery floats across the load and is charged by the dynamo; with the double-battery system, one battery floats across the load while the other, disconnected from the load, is placed on charge.

The principal components of a lead-acid train-lighting cell are: plates, container with anti-splash lid and plug separators float and electrolyte.

The plates are of either the pasted or the Plante type, with a grid of rigid lead-antimony alloy. In the pasted type, the grid is of honeycomb or rectangular pocket design, to retain the lead oxides which form the active material. When the battery is formed, these oxides are almost entirely converted to peroxide.

Plante type plates may be of two designs, Lamelle or Rosette, the latter being more suitable to train-lighting service. The lead-antimony grid has tapered circular holes into which fit crimpled buttons made of pure lead, termed Rosettes. In this type of plate the conversion of lead to peroxide is only partial, by virtue of a special process of chemical formation.

The life of the pasted type train battery may be reckoned as three to four years, and of the Plante type as four to five years. This life can be extended by replacing the positive plate, which wears out before the negative.

Battery containers may take one of four forms; moulded composition, glass, wood lined with lead; or hard rubber. Composition containers are moulded from thermoplastic bituminous materials. Glass cases have the advantage of transparency, but do not stand up satisfactorily to Indian conditions. Lead-lined wooden boxes have become almost obsolete. The hard rubber box is now universally accepted as the ideal container for train-lighting batteries, and this is the type of container manufactured by Standard Batteries Ltd.; its life in service is generally longer than that of the other types, and it is less subject to the deleterious effects of the electrolyte.

The separators commonly used are made of a special type of wood—fir or Port Oxford Cedar—chemically treated to eliminate the acetic acid-forming compounds which would otherwise impair the functioning of the battery; their purpose is to provide insulation between the positive and negative plates of the cell. The float, which generally consists of an ebonite tube attached to a cork, indicates the level of the electrolyte, a solution of pure brimstone sulphuric acid in distilled water, ranging in specific gravity from 1.215 to 1.250.

Indian Railways have accumulated a vast fund of experience in using train-lighting batteries and observing their behaviour under varying working conditions. This wealth of information can be turned to good account by cell-controlled liaison beween the Railways and Indian manufacturers, who will then be able to evolve products uniquely suited to operate under Indian conditions.

CORRECTION

In our June issue we wrongly published that Mr. T. S. Rao has been appointed as Chief Electrical Engineer of Southern Railway whereas Mr. R. D. Walter has been appointed as Chief Electrical Engineer.

Editor.

Railwaymen and American Food Aid

By V. B. S. Sreenivasan

Secretary, Southern Railway Employees' Association

AMERICAN HELP TO ACHIEVE ECONOMIC FREEDOM

Railwaymen in India who are the spear head of progressive Nationalism greatly appreciate the food aid given by the American people and echo the feeling expressed by the Indian Ambassador Smti. Vijayalakshmi Pandit at the colourful ceremony on the Delaware river port of Philadelphia when the first instalment of 9,600 tons of wheat bought from the E. C. A. loan of 190 millions dollars was taken over. Accepting the grain Smti. Vijayalakshmi, in a speech filled with emotion said "while our thanks are due to the Administration, the congress and various other agencies, will never forget the way the people of this country backed us up. They have strengthened still further the friendship between the two countries." She has added "This gesture of aid from my adopted country to the country of my birth moves me greatly as it must move every one. The words "thank you" do not express all I wish to say. What I want to say is that millions in India will be filled with gratitude at the manner in which the U. S. had risen to the occasion to extend the hand of friendship to them. During India's fight for freedom it was America that gave help in many ways. Many of our patriots found refuge here. Now when this question of economic aid came I never had a moment's doubt how the American people would react to our request. Common people of the U. S. had showed once more that they had a big heart. They not only spurred this aid but they sustained our faith in the ideals of the American people. By their self-denial they have helped us in the next stage of our struggle namely, economic freedom."

It is noteworthy that the ship John C. Kendall carrying the wheat was newly painted and carried the inscription "Strength for the free world from the U. S. A." Millions of Indians will deeply ponder over this as India after Independence is on the cross-roads.

The able American Ambassador Mr. Loy Henderson who has gone on a holiday to America said at the time of the function, "that the Indian Government's efforts to fight the danger of famine with their own resources had filled him with admiration. He added "I am convinced that with this wheat assured—and barring some unforeseen calamity—India's fight against famine is won."

AMERICAN PEOPLE

How was it possible for Americans to give this aid ?

Unless we know the history of their freedom struggle we cannot evaluate the true significance of this aid. It was in 1492 Christopher Coloumbus landed in America, but the first permanent English settlement was founded in the State of Virginia in 1607. The American War of Independence began in 1775 and Independence was declared in 1776. Within a period of 175 years American people have built up a most progressive industrial nation. America which produced a George Washington, Abraham Lincoln and Franklin D. Roosevelt is a fit example to be emulated by Indians.

LIVING STANDARDS OF AMERICANS

Of 37,000,000 American families in 1947, 11 per cent had wage and salary incomes of less than $ 1,000 a year; 16 per cent had incomes between $ 1,000 and $ 2 000; 22 per cent between $ 2,000 and $ 3,000; 22 per cent $ 3,000 and $ 4,000; 10 per cent between $ 4,000 and $ 5,000; 8 per cent between $ 5,000 and $ 6,000; 8 per cent between $ 6,000 and $ 10,000; and 3 per cent more than $ 10,000. There are few extremely wealthy persons in the United States, and few extremely poor ones. The great majority of Americans live relatively comfortably on moderate incomes. The United States is a nation, of workers, with about 60,000,000 persons employed out of a total population of 149,000,000.

7	minutes	to buy	2	pounds of potatoes
9	,,	,,	1	quart of fresh milk.
11	,,	,,	2	pounds of sugar
13	,,	,,	2	pounds of white bread
20	,,	,,	2	pounds of rice
21	,,	,,	12	oranges
33	,,	,,	2	pounds of curd
34	,,	,,	12	fresh eggs

In 1920, the average work-week in the United States was 50 hours. Now it is 40 hours. Americans thus have more leisure time for recreation.

To Railwaymen it will be interesting to note that the United State has about 29 per cent of the world's Railway mileage. American rail-roads have about 45,000 locomotives, 1,800,000 freight cars, and 32,000 passengers cars. The capacity of American freight cars ranges from 40 to 200 tons.

There are 192,000 railroad bridges, more than 1,500 tunnels, 59,000 passenger Stations and 61,262 freight stations.

Such in brief all the living standard of Americans, Indians can have the same if we are united and support our Nehru Government in this period of national regeneration, and only Railwaymen can do this. In India 1 in 350 of the population is a Railwayman and 1 in 100 of the population depend on the Railway Industry for earning a livelihood. Further Railwaymen are the foremost organised workers in India through the great Organisation: "All India Railwaymen's Federation."

There are relatively very few persons or families who live on income from investments.

It is no wonder then that the life span in the United States has nearly doubled since 1879; then the expectation of life at birth was 34 years; now it is 67 years. The death rate per 1,000 population has dropped from 17.2 in 1900 to 10.

In America free public schools are established by law and supported by taxation in the United States. Each State has its own school system. Education is compulsory for every boy and girl.

The average United States factory worker is able to pay a month's rent for a dwelling unit of average cost by means of 3 days' work. He works :—

HOW BEST TO UTILISE THE AMERICAN FOOD AID

American Food aid should be fully utilised for economical emancipation. The food arriving in ports must be transported by Railways to the interior. Then

(Continued on next page bottom)

Shipowners' Annual Meeting

Minister of State Delivers Inaugural Address

THE annual meeting of the Indian National Steamship Owners' Association was held on Thursday the 21st June 1951 in Bombay, with Mr. G. T. Kamdar, President, in the chair. The Hon'ble Mr. K. Santanam, Minister of State for Transport, graced the occasion with his presence and delivered the inaugural address.

MR. SANTANAM'S INTEREST IN SHIPPING DATES FROM 1937

Addressing the meeting, the Hon'ble Mr. K. Santanam related how although his official connection with shipping was but four months old, he had taken a consistent interest in the development of Indian shipping ever since he entered the Indian Legislative Assembly in 1937. "During those days," he continued, "I was more or less the spokesman of the party on matters connected with this subject. It is, therefore, a matter of great pleasure to me that I should have the chance of a closer association with this essential part of national economy." The Minister added that the fact that his first visit to Bombay after the transfer of shipping to his ministry was principally for this meeting should be sufficient evidence of the priority he gave to matters connected with shipping.

Congratulating the President of the Association on his speech which he described as "setting forth in a realistic and reasonable manner the main problems of Indian shipping," Mr. Santanam admitted that much of what Mr. Kamdar had asked for was reasonable and practicable and assured him that Government would consider them with the utmost sympathy.

Referring to the expansion of Indian shipping, Mr. Santanam said:

"In the somewhat unreal conditions produced by India's wartime finance when Indian labour and material were bartered for sterling paper and grandiose visions of post-war development, it was natural for the Shipping Policy Sub-Committee to place before the country a target of two million tons. It was assumed that post-war India would have as much money as she needed. At that time ships were also not expensive. Unfortunately, the events of the last four years have almost completely reversed the picture. Partition, communal conflict, refugee rehabilitation and failure of monsoons with the resultant scarcity of food have placed on the Government of India a strain which it could bear only with the greatest difficulty. That this crisis has been met without any vital sacrifice either of current consumption or of future development will be considered by impartial critics to be a high achievement. But I am not here to do any propaganda. All that I plead is that we should realise that circumstances have completely changed now and the Government of India has great difficulty in finding money even for the minimum development of national economy in various directions. *All that you can now expect me to do is to see that the vital role of national shipping is kept continuously in view and that its interests are not neglected or even wholly subordinated to more urgent and clamant interest.* You are also aware that ships are not only more expensive and scarce but also most of the shipyards are not in a position to promise delivery in less than three to four years.

TARGET REASONABLE

"In spite of these considerations, I am inclined to agree that the immediate target of acquring an additional 325,000 gross tons is neither unreasonable nor unduly high. The Government of India will certainly endeavour to give you the utmost possible help in every way in acquiring this additional tonnage. At the same time, I would suggest to you that it is neither practicable nor reasonable to throw the major burden on the Government.....I suggest that you should on your part do your best to convince the public that shipping is a good investment now and will be a better investment in the future. On my part I can assure you that it will receive its appropriate share and priority in all the plans of the Government of India."

Replying to some of the suggestions made by the Association, Mr. Santanam said that in regard to operating subsidy for the India-U. K. passenger service and for meeting losses as a result of the Dutch Rate War, Indian shipping must be prepared and able to face such occasional losses. Regarding tax relief, he said:

"You have mentioned the heavy burden of taxation. Shipping, like every other industry, is already in enjoyment of various concessions in respect of taxation. I shall, however, have your specific suggestion examined, viz., that profits which are credited to the tonnage replacement account should be exempt from taxation.

"In regard to tankers, it is not clear whether you want that the Government should buy, own and operate the tankers or whether we should assist the Shipping Companies to acquire the tankers. If is is the latter we are prepared to consider as and when we receive specific proposals regarding them. If Government should operate we should know exactly the position, particularly as we should not be dependent on private oil companies. But this is a matter which can be discussed with the Government of India.

"The Reports of the Deck Passenger Enquiry Committee and the Konkan Rates Advisory Board have now been received by us and are being examined. Your Association will certainly be consulted on the Deck Passenger Enquiry

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alone inflation can be checked. It is at this critical time your nation we hear talks of 'strike' in Railways. Every patriotic Railwayman should therefore echo the words expressed by our Hon'ble Minister of Transport Mr. Santhanam at the progressive Club in Bombay. "The threatened railway strike is not only not inevitable, but is not likely to come off."

Railwaymen have therefore a duty to the nation. Let them not be dubbed as unpatriotic by the progressive nations of the world. We hope the General Council meeting of the A. I. R. F. will give a proper lead to the nation. Then alone we can progress and lay a strong foundation for the economic freedom.

JAI HIND

Committee Report. As for the Konkan services, the few interested companies have had full opportunity of placing their views before the Advisory Board.

SHIPPING ADVISORY BOARD

"I am glad you have raised the question of the constitution of a Shipping Advisory Board. As you are aware, the Government of India accepted, in 1947, the recommendation of the Policy Sub-Committee that a Shipping Board should be set up. The Directorate-General of Shipping was formed in 1949, and considering the size of our problems and the present need for financial economy, it is felt that a whole-time and independent Shipping Board is not justified at present. I agree, however, that Shipping Companies should have opportunities and machinery of consultation with the Government of India and I shall be glad to consider proposals for that purpose."

Referring to the reports which were current a few months ago that Government were considering the question of inviting foreign companies to float shipping concerns in India, Mr. Santanam assured that "there can be no question of Government agreeing to any proposal or scheme for the participation of foreign capital for the development of Indian shipping which would even remotely affect the national interest adversely." "As you know, Government had at one time announced its intention to have three Shipping Corporations. It has been possible to constitute only one such Corporation so far and that also has not reached its full stature. If adequate Indian capital is forthcoming for establishing another Shipping Corporation, Government would be glad to consider the question of forming a Second Corporation."

SHIPOWNERS' DISAPPOINTMENT SHARED

Continuing, Mr. K. Santanam said: "Shipping was the last citadel of British Imperialism. When that citadel fell finally in 1947 and a National Government took charge of the destinies of India, it was but natural to expect that the development of shipping will be among its principal preoccupations. I therefore share your disappointment that though something has been done, it has not been possible to do much more. I should also confess that although many of your members have shown considerable enterprise, I am not satisfied with the progress made by them during 1949, 1950 and 1951, after a good start in the years immediately succeeding the cessation of hostilities. If we are lucky and have good monsoons this year and if there is no deterioration in the international situation, it may be expected that the Government of India will be able to breathe more freely and will be able to divert greater energies from survival to development. If you also intesify your efforts, it may be possible to hasten our pace and give the country the mercantile marine which though small in relation to international shipping, will yet be adequate for all the needs of coastal trade and a reasonable share of our foreign trade."

VOTE OF THANKS BY SIR BIJOY SINGH ROY

Proposing a vote of thanks to the Hon'ble Mr. K. Santanam, Sir Bijoy Prasad Singh Roy said that the members of the Association were greatly encouraged by the Minister's speech and the assurance which he had given them on behalf of the Government. But, he could not share the view of the Minister that the question of the development of Indian merchant marine could be deferred. Citing the tragedy of the Bengal Famine of 1943, Sir Bijoy warned that to avoid a similar situation arising in the near future it was the primary duty of the Government and those interested in shipping to use their resources for expanding the country's tonnage.

Sir Bijoy also drew the attention of the Minister to the fact that India was spending nearly Rs. 15 crores by way of freight for the carriage of foodgrains imports. The quantity of imports was increasing and the freight rates were also going up; necessarily the money spent in freight would also go up. Sir Bijoy, therefore, called upon the Government to give serious consideration to the question and decide whether it was not in the long run in the interest of the nation to invest some money in shipping and help the Indian Companies in the matter of finance.

Referring to the losses suffered by the two Indian Companies during the last rate war, Sir Bijoy pleaded that the Government should reimburse the losses sustained thereof. He recalled that the shipowners' request to reimburse the losses sustained by the Indian Companies on account of rate war was very sympathetically considered by the then Minister in charge of the Department of Commerce. But the shipowners were now told that the losses were mere "business losses,' which the Companies must bear. He said he held the contrary view.

Referring to the latest situation in Indian ports, and particularly in the Calcutta port, Sir Bijoy suggested the formation of a committee consisting of all the parties connected with ports to consider measures to avoid any possible congestion consequent on the arrival of food ships.

The vote of thanks proposed by Sir Bijoy was duly seconded and heartily approved by the meeting, which was followed by lunch in the Taj Mahal Hotel.

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Bharat Line's Position Improves

REVIEWING the events of importance in the field of Indian shipping during 1950, Mr. C. R. Sreenivasan, Chairman, the Bharat Line Ltd., claimed at the Company's annual meeting on June 11, 1951, that at long last Indian shipping had come into its own, thanks to the gradual reservation of the coastal trade and the admission of Indian shipowners to the India-U. K. Continent Conferences. Referring in particular to the activities of the Company during that year, he said that the position had improved considerably. At Calcutta, for instance, the supply of pilots had become better and considerable improvement had been noticed in the port services, appreciably reducing delays, although the dredging of the Hooghly remained far from satisfactory. There had been a corresponding relief in losses arising from such delays. (The port situation at the time of writing this review is again very unsatisfactory. —ED.)

The statement of accounts of the Company for the year ended December 31, 1950, adopted at the meeting, reflects this improvement to some extent. Thus, income by way of freight and charter hire of ships has gone up from Rs. 126·45 lakhs in 1949 to Rs. 164·50 lakhs in 1950, *i. e.*, by about 30 per cent. The *Directors' Report* for the year states that the improvement in income was the result mainly of an increase in the volume of trade handled by the Company's fleet, which gave it fairly full employment, particularly in the latter half of the year. The rise in freight rates, which has become

more pronounced since the closing of the accounts of the Company, has also possibly contributed to the better results.

OPERATING COSTS UP

Operating costs have also considerably gone up, the fuel, stores and victualling charges showing a rise of over Rs. 9½ lakhs to Rs. 44·82 lakhs and stevedoring and sundry charges of over Rs. 7½ lakhs to Rs. 21·59 lakhs, compared with the previous year. The percentage of increase of both these items taken together is 34·7.

The Company has paid out considerably more for chartering ships, Rs. 13·23 lakhs in 1950, as against only Rs. 5·56 lakhs in 1949. This was partly because of the higher charter rates and because the Company had to charter more ships than before, as their own fleet could not meet the demands of trade.

Despite these heavy inroads into the income of the Company, the gross profit, before providing for depreciation and taxation, has improved from Rs. 17·55 lakhs for 1949 to Rs. 30·92 lakhs for 1950—a rise of a little over 75 per cent. But, in the previous years, adequate allowances for depreciation on the fleet had not been made, the arrears of depreciation as at the close of 1949 standing at Rs. 14·37 lakhs. It is, therefore, gratifying to note that the improved profit for the current year has been taken advantage of by the Directors practically to wipe out these arrears. Thus, out of the year's profit have been provided Rs. 16.29 lakhs towards depreciation for 1950, calculated on the "probable" income-tax basis, and Rs. 11·93 lakhs towards unprovided balances for 1946, 1947 and 1948, bringing the total provision for 1950 to Rs. 28·23 lakhs. This leaves a small balance of Rs. 2·44 lakhs as the arrears of depreciation for 1949, which the Directors propose to provide out of the profits for the future accounting periods. The total depreciation account of the Company as at the close of 1950 in consequence stands at Rs. 64·65 lakhs.

INITIAL DEPRECIATION

Regarding initial depreciation concession allowed by Government, the report says that the Directors have been advised that such depreciation "is allowed by Government to enable industries to claim the same for relief from income-tax, that it has no bearing on the value of the assets to be written down by ordinary depreciation, and that it is not required to be actually provided in the accounts." Nevertheless, according to the Chairman, the Company will make provision for initial depreciation, to whatever extent possible, during the current accounting year, provided, of course, the profits continue on the same scale as during the year under review. The Directors have maintained the dividend at 3 per cent.

Although the financial picture, as revealed by the accounts, has improved somewhat, there are still many difficulties that shipowners, including the Bharat Line, have been facing and which are proving a costly burden on their companies' finances. Referring to some of these, the Directors observe in their report to the shareholders that the Company's ships still suffer considerable delays, as in the past, and that operating costs show a further rise, without any likelihood of an appreciable fall in the near future. Another difficulty has been that the Company has not been able to buy ships, new or old, as costs of both are abnormally high.

SHIPPING CORPORATION

The Company has also not been able to expand its activities by accepting the offer of the managing agency of one of the three Shipping Corporations sponsored by the Government, owing to the acute stringency in the money market. Thus the Company, in common with the other Indian Shipping Companies, has been unable to benefit to the fullest extent from the increased turnover of world trade and the consequent demand for freight space, owing to the paucity of ships. The Directors therefore are of the opinion that unless Government formulates a policy for extension of financial help for the aquisition of tonnage, they cannot visualise the early consummation of the corporation project.

Regarding the prospects for the current year, the Directors are hopeful that they will be satisfactory. They have effected retrenchment and economy in all directions and hope to show a saving of about Rs. 2 lakhs per year in the insurance premia paid by the Company. The revision of freight schedules and the reopening of trade with Pakistan, it is felt, will contribute to more satisfactory results.

Besides operating regularly in the trades between India and Pakistan, Ceylon and Burma, the ships of the Company have also been participating in the India/Australia coal and grain trade in recent months. This expansion in the activities of the Company should be reflected in the accounts for the current year.

(Indian Shipping)

(Continued on next page bottom)

ROAD TRANSPORT

Retreading of Tyres

Great Economy in Operation

RETREADING of tyres is today an accepted method of tyre economy by all owners of vehicles who keep mileage records. Enterprising fleet owners realizing that tyres form an important part of their running expenditure, successfully cut costs by having tyres retreaded not once but a number of times. This situation is reflected by figures for 1948 which show that, in Britain, of all tyres sold for replacement purposes 22% were retreads. Besides saving money for the truck owner, retreading saves imports for the country. In England the industry is officially recognized by the Government. In India today, retreading must surely play an increasingly important part in the economy of the country.

When talking of retreading, people naturally think of car and truck tyres. This by no means represents the full field in which retreading has been used successfully. "Retreads" have been and are used for aircraft and agricultural tractor tyres, for motor cycles and for racing. There is no reason why they cannot be used for any type of rubber tyre. During the war even bicycle tyres were retreaded by improvised methods in countries such as Holland but in normal times this is not economical.

Today retreading is an accepted practice. This has not always been so. Some 20 years go, when retreading first started, it did not win a very savoury reputation. The industry at that time had not attracted reputable manufacturers and the work produced was all too often slipshod and unsatisfactory. Further the tyres of those days were not the skilfully designed

product of today. All too frequently, after one life on the road, the tyres were not strong enough to stand up to a second tread life.

With the increase in speeds of traffic, methods of tyre manufacture were improved until we have today the modern tyre which perhaps has a safety factor of four tread lives to one casing life built into it. Tyre manufacturers themselves recognize this and publicly recommend the use of retreading.

With the improvement in tyre construction reputed firms became interested in retreading Scientific equipment and processing was evolved. The finest available materials were used and retreading slowly built name for itself. It was proved that pound for pound of tread rubber equivalent mileage to that of a new tyre could be obtained at approximately half the cost. This progress has been achieved with the assistance of the new tyre companies who made important data available to the new industry and assisted by supplying materials which incorporated all the latest skill and technical advances.

FAULTY TYRES

Retreading while basically simple, depends ultimately on the skill of the man doing the work. This skill is needed at an early stage, for the first job in the reconditioning of worn tyres is to eliminate those that are faulty. Inevitably, a number of tyres are damaged during their first life on the road. Some of this damage has been accidental and some is due to the carelessness of drivers. Whatever the cause, these weak tyres must be eliminated if retreading is to be satisfactory.

It is a point to remember that if retreading is done by a reputed concern, the reconditioned tyre is frequently the equal of a new one. It has a high safety margin because the cord body, which is the strength of the tyre, has been road tested during one tread life which ensures that there is no original weakness and the tyre has been scrutinized for subsequent damage.

The decision as to which tyres are suitable for processing can be satisfactorily given only by a trained tyre inspector. To the untrained eye there may be nothing to choose betwen two casings but a tyre inspector may accept one and reject the other. There are, of course, machines to help the inspector. The tyre is mounted on a spreader which opens the tyre and throws a light on the inside. Any damage can be clearly seen.

The term retreading is used to cover the whole industry but, in actual fact, there are various degrees of reconditioning. These methods have descriptive titles which indicate the amount of original rubber that is removed and replaced.

Of these methods, top-capping is accepted in the tyre trade as technically the most advanced process as it leaves the original casing construction of the tyre undisturbed and heat applied to vulcanize the new rubber can be accurately controlled. In the full remoulding and retreading processes, heat has to be applied to cure the thickest part of the new rubber. In doing this, heat inevitably penetrates into the sidewalls where the rubber may be only $\frac{1}{8}$th of an inch thick. The excess heat tends to dry out the cords and make the encasing rubber brittle which affects the flexing qualities of the tyre. Top-capping by the test equipment overcomes these objections but requires the tyre to be removed from the the wheel slightly earlier.

Tyres selected for reconditioning are first repaired and are then prepared for treatment according to the process to be used. For remoulding or retreading, the original rubber of the tyre is stripped back to the cord fabric to the appropriate distance down the sidewall. In shops with modern equipment this is usually done with a "poker-stripper." The tyre is mounted on a chuck and revolved at speed. A blunt poker is inserted between the rubber and the cord fabric and the poker is then worked around the carcass until all the rubber is stripped. This is a highly skilled operation. The tyre is then sent for buffing.

In the recapping and top-capping processes, no more rubber is removed that is sufficient to ensure that there is a firm and level foundation for the new rubber. This is generally done on a "buffing machine." This machine consists of a power-driven rasp against which the tyre is run while the rasp removes irregularities and the high spots on the tread caused by uneven wear. This process to a certain extent also restores the balance. Great care is now required to ensure that no dirt comes in contact with the prepared surface. This is painted with a special solution made from rubber stock dissolved in high grade solvent. The solution is then allowed to dry.

Next a strip of prepared tough tread rubber of the correct size is rolled on to the tyre. The joint is made by cutting the rubber stock and "stitching" the two ends together by pressure from a hand roller. During the vulcanization process, the rubber flows together and the joint disappears.

It is the vulcanization of the new rubber to the old which is the crowning achievement in retreading. Under heat and pressurre the new rubber becomes an integral part of the tyre. The most widely used method is with the use of a mould inside which is engraved the pattern of the final tread design. The tyre is built on to a dummy rim using a special curing tube made of thick heat-resistant rubber, and the assembly is placed inside the mould. Air pressure is built up inside the tube and the mould is heated by the use of steam. The rubber initially becomes fluid and flows into the design of the mould and then sets in the shape it will always retain.

The new rubber is now fused to the old and it is impossible to separate the two. Were it possible to hold the new rubber and pull, it would be found that the orginal rubber would pull away from the casing fabric before the new and old tread rubber would part. The design given to the tread is decided by the mould used which is designed with a view to future servicing of the tyre.

The cooling of the tread is particularly important in sub-tropical climates such as are experienced in many parts of India for rubber can waste away up to about 50% faster than normal due to heat alone. Silent running is, of course, particularly important with modern automobiles.

There is a method of vulcanizing the new rubber to the old without the use of a mould. Among other names this method is called "Open Steam Curing." The prepared tyre is placed inside a large chamber and steam and air, both under pressure, are added. This again effects vulcanization. The tread pattern is cut into the uew rubber either before or after curing by means of a special machine. This method of retreading, while not widely accepted as ideal, is useful where it is not

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Painting of Motor Vehicles

MANY different processes are involved in the painting of motor vehicles including brushing, dipping, spraying, and the wet-on-wet method, along with various systems of drying.

As typical of modern methods it will be interesting to make brief reference to the methods adopted by Leyland Motors, Ltd., of Leyland (Lancs), who for some time past have used air-drying synthetic enamels for the exterior paintwork on Leyland bodies. The enamels are applied by spray-gun in the wet-on-wet process, and this method is used exclusively between the first priming coat and final brush varnishing. The second primer, one coat of undercoating, a coat of fifty-fifty undercoat and enamel, a final coat of enamel and a hard-drying varnish are applied one immediately after the other, and it is claimed that this method results in a saving of 8-12 hours drying time for each coat. There are, however, other advantages, chiefly the fact that as all coats dry together the solvents rise to the surface to dry thus permeating the coats, binding them together, and producing a hard wear-resisting finish. The method also produces a good surface for flatting down before the final coat of varnish is brushed on in dustproof varnishing rooms.

It has been found by experience that it is more satisfactory to apply the final coat of varnish by means of brushes, as compared with spraying. In the first place, it is extremely difficult to spray a double decker body that is completely assembled, because of its height, although the undercoats and enamels are sprayed before final assembly, when the upper and lower saloons are separate units of medium height. Further, the large amounts of masking required to cover the windows and fittings of a complete double decker bus would not be a practical proposition, while it would be difficult to obtain a dust-free atmosphere. In any case, when the final varnish is applied with a brush, the coat is much thicker than that obtained by spraying and results in a more solid protective finish that will last for many years.

All Leyland road wheels are now treated in grey synthetic stoving primer, which gives them a hard durable surface over which the finishing colour coat of paint is applied by hand. Spraying of the primer on the wheels is carried out in a water wash booth, the water

(Continued on next page bottom)

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convenient to instal orthodox equipment.

After vulcanization, surplus rubber is trimmed from the tyre which is then painted. The tyre is now ready for a new life on the road.

Finally a word of advice to tyre users would possibly not be out of place. The Rubber Manufacturers' Association states that "a tyre is no better than a driver's habits." Proper care and maintenance of tyres can pay big dividends. More tyre care means more retreads and more saving."

We are thankful to "Statesman" of Calcutta for their so kind permission to reproduce the above article which appeared in their Supplement entitled "Automobile Survey."

Autocraftiness

We have received a brilliant and educative pamphlet entitled "Autocraftiness" published by Messrs. Dunlop Rubber Co., (India) Ltd., Calcutta—one of the leading tyre manufacturrng concerns of this vast sub-continent. We have hardly seen any such pamphlet issued by other tyre manufacturers in the interests of auto-owners. This booklet deals with all aspects of traffic rules which an auto-owner should observe while on the road. Besides it educates and guides a prospective buyer of a car how best he could increase longevity of his car by proper maintenance and handling. All the more tips given for saving the wear and tear of tyres by exercising a little care by motorists are very important. We invite particular attention of our readers who own cars to this.

In *toto* the book-let is published on art paper and pleasant to handle.

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circulation system having a 500-gallon closed circuit. It has an open tank at door level and the water is pumped to an upper trough from which it spills along one side to form the waterfall. Anti-drying compounds are added to the water to keep the waste paint plastic and prevent clogging of the pump. On the way to the upper trough the water is cleaned, and the heavier particles of paint drop back into the open tank, while a fan extracts all over-spray not removed by the waterfall.

Electrically operated infra-red equipment is used for the road wheels so as to reduce handling to a minimum, and once the wheels are hooked to a mechanical conveyor they do not leave it until they are completely stoved. The stoving equipment comprises six heater units arranged in two opposite banks holding about 300 clear infra-red industrial lamps, each of 250 watt capacity. After spraying, the wheels pass between the battery of lamps on an overhead, electrically driven conveyor which moves at a steady speed of 16" per minute. Anodised aluminium reflectors, as well as secondary reflector sheets at the top and bottom of the banks, focus the heat on to all parts of the wheels and rims. The baking process is completed within five minutes, and the wheels are carried another 30 ft. by the conveyor, which takes about 20 minutes, after which they are cool enough to handle.

In the body-building department gas-operated units are used for stove enamelling panels for ceilings, some dome panels, and interior decorative units including those around the window frames. The respective merits of gas or electrically-operated units are a matter of opinion, and while gas units are perhaps easier to maintain, since they need little replacement and only require regular cleaning of the burners, electrical equipment only requires the renewal of easily-fitted bulbs. The quality of the finish given in each case would appear to be about the same.

(London Engineering Correspondent—Hindu)

Modern Service Stations

Importance of Personal Attention

By Lt. Col. G. E. Cater,

General Manager, Tecalemit (India) Ltd., Calcutta

THE motor transport industry in India has undoubtedly suffered a further grave setback as a result of the recent increases in import duty on motor vehicles and parts, and enhanced taxation, which has led to all-round increases in operating costs.

It has been estimated that the average vehicle owner in India contributes no less than Rs. 1,200 per year per vehicle, in transport taxation alone. This taxation coupled with inadequate road maintenance and development, seems likely to cripple a young and struggling industry, and it is difficult to relate to this phenomena, the Government's declared intention to raise the standard of living in rural areas, which in the vast expanse of India, can only follow the development of road transport.

Fleet and private car owners have set up a resistance to the high cost of vehicle replacements, spares and repairs, and are forced to postpone expenditure on these items, to accept lower efficiency in operation, and to reduce the scale of their activities. The false economy of these retrograde steps appears to have been recognized by the Government of India, who are stated to be investigating corrective measures.

Of late, the perhaps more powerful voices of State Governments with "nationalized transport" have been added to the protests of the trade and the private motorists. While welcoming the support of State Governments, many nevertheless wonder why they do not set an example and extend relief by exempting the motor trade from the additional burden of State Sales Taxation now borne by the commercial and private vehicle owner.

While such unfavourable circumstances prevail, the vehicle owner must give great attention to the maintenance if he is to obtain the maximum service from his existing vehicles with the minimum expenditure on repairs and replacements. Preventative maintenance is the primary function of the modern service station, and the development of these stations which has been a notable aspect of the growth of the motor industry throughout the world, has naturally followed from the real saving effected by the vehicle owner, who insists on the right type of lubrication being correctly applied to his vehicle at regular and appropriate intervals. From the brick ramp and hand equipment of the early 1930's has grown the modern Super Service Station, where trained teams of service operators give complete lubrication service in some twenty minutes, ending with a vacuum cleaning of upholstery and a DDT spray. Stations have developed apace with the remarkable changes that have taken place in mortor transport over this period, aod it is perhaps helpful to review these changes and the development of the demand for "specialized maintenance."

VEHICLE DEVELOPMENTS

The growth of the modern transport vehicle may be traced directly to the economy effected by increasing the payload lifted per vehicle over a given mileage. Wheel-bases have grown from 134 to 199 inches chassis from 26 to 35 feet in length, and vehicle widths have extended up to nine feet. The use of modern metal sections and tubes has enabled these longer and stronger chassis to be built with a minimum increase in unladen weight.

Payloads up to 50 tons are comparatively common, while transporters with as many as 32 wheels carry loads up to 100 tons. The demand for these heavier vehicles has led to developments in every aspect of motor engineering, the benefits of which embrace every type of motor vehicle. The standard 5" tyre of the past has grown to 8¼" with dual tyres on rear wheels. Giant tyres have been developed and standardized to sizes on a world basis. Tyres are broader, treads are deeper, and the average tyre mileage in western countries and the USA is now no less than 85,000 miles.

It is a sad commentary on the state of India's roads and tyre maintenance that the average tyre life in this country is little more than 20,000/25,000 miles, although allowance must be made for the adverse effect of the Indian climate. Improved steering and suspension have kept pace with the development of more powerful oil and petrol engines, now available up to 180 b. h. p.

The trend away from the conventional central front engine mounting—which became noticeable with the advent of the forward control vehicle—continues, until at the present time the horizontal underfloor type engine, mounted amidships between the main frames, would appear to have become established in many classes of transport. For the transmission of increased loads and greater horse power, more complicated transmissions such as fluid flywheel couplings, synchromesh, pre-selective epicyclic gear boxes, and air operated self-changing gear transmission with high speed bevelled final drives, which in turn may include a ratio change mechanism, are now current practice. The contribution of the metallurgist in making available stronger and lighter metals, cannot be overlooked.

SPECIALIZED LUBRICATION

Often leading these developments, the research carried out by oil companies on the provision of improved fuels and lubricants has been one of the engineering highlights of the past 20 years. They foresaw that the increased stresses and strains that would be imposed upon the component parts of vehicles, following demands for higher speeds and greater loads, called for special fuels and lubricants.

As engineering design became more exacting in its requirements, the necessity for specialized lubrication became established. Engine oils of a particular viscosity were specified by engine manufacturers in relation to engine design factors, and today designs are increasingly modified in the light of improved and special fuels and lubricants becoming available.

As an example, the greatest percentage of cylinder and piston wear is abrasive wear from the carbon and gums deposited on the pistons and piston rings. The use of modern detergent engine oils dissolves these deposits, and additives to these oils break up the sludge into minute particles, which remain in suspension in the oil, thus avoiding blocked oilways. Others reduce oxidization and prevent corrosion when engines are cold.

With these lubricants, filtration and regular engine oil changes

are essential, and most manufacturers recommend oil change at 1,000 miles, while at the same time incorporating in the oil system, an oil filter, usually of the "fullflow" type, embodying a felt replacement element, to collect and remove the particles in suspension in the oil. This continuous filtration of the air intake has resulted in a substantial decrease in the rate of cylinder, piston ring and bearing wear, despite higher piston speeds and higher working pressures.

For the old crash type gear boxes, heavy gear oil such as SAE140 is specified, to cushion the shock when engaging gear teeth. Modern boxes with synchromes type gears however, require thin oil such as SA90 gear oil or SA50 motor oil to facilitate the operation of gear clutches; epicylic gear boxes with high speed gears and fine clearances require an even lighter oil down to SAE20. Similarly, the heavy point pressure on the gear teeth at the final drive makes it essential, on vehicles with hypoid or bevel drive, to utilize the extreme pressure range of lubricants which have been developed for this purpose.

USE OF GREASE

For heavy transport and public service vehicles, mileage controlled automatic chassis lubricators are now being built into the vehicles, the successful use of which appears to make 10 years' life without chassis bearing replacement a new probability. For normal chassis lubrication, grease is usually recommended by manufacturers. Various greases are required for the wheel hubs, the water pump, spring shackles, universal joints and steering linkage. The oil companies have undertaken considerable research into the production, in commercial quantities, of a multi-purpose lubricant to meet all the various chassis conditions. Such a lubricant must have excellent lubricating properties, a high melting point, and must not be soluble in boiling water; it should have good pumpability over a wide range of temperatures, to facilitate handling in air powered equipment required in modern service stations. Considerable progress has been made in this direction.

The supply of the correct engine, transmission and chassis lubricants for each particular type and make of vehicle is one feature of specialized lubrication. Other services which have to be given at the service station include shock absorbers to be topped up with a fluid of the correct specification; hydraulic brake systems to be topped up; penetrating oil to be sprayed into open type leaf springs; crank cases and gear boxes to be flushed before filling with fresh lubricants; blocked or missing grease nipples to be replaced; and many other minor but important inspection and lubricating duties to be performed. Tyres must be checked over for cuts, flints, etc., and pressures adjusted correctly, since systamatic tyre maintenance may easily double the working life of a set of tyres, with considerable saving in operating costs.

Certain services attached to normal lubrication services are sometime known as the "safety services." They consist mainly of brake testing and adjusting, wheel aligning, and head-light testing adjustment. These services usually require additional accommodation, and their description, together with engine analysis, testing and tuning, battery-charging, etc., are beyond the scope of this article. They are nevertheless essential, and must be provided in any major servicing organization.

SERVICE STATION DESIGN

The design and equipment of a modern station to provide the various services outlined above will naturally vary, dependent on whether the station owner is seeking to provide facilities for the public or for his own fleet of vehicles. The average fleet owner will set up and equip his service bay in accordance with the number of vehicles to be serviced per day, in order to maintain his fleet on the road at the lowest possible maintenance cost.

For this type of installation an industrial form of equipment is required which, while not having the appearance and sales appeal of equipment required at public service stations, nevertheless retains the essential features necessary for speedy and efficient servicing. For those responsible for the service of large fleets such as passenger transport organizations handling groups of perhaps 100 vehicles, specialized vehicle servicing facilities laid out to suit local operating and garaging requirements are necessary.

The design of stations to serve the private motorist and small-scale local transport owner, should be based on a careful assessment of the probable business to be obtained in the area, together with an appraisement of the extent and effectiveness of local competition. This, in turn, may be much influenced by the availability of a suitable site.

Considerations in selecting a site, on which small operators are usually guided and assisted by oil companies, include local bye-laws in respect to buildings, fire, availability of public services, local developments, etc.. The size of the station will depend upon the type and scale of services to be offered. The smallest station will consist perhaps of refuelling facilities with one light or heavy lift servicing bay providing basic lubrication, tyre, and water services.

Such stations may increase in scale up to 3, 4 or more hydraulic lift bays, together with additional facilities for washing and polishing services. In the realm of major service stations these bays will be supplemented by additional work space where the safety services and running repairs are carried out. Such stations are usually able to offer minor sales services of tyres, accessories and such like. In western countries super stations are frequently combined with a multi-floor garage, and are located at key points in populous areas.

Having finalized the scale of service to be offered, the capacity of fuel storage and handling equipment is to be decided in conjunction with the appropriate oil company, and the servicing equipment selected, so that a lay-out plan may be drawn up from which to prepare the working drawings of the complete station. This lay-out plan must cover the main building, service bays, approach roads and other aspects and make allowance for the possibility of future extension.

Ample provision is required for storage, equipment, rooms and for washing facilities. The spacing and location of buildings, roadways, equipment, etc., is important, and must facilitate the handling of vehicles within the station, due allowance being made for the turning area required to give access to servicing and other bays.

Where possible refuelling points should be covered for use by the private motorist while at the same time an open driveway should be available for refuelling high commercial vehicles. Service

station design is a matter of experience, and certain equipment specialists provide a valuable free design and consultation service to assist the would be station owner.

SELECTION OF EQUIPMENT

The careful selection of service equipment is of the utmost importance, and the advice of reliable equipment specialists or oil companies should be sought before purchasing. The safest rule is to purchase the finest equipment that can be afforded, based on the anticipated scale of business. It is folly to attempt to service with inadequate or inefficient equipment. Equally it is folly to spend large sums of money on equipment for a station which can never obtain sufficient work to justify the expenditure.

Nevertheless, the maximum service capacity of a new station will only be utilized after a patronage has been built up by degrees, and it is not to be expected that the installation of adequate equipment will immediately produce a demand requiring the full working capacity of the station.

Service stations may be classified for capacity according to the number of lift bays. With up-to-date servicing equipment a single lift bay will permit service of between six to eight vehicles per normal working day under Indian conditions. Washing to be undertaken in a separate bay. The central ram type of hydraulic lift is most popular, giving the maximum under-car accessibility, together with the ability to turn the car round on the hoist using the ram as a pivot 3½ tons lifts are usually designed with 16 ft. runways, while 5, 7 and 10 ton lifts are fitted with 22 ft. runways.

Lifts are divided into two main types—the wheel free lift, and the flush fitting drive-on type. The wheel free lift, although popular in the past in this country, is now becoming redundant, as in the Western countries. This type of lift was sometimes preferred for wheel and brake work. Now-a-days most manufacturers recommend that wheel hubs should be repacked but once in every 5,000 miles, and indeed some now omit grease nipples from wheel hubs with this in view. Consequently, only at infrequent services does it become necessary to remove the vehicle wheels while on the lift.

The flush fitting type of drive-on lifts are faster and more convenient for work, and facilitate movement in service bays, where space is at a premium. Special jacks can be fitted to the runways of these lifts for lifting the vehicle to release the wheels, when occasions require.

The well designed modern lift has self-adjusting glands and will operate up to 15 years with the minimum of attention. While 3½ ton lift is adequate for all makes of motor cars and for most small transport vehicles, it must be borne in mind that it is increasingly common to find vehicles which, although within the capacity of a 3½ ton lift by unladen weight, nevertheless require the service of a 5 ton lift, in view of the length of runway required to accommodate wheel-bases in the order of 174" and upwards.

TYPE OF LUBRICANTS

A wide range of lubricants must be available in the service bay to cater for any make of vehicle, and as many as 20 types of oils, greases and fluids may have to be utilized in the course of a day's work. To assist station operators, many oil companies set out their own system of lubrication servicing, which has been worked out by experts to cover almost every type of vehicle.

Their recommendations for lubricants are based on the manufacturers' specifications, and they go to considerable trouble and expense to prepare special charts for the guidance of operators, setting out the particular lubricant or fluid required by each component of a particular make and type of vehicle, together with details of the mileage at which the lubricant is to be applied. For dispensing these lubricants, a wide range of equipment is available, from the simplest grease gun trolly to attractive cabinets housing air operated oil and grease pumps, penetrating oil sprayer hoses, air hoses' pressure gangs lift controls, and in addition incorporating up to four self-reeling metered oil hoses.

For the small station, independent air operated oil and grease drum pumps are available for dispensing lubricants, if desired, direct from the original oil companies' drums, which are enclosed in attractive covers and serve to locate the pump centrally within the drum. This arrangement avoids the necessity to decant lubricants from larger containers, thus saving time and ensuring that the lubricant is delivered free from contamination.

The most satisfactory method of dispensing high pressure grease lubricants is undoubtedly by the use of overhead swing arms carrying the grease hose and a simple control valve. This swing arm is fed with grease under high pressure from the grease pump via special steel pipework designed to carry pressures up to 10,000 lbs. per sq. inch. Supplementary lubrication equipment includes mobile containers designed to facilitate the collection of waste oil drained from gear boxes, engine pumps etc.

Still other equipment is available for air-powered gear box flushing operations, subsequent to drainage. With a wide range of choice it is possible for the small station to commence with the simplest type of equipment and expand steadily as the station develops.

For casual services roadside type oil dispensers are available with hand operated pumps delivering a specific amount of lubricant per stroke. Powered equipment, in the form of pedestal mounted oil meters fitted with hose and control valves, are coming into increasing use, the meters being fitted with totalizers recording the total volume of sales.

Air services from pedestal or wall type tyre inflators are now most commonly fitted with large dials, which clearly indicate the actual pressures in the tyres being serviced, controls being simply arranged to adjust tyre pressure as required.

A useful accessory is the trolley type garage jack. These jacks, which are particularly useful for emergency work in small stations, as well as for general work in larger stations, are usually made with lifts varying from 2 to 3 ft. and in capacity from 1½ to 10 tons. It is essential that the jacks should not exceed 5 inches height when down in the case of light car jacks, or 6 inches height for heavier vehicle jacks, in order to cater for low axled vehicles.

AIR COMPRESSOR

An air compressor is required for the various power operated pumps, hydraulic lifts tyre services, air cleaning guns, etc. This piece of equipment is the heart of the service station, and like the human heart, if undersized or overworked, will soon become unreliable, with equally disastrous consequences.

Service station compressors may be divided into two classes single stage and double stage. In two-stage units the air is first compressed in one cylinder, cooled, and then compressed again in a second cylinder. The two stage

twin cylinder compressor is very much more efficient than a single stage compressor, and will pump approximately 40% more air at 200 lbs. per sq. inch pressure than a single stage compressor of the same horse power, while the maximum temperature of the delivered air is nearly half that of the single stage compressor.

In practice it will be found, when comparing compressors of the same air capacity in terms of cubic feet per minute, that the two-stage compressor will show a saving of some 15% in electric consumption over its single stage counterpart. As a rough guide, each horse power of the compressor motor will produce approximately 4 cubic feet of free air per minute.

Some manufacturers achieve a greater output in small models by operating the compressor at high speed. This high pulse rate usually ends up in heart stroke. A well designed, slow reviving two-stage air compressor, preferably with high and low pressure air outlets, capable of not less than 150 lbs. per sq. inch pressure, with a good capacity air receiver, is required.

The horse power of the compressor will depend on the volume of air required to operate the station equipment. Stations fitted with heavy transport lifts—5-ton upwards—require additional air, and it is usual to have an 18 cubic feet per minute compressor for 5-ton hoists, and a 24 cubic feet per minute compressor for 2 nos. 5-ton hoists or for 7 or 10-ton hoists.

In this country the design of cooling arrangements is important, and units of 6 horse power are frequently water-cooled and incorporate a simple design of radiator. All garage type compressors should be fully automatic in action, cutting in and out within specific limits by means of an air operated pressure switch which controls the no volt release circuit of the electric starter. A well-designed unit will automatically unload the compressor on cutting out, so that the electric motor can start without a load when subsequently switched in by the pressure switch arrangement.

It is as well to note that it is unwise, and frequently against electrical regulations, to switch motors exceeding 2 h. p. direct on to electric mains, and better types of compressors include contactor relay type starters which switch the motor on to the mains in 2/3 stages, thus avoiding excess starting current, blown fuses, burnt out armatures, etc. These refinements may make the compressor a little more expensive, but are well worth the investment in the long run.

WASHING FACILITIES

The provision of high pressure washing facilities at service stations is now considered as essential in India as in Western countries. The ideal arrangement is perhaps to wash vehicles on a suitable lift located in a washbay, the floor of which has been specially prepared for the purpose.

These washbays are frequently constructed with non-skid steel flooring fitted into recesses in the floor of the bay, so that water and mud is carried through the flooring to suitable sumps and drainage. High pressure washing machines incorporating large capacity storage tanks, provide speedy and efficient washing services with the minimum effort. One and two-gun units are capable of delivering a jet of water at pressures up to 400 lbs. per sq. inch, which may be varied through a simple rotary control at the spray gun, down to the finest spray for finishing purposes.

In order to permit the operator to shut off the Water at the spray gun, modern washing machines are fitted with an unloader mechanism which automatically unloads the electric motor when the control valve is shut, thus preventing excessive strain on the mechanical pump and electric overloads on the motor.

In India, it has been found particularly convenient to locate as much as possible of the powered equipment in an equipment room adjacent to the service bay, and services from oil and grease pumps, oil sprayers, air compressors, washing machines, etc., are piped from such rooms to the servicing points. The attention of the normal servicing operator is thereby restricted to the operation of the control valves of the various services, and the actual pumping equipment is usually locked away for most of the day, and only requires routine attention on first operation in the morning. In this way the equipment is under the supervision of one member of the staff—an arrangement which usually proves most satisfactory from every point of view.

PERSONAL SERVICE

Many merchants sell oils. The service station sells lubrication. The difference is a matter of specialized service, and the success or failure of the station is usually dependent on the supervision, and the care and attention given to the details of service by the station owner and operating staff.

The station must be kept clean and attractive in order to gain and retain public confidence. Good lighting is essential for night sales—Services must be willingly and promptly given with courtesy. Air and water services should be free. Contract servicing can be undertaken, provided the staff is sufficiently trained and practised to ensure punctuality in meeting service obligations.

In this case a customer reminder system is essential. Before any vehicle leaves the service bay every detail must be checked as being systematically serviced. After the check, re-check the good work will not be undone by the customers' annoyance on finding dirty marks left by the servicing staff on upholstery, or excessive lubricant left on door locks, etc., to find its way on to clothing. The owners' attention should be drawn to any parts noted during the service inspection which require repairs or replacements.

Petrol pumps should be kept in first class condition, and small details such as wiping the hose nozzle in the monsoon, and covering the filler hole of the car tank so that rain cannot get in are appreciated by the discerning motorist. Similarly, windscreens should be wiped over, headlights and number plates cleaned, and inquiries made as to the need for oil or water when giving petrol services.

An adequate scale of fire-fighting equipment should be maintained in good order, and every member of the staff should be aware of his duties in the event of a fire. A wise station owner, when inquiring in regard to fire insurance, will also investigate, with the aid of an insurance company, his third party responsibilities arising from accidents on his premises.

Finally, it is well, if every service station owner remembers his responsibility to the motor industry as a whole. While it is perfectly reasonable to keep informed on a competitor's progress, and to endeavour to establish a lead in sales and service, goodwill is essential, and the motorist, motor trade and the country as a whole must benefit by co-operation between all members of the transport industry on matters which led to the improvement and development of road transport in India. The above article is a reproduction from the Calcutta *Stateman's Automobile Survey* Supplement.

AIR TRANSPORT

Airways (India) Ltd.–An Efficient Operator

By Our Special Correspondent

THE people of this Province know that there is one airline by name Airways India operating Calcutta-Bangalore service daily. They hear at noon daily the drone of the twin-engined Dakota flying low over the city for a touch-down at Meenambakkam Civil Aerodrome. But how far this airline has contributed to the development and progress of Civil Aviation in this country they do not know. Hence is the purport of penning this article.

I had the privilege of travelling by Airways India Dakota from Madras to Calcutta sometime in March this year. Although I had travelled in several other airlines I cannot compare the standard of service and courtesy a passenger receives while travelling by Airways India. It seems "Service is their motto" and in fact I witnessed the Steward who travels in the same aircraft attends to the comforts of passengers minute-to-minute. Above all, in every fifteen minutes you get a slip from the Commander known as "Route Information for the Passengers." This is a unique feature that could be seen only in this Company. Really such information to the passengers does put them off from the monotonous and loneliness.

I will be failing in my duty if I did not make a mention about the crews employed by this Company. Airways India has an excellent complement of crews who are mostly Indians, Unlike other airlines, the Chief of this Company

This group photograph of air crew members was taken by our Editor at Vizag. Airport with kind permission of Mr. Mazumdar, Aerodrome Officer.

Mr. K. K. Roy has given employment for most of the Indians thus eliminating the monopoly of foreign pilots in India. On this the Managing Director deserves all praise and congratulations from us. Among the Indian airlines today Airways India ranks first. Why? It is all due to the indefatigable efforts of Mr. Roy. Words are inadequate to describe his achievements and success in Civil Aviation world. The following figures will speak for itself.

YEARLY PROGRESS OF AIRWAYS (INDIA) LTD.

OPERATIONAL STATISTICS 1946—1950.

	1946 Sept-Dec.	1947	1948	1949	1950
Plane Hours	79	3,367	8,476	12,774	24,815
Plane Miles	10,941	5,04,711	13,14,939	18,40,099	36,00,415
Revenue Passengers	327	9,910	31,476	48,639	1,02,646
Revenue Pas. Miles	73,189	48,80,853	134,21,339	174,66,634	307,00,961
Revenue Cargo (incl. Frt. excess Bagg. & Newspaper in lbs.)	4,424	3,30,343	13,91,085	33,24,701	240,81,048
Mail in lbs.	—	27,092	3,42,695	5,36,648	17,45,208
Revenue ton-miles	6,933	5,18,254	15,18,874	21,41,820	60,30,354
Capacity ton-miles	—	9,46,766	25,18,905	40,53,208	93,01,266

Today Airways India under the able directorship of Sri Roy are operating a net-work of routes in Assam and North Bengal besides Calcutta, Bombay and Bangalore routes. Last year this Company has made profits. Mr. Roy believes that contended labour is an asset to the Company. Keeping this belief abreast Mr. Roy declared four months' salary last year as bonus for all the employees according to length of service.

Capt. Singh

Capt. K. D. Menon

It will be interesting to recall here the small beginning of this Company. This Company started operations in 1946 with three Dakotas. Although the Company faced with serious handicaps and obstacles in the beginning the efficient management of an able Director of Mr. Roy's calibre kept the Company above such handicaps.

Mr. Kiron K. Roy, Chief of Airways (India)
..... Unassuming and unostentatious .....

Children airlifted from Calcutta to Darjeeling in March at Concessional Rates

Today the very same Company owns 14 Dakotas—the largest operating Dakota fleet in India—besides two 8 seater "Dove" aircraft.

During March, Airways India moved about 650 school children by air from Calcutta to Darjeeling at a very cheap rate. In freight operations the Company has carried consumers goods and ferried cars and small aircraft.

The Air Transport Enquiry Committee appointed by the Government of India has paid very high tributes to Airways India in their operations. This is one more feather in Mr. Roy's cap! We are publishing a photopraph of Mr. Roy with this small note so that our future generation may remember him with glee and tell stories. "Here is a great air-minded man who built up aviation industry for us."

Judged from the record of achievements and figures before us, we have every reason to believe that Airways India not in the too-distant-future date will spread up its wings under its able Director Kiron K. Roy throughout the length and breadth of Hindusthan. We take this opportunity of congratulating Mr. Roy for the remarkable contributions made to the Civil Aviation in general and Indian aviation industry in particular.

Indo-Danish News Bulletin
One Year Old

In August last year the Royal Danish Legation in Bombay started publishing a monthly news bulletin "Danish News." During the past year, 12 monthly issues have been published and 4 special issues.

Danish News is distributed amongst leading newspapers in India, Chambers of Commerce, Government Institutions, etc. and a large number of dailies, weeklies and monthlies have published articles from Danish News.

Danish News deals with Indo-Danish trade relations and cultural and social developments in India. A special issue was published regarding social benefits for children in Denmark and another issue dealt with "Denmark as a Tourist Country."

A few copies of Danish News are distributed in Burma, Ceylon and Pakistan and readers of Danish News in these countries and in India also receive another Danish monthly "Copenhagen Review."

Before we become a nation possessing an effective voice in the councils of nations, we must be prepared to contemplate with equanimity, not a thousand murders of innocent men and women but many thousands. Only then can we attain a status in the world that shall not be surpassed by any other nation.—M. K. GANDHI

A History of the Aeronautical Industry in India

HINDUSTHAN Aircraft was registered on December 23, 1940 and construction started promptly on January 1st, 1941. The original programme was for the manufacture of Curtiss Hawk Fighters, Vultee Bombers, Harlow Trainers and spare parts for each, to a total of $ 44,00,000 with the understanding to increase the contract to $ 10,000,000 if found possible. Encompassing more than 150 acres of land it has over 1 million sq. ft. of buildings exclusive of residential quarters.

When plans were being formulated, the Founders Seth Walchand Hirachand and his associates faced a storm of criticism.

The critics declared that under the existing circumstances aircraft could not be sucessfully, economically and efficiently manufactured in India in any reasonable time, and that the money, materials and machinery should not be withdrawn from established factories in England and America where they could be of much more direct and immediate benefit to the war effort. The courage of the Founders in carrying forward this enterprise in the face of such criticism is indeed praise worthy.

The original capital was Rs. 40 lakhs which was increased to Rs. 75 lakhs in 1941 and Rs. 1 crore 75 lakhs in 1947–48.

In March 1941 the India Government desired to take active part and became a shareholder paying Rs. 25 lakhs. Air Marshal Sir John Higgins was appointed as Resident Director. The following account of the factory which then appeared in the American Magazine "Life" makes interesting reading.

"In the industrial desert of India, American enterprise has produced one first-class airplane factory shown for the first time in these pages. It is William Pawley's Hindusthan Aircraft Limited, and naturally it is in India's most progressive State, Mysore, which has plenty of electric power, steel and semi-skilled labour. This one plant saves the US and Britain, millions of tons of shipping space in their effort to apply air power to the continent of Asia. Its very existence is a total surprise to most Americans.

Its Founder and President, William Douglas Pawley, is the same American Mystery Man who agitated the famous Flying Tiger into existence. For seven years he owned China's only plane factory and sold China 30,000,000 dollars worth of planes and service. When the Japanese last bombed his plant on the border of Burma, he had already moved the machinery and equipment out to Mysore. He is also President of Intercontinent Aviation Corporation in New York which sold its Florida plant to Vultee last autumn. The factory in Mysore assembles Vultee and Curtiss type ships and produces Harlow trainers. In a little less than two years, it has equipped itself to repair any type of American plane and has dug out a channel for flying bats. William Pawley's flair for being at the right place a few minutes before the right time has come in handy again for the United Nations."

The first aeroplane to be assembled by the factory was flown in August 1941. This was a Harlow PC-5 two-seat training monoplane of all-metal construction.

WAR YEARS

In April 1942 HAL was taken over by the Government of India during the period of the war. A year later, the first Curtiss, 'HAWK' P-36, a single-seat fighter monoplane was completed and given over to the Government. In the meantime, a group of Indian Engineers at HAL designed and developed a ten place troop carrier glider for the Government of India. The first glider was built and successfully flown in 1942.

In August 1942, however, with war pressure increasing, the Central Government assumed sole control, buying out the Hirachand interest and securing agreement from Mysore to assume the role of silent partner. First planes were beginning to toll off the lines. But concurrent with this work there was a steadily increasing pressure for maintenance work by the Allied air forces which cut into production plans.

By the following September this work had assumed such proportions that a complete redirection of activity was decided on. With the USAAF acting as Managing Agents, Hindusthan became an outright maintenance and overhaul base. Its already well-equipped plant was expanded ultimately to about four times its original capacity for overhaul work, personnel rosters ballooned, and during the next two years achievements were recorded which all authorities found compared well with those of other plants of like size and nature.

From mid 1942 to early 1943 a phenomenal increase in labour force took place from 3,500 to 13,500. Peak point came in early 1945 with 16,000. HAL was then called 84th Air Depot of the USAAF. The original cost value of the plant and facilities was trebled and stood approximately at $ 4,500,000. Though roughly half of this was taken away by the USAAF the net result is that HAL still has twice the machinery it had before the American Army took over, and there are no gaps.

Between the fall of 1943 and mid 1945 the following overhaul figures were recorded.

	Qty.
C-47 Cargo	406
B-25 Light Bomber	374
B-24 Heavy Bomber	176
Catalinas	55
Aircraft Engines	3,800
Misc. Aircraft	160

The work was being turned out fast as well. Overhaul time per single engine varied between 300 and 500 man hours depending on availability of spares, and air frame overhaul swung between 7000 and 10,000 man hours. Key to this production was the breaking down of every piece of work into its simplest components to permit the comparatively quick training of unskilled workmen. Every job of major size became an assembly line process; inspector's methods too were broken down accordingly.

POST-WAR PERIOD

This work was cut off abruptly in mid 1945 and Hindusthan assumed a comparatively somnolent existence pending crystallization of Government post-war policy. In 1945 the U. S. Army gave up the Managing Agency. The Board of Directors was constituted with Minister of Industry and Supply as Chairman, the representative of Mysore Government as Vice-Chairman and J. R. D. Tata as the Nominee of the Government on the board.

Keenly alive to the necessity of promoting the aeronautical industry in the country, Government invited a Technical Mission from U. K. to advise them on certain aspects and according to their

recommendations Hindusthan was selected as the first factory for development. In the meanwhile India's enterprising airline operaters bought over many war surplus Dakotas and HAL was entrusted with the work of converting these cargo planes into comfortable passenger carriers. HAL engineers also started designing a new type all-metal railway coach and the Railway Board placed substantial orders in order to improve the lot of III class travelling public. An American newspaperman who visited HAL at this time made the following report :—

The factory "handles every aspect of Dakota conversion, even to manufacturing its own seats and other fittings; it offers complete overhaul for C of A, including propeller radio and instrument work and there is no argument about whether its work stands the test of operation flying, for there has not been a crash on any scheduled Indian airline flight. This means only one thing—that Hindustan knows its business. It should, for the 3,500 men left at the factory are the cream of labour force that totalled more than 13,000 skilled and semi-skilled workers."

As an American he was particularly impressed by the contribution of Americans and says "Despite its India's ownership, Hindusthan has always held the reputation of being a slice of America set down in Southern India. At the highest point it had more than 250 American management, engineering and technical men on its pay rolls."

The mark they left is a deep one. Not only is the factory of American design, equipped with American machinery and run on American lines, but even the language of many of the men has lost the previously characteristic British pronounciation. The "Capper" comes on a walk through the plant where one realizes that the final piece of Americanization is complete-jaws at work on U. S. chewing gum.

Although HAL has made its mark in this field, it is only now digging in for a fresh start down its original course—aircraft construction. The Government has given the factory the assignment of building 30 British Percival "Prentice" trainers, assembling 20 from parts shipped out from Britain, and—as an intermediate step between the last and the first stage —assembling 20 others from a combination of imported and HAL made components."

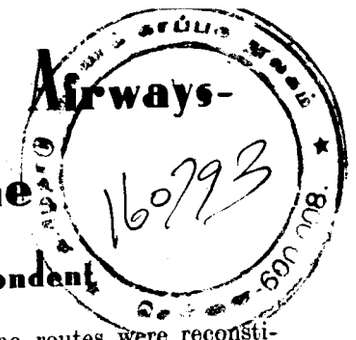
The Design Department under Dr. Ghatage, has designed the HT-2 an all-metal monoplane which is now in prototype stage. This is a primary trainer for Flying Clubs, private individuals and National Cadet Corps. An advanced trainer with a turbine engine is being developed for the Indian Air Force. Preliminary design specifications have been completed.

Development work on a Twin-Engined Medium Bomber aircraft is being initiated as a third major project; a scheme for the development of aero and commercial type engines is receiving the active consideration of the experts.

Ten years have passed, but it was only since 1946 that HAL started functioning on a commercial basis. And there is to its credit today such a volume of actual output, that the greatest confidence can be placed on its future as a national industry of importance. As many expert observers have commented "More than the equipment and other facilities, it is the trained and experience personnel which is the real asset of the factory." (By courtesy of "*Vimana Samachar.*")

The History of Bharat Airways—The Birla Line

By Our Special Correspondent



THE end of the second world war practically heralds a new era in the Indian Air Transport Industry. It was June 1946 when the illustrious Birlas entered into the field of Aviation. This is the small beginning of Bharat Airways—a costly enterprise of Birlas which is significant of their sagacity and business intelligence. Thus the inception of Bharat Airways is fulfilment of one of their cherished dreams. This is an adventure in a new domain which was undertaken in a spirit of service of paramount national importance and today the airline has come to be an asset to our motherland—a fact Birlas can be well proud of. It is a legacy of Birlas we can safely say for the posterity to remember what their ancestors did for the promotion of civil aviation.

Although Bharat came into existence as late as 1946, actual commercial operations began from January 1947 firstly on the basis of non-scheduled lines. Barely within six months Bharat commenced its scheduled services the first route being Calcutta/Gaya/Lucknow and Delhi to which a couple of months later, another route Patna/and Benares was added along with Calcutta / Allahabad / Kanpur and Delhi and Delhi Amritsar / Delhi shuttle service. The then Director General of Civil Aviation in India appreciated the efficient and prompt operations of the first route and in no time the routes were reconstituted for increasing the frequencies. Of course the routes of Calcutta/Delhi services were changed from time to time in the light of experience gained and the traffic potential offering at various points.

In September 1947 responding to the clarion call of the National Government, Bharat Airways placed all its surplus serviceable aircraft at the disposal of the Government of India at New Delhi for rehabilitation of refugees from East Pakistan and also for Kashmir operations. This speaks in volumes of Bharat's ever-readiness for national service in the larger interests of the country.

Fourteenth June 1948 witnessed the commencement of another daily service between Calcutta and Chittagong which is still continuing. Again in 1949 Bharat was granted permission to operate daily service between Calcutta and Agartala. Soon afterwards this service was extended to Gauhati and now the Bharat is operating several scheduled services to various points i. e. Assam via Kumbhigram, Tezpur, Jorhat and Mohanbari.

The following figures will reveal the operations of Bharat between July 1947 and June 1950.

Statistical figures—From July 1947 to June 1950

	July'47 to June'48.	July'48 to June'49	July'49 to June'50
Routes Miles Operated	2,030,386	990,498	566,474
No. of Rev : Pax : carried	74,716	26,678	14,198

Rev: Pax: Miles Flown	17,398,795	9,786,113	6,315,595
Rev: Ton Miles Flown:			
Pax: (including free baggages)	1,527,233	870,257	558,857
Mails	100,333	50,916	18,570
Cargo & Ex: Bagg:	1,735,531,	114,144	56,175
Total	3,363,097	1,035,317	633,602

The following statistics will reveal the number of technical personnel employed by Bharat and the type of aircraft owned by them :—

		1947-48		1948-49		1949-50
Pilots	...	15		37		37
Radio Officers	...	14		15		15
Staff	...	305		480		955
Aircraft—Dak	...	9	Dak	11		12
Ansons	...	2	Ansons	1	Avro	1
Wayfairer	...	1	W'Fairer	1	W. F.	1
Sentinel	...	2	Sentinel	1	Sen.	1
			Skymaster	2	S. M.	2
			Bonanza	1		

Sri Raja Gopalachari, Home Minister, Government of India, photographed at the Amausi Aerodrome (Lucknow) before he took off for Delhi.

Bharat has made a name not only in India but also in foreign countries. It is one of the two Indian airlines operating on International routes. Bharat is contributing its due share in bringing Asian Peoples Closer and cementing ties of friendship and cultural relationship between them by the recent inauguration of the Calcutta-Singapore service via Bangkok.

On the inaugural flight of this service a luxurious Skymaster DC-4 of Bharat took off from Dum Dum airport on October 6 at 11-30 P. M. amidst scenes of enthusiasm and jubilation to establish for the first time, an Indian Air Link with the Far East. The event justly constitutes a landmark in the progress of civil aviation.

A large number of distinguished guests including representatives of the Press graced the occasion. Messages of blessings from the Prime Minister of India, Hon'ble Mr. Rafi Ahmed Kidwai, Communications Minister, Mr. Kurshidlal, Deputy Minister for Communications and Dr. B. C. Roy, Chief Minister of West Bengal, were received.

The Prime Minister of India welcomes the service as a link between India and the countries of the Far East which are playing such an important part in the world affairs at present.

The late Sardar Patel was pleased to say "Our ties with the countries East of us are more ancient and intimate than those with the West. Bharat Airways' Far Eastern Service planes in that sense need not, therefore, be strangers to these lands. At the same time, they must be ambassadors of goodwill and enlightened

Sri Haradatta Rai Sugla

neighbourliness. They have also to maintain a high standard of tradition and culture for which India indisputably stands."

The Communications Minister, Mr. Rafi Ahmed Kidwai, said that this starting of another International Air Service in regions with which India had cultural associations for centuries past would give immense satisfaction to the large number of Internationals who have settled down in those areas.

A grand reception for the inaugural flight was arranged at Singapore.

Today Bharat Airways enjoys the unique reputation that no member of the public flying on its service has suffered due to accident or crashes in the course of its operations—an important psychological factor usually weighing with the general public while choosing the air company they would like to patronise.

We will be failing in our duty if we did not make a mention of the Chief of this Airline.

The success of Bharat Airways is largely due to the initiative, courage, grit and persistence of its General Manager Sri Haradatta Rai Sugla assisted by a team of worthy colleagues and workers. Medium-built, chubby faced, fifty-year old Sri Sugla hails from Bhiwani in the East Punjab where he was a Lawyer and Municipal Commissioner. The year 1943 proved to be a turning point in his career and he joined Birla Brothers and served their different sister concerns in various capacities. His self-acquired and vast knowledge on problems of complicated nature affecting the aviation industry, got him Vice-Presidentship of the Air Transport Association of India. His pleasing manners and perfect gentlemanliness besides his unassuming outlook bring him continued success in life. Sugla's name is associated in every charitable institution and social organisation throughout the country. Whenever any visitor approaches Sugla for any favor or assistance, he hardly refuses him. It is gratifying to note that he has the highest respect for members of the Fourth Estate.

To be honest in a right line, and virtuous by epitome, be firm unto such principles of goodness, as carry in them volumes of instruction and may abridge thy labour. And since instructions are many, hold close unto those whereon the rest depend.—SIR THOMAS BROWNE.

(Continued from page 22)

waymen to heed the appeal of the Prime Minister of India and to support him in all his undertaking.

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RAILWAY FINANCE

The first All-India Conference of Railway Financial Advisers and Chief Accounts Officers held in Bombay middle of this month. The Conference discussed the co-ordination of Railways Accounts and Finance.

Inaugurating the Conference of Financial Advisers and Chief Accounts Officers of Indian Railways, India's Transport Minister, Mr. N. Gopalaswamy Ayyangar, stressed the need for closer co-ordination between the Finance and Accounts branches of the Railway Administration with a view to improving the efficieny of the Railway Organisation.

Mr. Ayyangar said the Indian Railways were the largest single industry in the country owned and managed by the State and played an important role in the economic structure of the country. He said every possible step should be taken to improve the machinery of control over financial expenditure.

The Railways Minister was welcomed by Mr. A. K. Chanda, Financial Commissioner for Railways, who conducted the deliberations of the Conference. Mr. Chanda said that the Conference had arrived at certain conclusions in this connection and the Railway Board would shortly submit to the Ministry of Railways certain recommendations to accomplish increased efficiency.

Among those present were Messrs. N. C. Deb, Director General, Finance (Budget), Railway Board: K. Sadagopan, Director Genaral, Finance (Expenditure) Railway Board; S. S. Vasist, Member, Transportation, Railway Board, H. P. Hira, General Manager, G. I. P. Railway, K. P. Mushran, General Manager of the B. B. & C. I. Railway and Officers of various other Railways.

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AURANGABAD STATE HOTEL

Sometime back we published an article on "Aurangabad State Hotel" from our Correspondent. The General Manager of the N. S. Railway desires us to give due publicity for the letters of appreciations received from the top-ranking personalities on the high quality of service and efficiency of the State Hotel. We have, therefore, pleasure in reproducing the same below—(Editor).

Col. B. Chatterjee, Military Secretary to the Governor-General, Government House, New Delhi in his letter dated 26th December 1949 to Mrs. Mitchell, Manageress, State Hotel, Aurangabad, says: "I am desired by His Excellency the Governor General to forward to you the accompanying autographed photograph of His Excellency the Governor General as a Memento of the very pleasant time His Excellency spent at the State Hotel, during his visit to Aurangabad last week. On behalf of His Excellency's daughter and son, as well as His Excellency's staff, I thank you for the excellent arrangements made for our stay in the Hotel which we all enjoyed immensely."

A letter from a party of Swedish Indian Society through the Tourist Agents Messrs. Cox & Kings Ltd. to the Manageress, State Hotel, Aurangabad says: "I am writing to tell you how pleased I was to receive such a favourable report from the Conductor of the

above party of tourists prior to their departure from Bombay.

"He spoke very highly of the attention and service given during their stay in Aurangabad and in the opinion of the tourists themselves, the State Hotel was the most comfortable of all the Hotels they had stayed at during their recent tour of Pakistan and India.

"Please accept my thanks and best wishes."

The Chief Minister, Government of Hyderabad in his letter to Mrs. Mitchell, Manageress, State Hotel, Aurangabad, says: "I am writing to thank you for the excellent arrangements made for the comfort of Sardar Patel and his entourage during our stay in Aurangabad. Sardar Patel expressed himself as very much struck by the efficient and orderly manner in which you are managing the Hotel. He told me what indeed is said by everyone who visits the Hotel—that there is no other Hotel in India which is managed so efficiently and kept so clean."

Dr. Bhola Datt Panth, Consulting Engineer, Nerbudda Club, Jubbulpore to the District Traffic Manager, N. S. Railway, says: "Recently my wife and I spent about twelve delightful days in your State Hotel at Aurangabad. Had we more time at our disposal, we would have certainly stayed on for a longer period.

"To my estimation this is the best hotel that I have come across in the whole of India from the point of cleanliness, comfort, food and general services. The cuisine is superbly managed and can be compared favourably with any first rate hotel in the United States. What impressed me most was the personal concern that the staff manifested in complying to the wishes of the guests. This is most probably due to the nice treatment that is accorded to the servants by the Administration. Mrs. Mitchell, the Manageress of the Hotel, is indeed doing a first rate job and I wish to take advantage of this occasion to commend her and to thank you for our stay at Aurangabad."

Do You?

Do you throw empty bottles or tins from a moving train? A Gangman or other Railway employee working on the line may receive serious injuries if you do.

Do you light a methylated spirit stove in your compartment or throw a burning match on the floor? Fires often result when you do.

Do you lean out of a window or rest with an arm or leg protruding out of the window? Serious accidents have happened to passengers who do.

Do you attempt to board or alight from a moving train? If you do, please don't; for many fatal accidents have resulted to people who do.

Do you cross the Railway lines on the level or do you use the overbridge provided? It is safer to climb the stairs.

Our Editor Weds

By S. Prakash

ON the first of July 1951, synchronising with the Third Year of the birth of the "SOUTHERN RAILWAYS MAGAZINE" our Editor Sri T. S. Krishna Rao was joined in wedlock to Miss Anusuya Boi Dabir. The marriage function held at Tanjore was largely attended by friends and well-wishers of Mr. Rao. Messages wishing the couple all happiness were received from the cross-section of our nation and an objective review is given below:—

UNION GOVERNMENT

President of Indian Republic:	Dr. Rajendra Prasad
Prime Minister of India:	Mr. Jawaharlal Nehru
Minister of State Transport & Railways:	Mr. K. Santhanam
Commander-in-Chief of India:	General K. M. Cariappa
Minister For National Resources & Scientific Research:	Sri Prakasa

STATE GOVERNMENTS

Governor of West Bengal:	Dr. Kailash Nath Katju
Governor of Madras:	Maharaja of Bhavnagar
Governor of Central Provinces:	Mangaldas Pakavasa
Governor of Bombay:	Raja Maharaj Singh
Chief Minister of Mysore:	Sri K. Chengalraya Reddy

Mr. & Mrs. T. S. Krishna Rao

RAILWAYS:	
General Manager, Southern Railway:	Mr. K. R. Ramanujam
General Manager, G. I. P. Railway:	Mr. H. P. Hira
General Manager, B. B. & C. I. Railway:	Mr. K. P. Mushran
Chief Traffic Manager, G. I. P. Railway:	Mr. M. G. Iyer
Jt. Public Relations Officer, G. I. P. and B. B. & C. I. Railways:	Mr. B. L. Kapur
Dy. Chief Engineer (Signals) B. B. & C. I. Railway:	Mr. H. C. Towers
Public Relations Officer, Southern Railway:	Mr. R. Gopalakrishnan
INDUSTRIALISTS	
The Mysore Kirloskar Ltd., Harihar:	Mrs. R. L. Kirloskar
	Mr. M. B. Jambhekar
	Mr. S. N. Dhanaraj, Medical Officer
The Shalimar Paint, Colour & Varnish Co., Ltd., Calcutta:	Mr. G. H. Gates-Reed, M. I. A. M. A.
Prince of Tanjore:	Prathapa Simha Raja Chatrapathy
Railwaymen: S. I. Railway Employees' Association:	Mr. V. S. Ramanathan, General Secretary

It is significant to note that the messages detailed above are from the cream of our nation who are very very great in their own sphere and have sacrificed their all for bringing Independence to India and are striving hard to build up the noble edifice. What then do these messages indicate? It indicates unequivocally that during these two years of existence "THE SOUTHERN RAILWAYS MAGAZINE" has played such a notable part in welding together the loose elements in the nation and forged a national unity to fight disruptionists on the one hand and give a constructive lead on the other hand through Railwaymen who are India's shock-brigade. It also shows that Railwaymen whose patriotism was never in doubt, play an important part in shaping the future of the Indian Nation. A cursory glance of the back numbers of the Magazine will reveal even to a casual observer that in the matter of Railway operation, engineering, public relations, staff matters, signalling installations, the Magazine has done much spade work that the credit must go to Sri Krishna Rao in bringing this Magazine to this standard within such a short time. The Engineering Supplement which came out on the eve of the marriage is a pride of Indian Railways and the Pride of our Nation too. The success of the Magazine is due to the fact that it has been able to canalize the idealism and the constructive urges of the Railwaymen into new lines of activity and progress.

Today better than ever when cheap rubbish magazines are lifting their heads, personalities and not policies are being discussed, it is very hard to run a technical magazine at this standard. In this laudable effort Mr. Krishna Rao is ably assisted by his three brothers Mr. T. S. Sundar Rao, Mr. T. S. Gopal Rao, and Mr. T. S. Nagaraja Rao. Mr. T. S. Nagaraja Rao like Lord Clive left the South Indian Railway service for a post in the Press Trust of India and earned the love of his countrymen by his reporting in the famous Razakar campaign in Hyderabad. He was also interned for sometime. The success of the Magaz ne is also due to the voluntary contributions of eminent writers such as Mr. A. H. Pearson, Mr. Gates-Reed, Mr. H. C. Towers, Mr. P. G. Rose and a host of others.

Today when our Nation is on the cross roads, when our beloved leaders are discussing the future and when the elections are coming, the role of a Railway Magazine commanding the widest support of not only Railwaymen but the nation as a whole is very difficult. But in spite of difficulties this will march on to progress and in this belief we can only rely on the past history of some of the eminent journals like "Modern Review" and so on. On behalf of the Railwaymen we wish a most happy matrimonial life to Mr. and Mrs. Krishna Rao and echo the sentiments expressed by our *General Manager Mr. K. R. Ramanujam viz.* "*May your wedded life be one sweet song right through.*" *I wish to add* "*May you both serve the* "*Southern Railways Magazine*" *to the best of your ability and to the true interests of Railwaymen and Nation.*

Paris in Birthday Splendour (1951)

1951 in France marks Paris' 2000th birthday adding to the myriad attractions of this ever-brilliant Capital. The "City of Lights" in addition to its normal schedule of events is busy with plans for a festival of song in April, a city-wide flower decoration contest in May, plus a string of special concerts, costume balls and night tableaux to be held throughout the year.

The visits outside Paris this year will cost between Rs. 15/—to Rs. 30/—a day, room and meals included. Festive Paris will cost about tiwce this amount in a first class hotel, but the canny tourist with an eye to a bargain should be able to cut this figure down considerably. Paris, has deluxe hotels, fashionable restaurants and gay night clubs; but it also has countless comfortable and inexpensive hotels, charming bistros serving good food at moderate prices, and any number, of theatres and cellar clubs where the average citizen can be gay without putting an awesome dent in the vacation budget. The traveller arriving before the summer rush will also be able to take advantage of new "thrift season" rates.

Everyone travelling abroad in 1951 will naturally make Paris a "must" stop because of her birthday celebrations, but the wise tourist will also take the time to see how the people of France, in big industrial cities like Lyons and Marseilles and in tiny resort towns like Luchon and Cassis are tackling today's problems and building toward economic stability and the preserving of their democratic ideals and spirit. It's a truly wonderful lesson in international relationships.

Praise is a Helping Hand

Praise a boy and you give him a helping hand. Praise helps to build his self-confidence. It makes him feel that he can do what he should. Criticise him and he gets angry and resentful; he is discouraged, begins to doubt his own ability and feels unequal to his task.

In the beginning an elder and a wiser person should, no doubt, show him the way to do things. The way he sets about, the way he works, the way he gets along with others, all these and more require to be watched and supervised. Guidance is often necessary, but the manner in which such guidance is given makes a big difference. For, on that manner depends the shaping of the attitude he develops towards authority.

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It is so easy to be impatient with one's attempt to do a job. Criticism is often hard to take in spite of the very good intentions behind.

Don't praise indiscriminately. *Tell him he has done well when he has actually done well.* Though this is only about one thing, the encouragement carries him on through several other things.

As in every service, so in the Railways too. Let Officers and Supervisory Staff in every Department know the golden principle that "Praise is a Helping Hand" to them. Was it the intuitive knowledge of this principle that led to the introduction of the new feature of Personal Letters in their Weekly Gazette from Heads of Departments to Staff on the South Indian Railway? This feature is well worth imitating on the other Railways too.

SOUTHERN RAILWAYS MAGAZINE

VOL. III NO. 2 — AUGUST 1951 — ISSUED MONTHLY

"The Tension Eased"

THE nation as a whole, and Railwaymen in particular, must have read with genuine relief, the decision of the Action Committee of the All-India Railwaymen's Federation, at their meeting in Bombay on August 9th/10th, to suspend for two months, their former decision to strike from August 27th. And what must have made every citizen of this nation feel happier still, was the fact that this decision was taken within a few days before India's fourth anniversary of freedom and independence.

If read in the context of India's celebration of independence all would cherish the hope to believe that the Action Committee of the A. I. R. F.—obviously with the backing of all Railwaymen pledged to support the Federation—were prompted to take this happy decision for genuine patriotic reasons.

"If the Railways go under, there will be stark ruin and economic chaos in the country, that will hit the entire Nation, but hit the working class the hardest." This quotation is from Sri Jayaprakash Narain, President of the A. I. R. F., himself, and is an apt reminder which all Railwaymen should seriously ponder over before and after India celebrates with joy another freedom anniversary.

"If the Railways go under....." Let us think over this in the context of the past four years since the historic 15th of August 1947. Have the Railways gone under? Or are they going under? In spite of the tremendous handicaps that Indian Railways have had to contend with as a result of the aftermath of World War II, and the partition, the trend of events on Indian Railways are a definite indication that, far from going under, they have been reaching forward to higher levels of efficiency and comfort for the millions of travellers who use them. Even though the nation feel that the progress and improvement achieved has not been what has been desired, it has to admit that there has been progress and improvement. And to whom does the credit go for these achievements? To all Railwaymen, from the General Managers to the Guards and the Firemen and the skilled and unskilld Artizans in the Workshops.

The decision to strike has been suspended for two months. In these two months every Railwayman should read, re-read and take to heart the words quoted by the A. I. R. F. President himself. These same Railwaymen who have done much towards the progress so far achieved, can do still more, to make the Railways they serve directly, the finest asset to the nation as a whole.

We hope, and every sane-thinking man in the country hopes that the decision to strike has not only been deferred for two months, but for all time, so that Railwaymen can get down to the jobs as they have done in the past, and still can do in the future.

Notes and Comments

INAUGURATION OF NORTH METRE GAUGE REGION

While inaugurating the North Metre Gauge Region Mysore of the Southern Railway, our General Manager Sri K. R. Ramanujam said: "Let not passion blind your vision and judgment. The country's interests are paramount now more than ever. Railwaymen claim that they have not let down the country in the past. I hope patriotism will prevail over every other consideration, and railwaymen will live up to the tradition."

Further in a pamphlet issued by the Southern Railway Administration on "Our Duty" a factual review of the present situation has been made and it concludes "Economic conditions all over the country are admittedly difficult but it has to be realised that these difficulties are not peculiar to Railwaymen alone but are shared by the generality of workers in Government, industrial, agricultural and other employ. The country expects Railwaymen to do their duty. It is hoped that Railwaymen will place the interests of the country above all other considerations and desist from launching a strike which will upset the economic structure of the country which will undoubtedly recoil on them."

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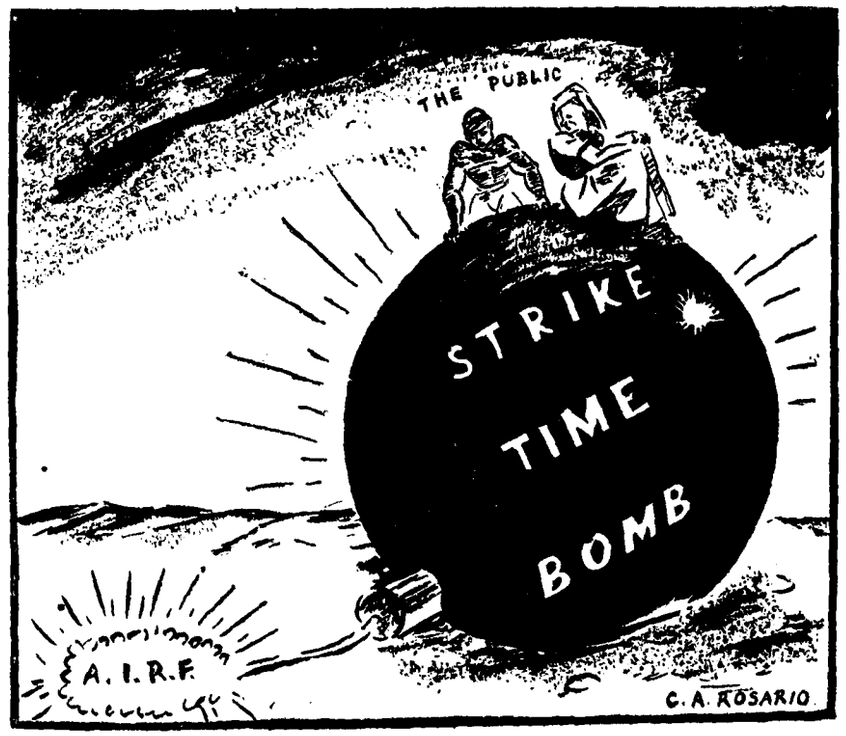
PERAMBUR COACH PROJECT

Another big achievement to the credit of our Transport Minister Mr. N. G. Iyengar is the inauguration of the Perambur Coach Project at Perambur near Madras. This was promised by the Minister at the inauguration of the Southern Railway and it is understood that the work has been started in right earnest to set the project on the move. The foreign

Sri M. Ganapathy B.E., M.E. (Hons.) M.I.E. (India) Engineer-in-Chief, Perambur Coach Factory

experts and the staff of Railway Board recently visited the project site and made tentative plans regarding location etc. Sri. M. Ganapathy, the Engineer-in-Charge of "Chittaranjan Locomotive Workshops" has been assigned the job of constructing the "PCP" and work is progressing very rapidly. The project is expected to employ nearly 6000 workers and to this extent unemployment will be solved. When the project is completed and steel coaches are produced, the overcrowding will be a past affair and third class travel will be pleasant. The main difficulty appears to be the outmoded suburban service on the Madras-Trivellore section and on the ex-M. S. M. Railway this suburban service is a nightmare. These are called "Locals" meaning no importance should be attached to them. While side by side the Electric Train service is speeding up in quick succession on the Madras—Tambaram, it is unfortu-



The decision of the All India Railwaymen's Federation to launch a strike in August will create chaos throughout the country.

nate that such a slow service should exist but it appears our General Manager is keen in improving it especially before the "PCP" is started. This may require some attention to Central Station whose improvements are being taken up. The PCP will be another mile stone in our progress and achievement to our credit. Therefore it is important to introduce to our readers and the public Sri M. Ganapathy, who has been appointed recently as Engineer-in-Chief of the proposed "Perambur Coach Project."

Sri M. Ganapathy was born in 1903 and graduated from the Engineering College, Guindy, Madras, in April 1925. After an apprenticeship with Messrs. Tata Power Supply Co. at Bombay he served Messrs. Tata Power Co. as an Electrical Erection Engineer for about 15 months.

After a period of seven months between July 1927 and February 1928, as an Engineering Supervisor on the Mettur Dam Construction Work, he joined the East Indian Railway as an Assistant Executive Engineer in the Indian Railway Service of Engineers in March 1928. He was attached to the L. S. Z. Railway Construction for six months and to the Lower Sone Bridge Regirdering at Koilwar for another six months and then joined the Calcutta Chord Railway Construction (including Willingdon Bridge) as an Assistant Executive Engineer, in February 1930.

On completion of this Project, he joined the East Indian Railway Open Line as an Assistant Executive Engineer early in 1933. After a spell of about two years six months on Open Line work, he was posted to the East Indian Railway Bridge Office in April

1936 on Special Duty in connexion with the reorganisation of work on the maintenance of bridges. After four months as Bridge Engineer, towards the end of 1939, he joined the Dufferin Bridge Regirdering Work early in 1940. On this, work being postponed on account of the war, he was placed on Special Duty from December 1942 to December 1944 in connexion with the construction of the Panagar Base and later restoration and reconstruction work in connexion with breaches on the East Indian Railway Main Line near Saktigarh.

Between December 1944 and September 1945, he served as Track Supply Officer in the East Indian Railway Head Office and from October 1945 to October 1947 was Deputy Chief Engineer in charge of the regirdering of the Dufferin Bridge. After three months as Deputy General Manager (Works) at the East Indian Railway Head Office from October 1947 to December 1947 he took over as Engineer-in-Chief, of the Loco Building Works Project in 1949. Now he has been appointed as Engineer-in-Chief of the Perambur Carriage Factory. We take this opportunity of extending our good wishes to Sri Ganapathy. We can say with confidence that Sri Ganapathy will bring up the "PCP" within short time as the biggest Carriage Factory in India, and he has that much capacity.

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KALYAN POWER STATION EXTENSIONS

There has been substantial progress in the Civil Engineering Works on the extensions to the Kalyan Power Station. Work on the foundations was commenced early in 1950. It involved considerable quantity of excavation in rock, which had to be removed by blasting. For this purpose, special precautions had to be taken owing to the vicinity of the existing Power Station. The foundations for the Boiler House columns were taken down to hard rock. Numerous recesses and pockets had to be laid out and the precision of the work was very important as any errors in setting out would have ultimately meant costly repercussions.

The structural steelwork which was ordered on a British firm, Messrs. Redpath Brown and Company, started arriving early in 1950 and actual erection work was taken in hand in November 1950. As the picture published on the next page shows most of the work in th eBoiler House, has now been completed. The steelwork in the Turbine House is in progress.

The heights at which the steelwork had to be erected and the heavy weights which had to be lifted, presented problems of their own. The planning of the work had to be carried out taking into account the order in which certain pieces had to be erected. The operations of lifting heavy bunker girders weighing as much as 26 tons to heights of nearly 90 feet were very risky but were successfully carried out. So far the progress on the erection of steelwork has been quicker than was expected considering the deliveries of the fabricated steelwork.

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LICENSED PORTERS AT VICTORIA TERMINUS

With a view to facilitating the task of location and identification of such licensed porters as may be guilty of harassment to passengers, it has been decided that with effect from July 15, each licensed porter at Victoria Terminus Station will be supplied with a slip book, the pages of which are easily detachable and have the badge number and the station name printed thereon. These books will be carried by the porters during their hours of work.

A passenger having a complaint to make against any particular licensed porter should demand the slip book from the porter concerned and remove the top slip for recording his complaint on the reverse, together with the train number, date, name and full address. After recording the complaint, the passenger should send the slip to the Station Superintendent, Victoria Terminus either personally or by post.

Passengers are requested to co-operate with the Railway Administration in making this experiment a success. We commend this experiment to the authorities of Southern Railway also.

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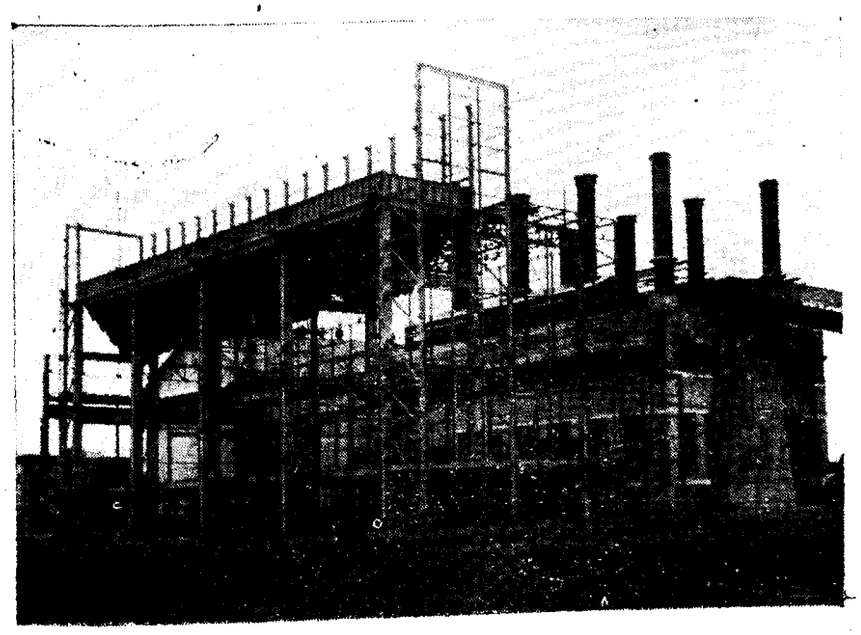

KALYAN POWER STATION
Structural Steelwork in progress

Nice distinctions are troublesome. It is so much easier to say that a thing is black, than to discriminate the precise shade of brown, blue, or green, to which it really belongs. It is so much easier to make up your mind that your neighbour is good for nothing, than to enter into all the circumstances that would oblige you to modify that opinion.

It is with men as with trees: if you lop off their finest branches, into which they were pouring their young life-juice, the wounds will be healed over with some rough boss, some odd excrescence.

The golden moments in the stream of life rush past us, and we see nothing but sand; the angels come to visit us, and we only know them when they are gone.
—GEORGE ELIOT

Who is Who on Indian Railways

By Our Special Correspondent

We have pleasure in introducing this column in response to numerous suggestions and requests made by our readers. To begin with we will be publishing short pen-portraits of General Managers of Indian Railways every month. After this, heads of various departments on Indian Railways whose life-sketches and photos will appear in our subsequent issues subject to availability of maximum space. (Ed. SRM.)

GENERAL MANAGER, JAIPUR STATE RAILWAY

Tall, handsome bespectacled thirty-six year old Sri Hari Sinha is the present General Manager of Jaipur State Railway, Jaipur. Jaipur-born Sri Sinha graduated in Civil Engineering from Bombay University securing First Class position in his early twenties. Subsequently in 1938 he Joined PWD Jaipur as Technical Assistant to Chief Engineer. The next year he was transferred to Jaipur State Railway as Assistant Engineer. During this period he worked on Jhunjhunu-Loharu (36 miles), Sikar-Fatehpur (30 miles) Railway Constructions, Jaipur-Deoli (92 miles) Survey & Project and Sanganer Tower-Toda Rai Singh Railway Construction (65 miles).

Sri Hari Sinha
GM. Jaipur State Railway

At the age of thirty he was promoted as Superintendent—Way and Works. Here too he did well in his job. It is no wonder if he has been appointed as General Manager at the age of thirty-four in recognition of his invaluable services.

Sri Sinha is a Gentleman inch by inch and he has the highest respects for an average Railwayman. In 1940 he was elected member of the Royal Sanitary Institute, Associate Member of the Institution of Engineers in 1943. For the current year he has been elected as President of the Rotary Club of Jaipur. He is also a member of the National Sports Club of India and Jaipur Club.

Sri Sinha has passed "Sahitya Ratna" and got married in 1941. He has two sons and two daughters. We wish all happiness to Sinha and his family.

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GENERAL MANAGER, RAJASTHAN RAILWAY

Fifty-three-year old Sri Padma Singh Khamesra the present General Manager of Rajasthan Railway hails from Udaipur. He had his early educational carreer at Udaipur and Agra. In his twenty-fourth year he graduated

Sri P. S. Khamesra
GM. Rajasthan Railway

in Civil Engineering from Thomson College Roorkee. Hardly within thirty days, after his graduation the Secretary of State for India then recruited him to the Indian Service of Engineers. As a Member of Institution of Engineers (I) he started his career as Apprentice Engineer on the East Indian Railway in his twenty-fifth year. After having worked on open-line, constructions, establishment etc. Sri Padma Singh Khamesra rose to the post of Divisional Superintendent in 1947. The following year he was transferred to the Rajasthan Railway and since then has been working as General Manager of Rajasthan Railway.

Let us peep into his private life. Sri Khamesra is not a man of reserved nature. He is a voracious reader of books. The way in which he receives visitors, make feel them that the General Manager is a "nice man." Any visitor coming out of the General Manager's room has the feelings that "GM is a nice gentleman." Such appreciations and admirations he has won both from the public as well as Railwaymen. We extend all our good wishes to Sri Padma Singh Khamesra and members of his family.

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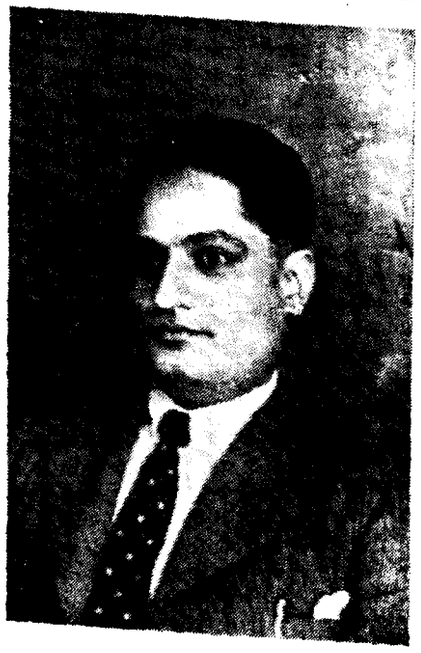
GENERAL MANAGER OF SCINDIA STATE RAILWAYS

Sri G. L. Kavadey, officiating General Manager, Scindia State Railways, was born in October 1909 and took his early education at Gwalior. He graduated in Electrical and Mechanical Engineering from Benares Hindu University. After passing his B. Sc. in Engineering in 1935, he was appointed as Engineer, Telephones in the ex-Gwalior State. Later on he took up Electrical Engineering and worked as Resident Engineer and Manager, Ujjain Electrical Supply for nearly seven years during which time he was also put in charge of Ujjain Water Works for a short period. He joined this Railway in the year 1942-1943 but again left for Ujjain Electric Supply.

He went to United Kingdom for his practical training in various firms in the year 1946-47 and on his return was appointed as Engineer-in-charge, Gwalior Engineering Works, Gwalior. He took over as a Chief Mechanical Engineer and Deputy General Manager of this Railway in the year 1948 and officiated as General Manager on more than one occasion. At present he is officiating as General Manager since July 1950.

He is also an Associate Member of the Institution of Loco-



Sri G. L. Kavadey
GM. Scindia State Railways

motives Engineers (London) and an Associate Member of the Institute of Engineers in India.

Sri Kavadey is immensely liked by the Railwaymen of Scindia State Railways. As an Engineer he has done outstanding jobs which merits every encouragement. We hope that Mr. Kavadey will continue to extend his services of paramount national importance to the Indian Railways. We take this opportunity of conveying our heart-felt thanks to Mr. Kavadey for the co-operation and support extended to us.

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U. S. Railroads Testing New Type of Shock-resistant Goods Wagon

A new type of box car (goods wagon) which its producers say will virtually eliminate damage to freight, is being tested by seven railroads in the United States. The new car is reported to carry 50 per cent more freight than those now in use. It is constructed so that it can travel nearly 100 miles a day instead of the 41 miles now averaged by standard U. S. cars.

The car weighs 50 tons and is 53 feet in length. It is heavier and larger than the standard American box car. One of its main features is a single-spring cushion underframe. According to its producer, the General American Transportation Company of Chicago, this will give greater protection to both the car and its contents against the shocks caused by train handling and switching.

The car is equipped with a new kind of loading device, developed by the Evans Products Company of Plymouth, in the state of Michigan, that is said to eliminate almost completely vertical and longitudinal shocks. These are believed to be the principal cause of freight damage. Other features of the new car include eight-foot side doors and a steel floor to support heavy loads.

A Peep at the History of Lanka

By V. Subramanian, M. A.

IN almost all popular legends on heaven there is a reference to some pass which separates the lower regions from the heaven proper. By accident or design just before the road enters the villages near Kandy, there is a pass called Kadugannawa Pass. The name, I was told, denotes a pass which prevents foreigners from entering by a shower of boulders! Anyway once you pass up through Kadugannawa, it is impossible to resist the thought that you are in some ethereal region

The town of Kandy was the last capital of the Sinhalese in the island, before it fell to the British. The town bears the royal impress on most buildings and temples. There is the palace of the last King of Kandy and there are palaces of previous kings nearby. There is the famous temple of the Tooth and there are a lot of minor temples. There is a beautiful lake with an artificial island in its midst near the temple. Then there is a museum and an arts and crafts sales centre where the memento hunter can fill his bag and empty his purse in happy abundance. The climate is delightfully moderate. What else could a man possibly expect in an earthly heaven? No wonder those who lived here would not admit foreign invaders to disturb the quiet of this heaven and tried to keep them away at the Pass itself.

The kings of the Sinhala (lion) race who had their capital in Anuradhapura in the centre of the island were forced to shift it to the South slowly because of successive Tamil invasions. At last, they sought refuge in the mountainous city of Kandy at the end of the 15th century. It was the capital, which resisted the invasions of the Portuguese, the Dutch and even the English till at last, treachery and disunion were successful where force failed. The story of how Kandy at last fell to the English was the subject of a popular play in Tamil in South India twenty years ago. It is a tangled tale of treachery, cowardice and nemesis that will never lose its interest.

The Sinhalese Kings of Kandy used to marry Tamil wives and when the last Sinhala King died without a heir, a Royal Tamil relative of his ascended the throne with the consent of the nobles. After two or three generations a king named Thrivikrama Rajasinha ascended the throne with the support of a Sinhalese noble, Ethelapola. But this noble entertained designs on the throne himself and was just bidding his time. So sometime later he was moving about suspiciously and the king called him back but excused him. Later he again moved out to stir up rebellion. Rajasinha came to know of this and sent a faithful noble named Molligoda to capture him but Ethelapola escaped. The king then called the priests and asked them what was the punishment in Kandyan law for treachery. They answered that it was complete wiping out of the traitor and his family by pounding them in a mortar. Rajasinha promptly pounded to death Ethelapola's family, which news embittered Ethelapola all the more. He fled to the English Governor of the Maritime Provinces at Colombo and told him his tale and asserted that the whole of the kingdom was seething with rage at the king's act. The British Governor Brownrigg soon sent the required forces with him but he met with no resistance, since the king, deserted by his nobles, had already fled. The Kandyan chiefs signed away their independence in the Convention of Kandy in 1815,

but to his disappointment, Ethelapola was not made king nor deputy but was soon suspected and deported to Mauritius where the captured king Rajasinha was already kept. Both the king and his faithless noble died there. The Lion Flag which the Sinhalese now claim as their flag was the flag of the Tamil king, Rajasinha and the first thing which the Ceylonese did on Independence Day was to reinstate this flag in the place of the Union Jack.

The palace where this hapless king held court is now the venue of the District Court. It is a beautiful wooden structure which even now is most impressive. It is next to the famous Dalada Maligawa or the Temple of the Tooth and near the ruined palaces of earlier kings. But of course the structure for which Kandy is world famous is the Temple of the Tooth or the Dalada Maligawa. The relic has a history of two thousand years behind it—a history of battles, rebellions, escapades and devoted service. Immediatly after the death of Buddha his disciples recovered four of his teeth and one of them was in the hands of the king of Kalinga who enshrined it in a place called Dantapura but later a Hindu king of Patna named Pandu got it by force and tried to destroy it. All his efforts to destroy it failed and finally he became a Buddhist himself. The relic was returned to Dantapura. Later the city was invested by the Jains with a view to get at the relic. The king Guhasiva, therefore, hid the relic in the hairbraids of his daughter Hemamala and sent her to the Buddhist king Mahasena of Ceylon. After many vicissitudes, the princess reached Ceylon in the reign of Mahasena's son Kirti Sri Meghavarna at Anuradhapura and the relic was enshrined there, in a temple. It has been the coveted prize of many invaders and it was carried away by a Pandyan king but later restored. When the Sinhalese kings took their capital to the southern parts of Ceylon to be free from the invaders, the relic was also carried because there was the established belief that the possession of the relic made them powerful and invincible. So every invader also tried to get the relic to bring down the morale of the enemy. When the Portuguese came to Ceylon they were after destroying this relic. For fear of them a fake relic was kept at Kotte, which they promptly destroyed. The real relic was taken farther south till at last it found a permanent lodgment in the Dalada Maligawa at Kandy. When the British took over Kandy from the Kandyan chiefs they assumed charge of these relics. Even under the British regime rebel chieftains tried to get hold of the relic. Finally at the end of the last century, custody was transferred to the hands of Buddhist priests and local authorities.

It has been called rightiy the world's most venerated relic and it can also be called the world's most fought-for relic, since its value has made it the coveted object of all the invaders and despoilers. The belief in its miraculous properties is still as strong as ever and local Buddhist sentiment would never allow its being taken away from its present abode even for a short time on loan, since the prosperity of Ceylon is believed to be dependent on it. Sometime ago the late King of Siam came to Kandy and just requested to have the relic in his bare hand for a minute and almost wept to show his sincerity but the authorities would not allow it, since nobody, however great, is allowed to touch the relic. The relic is kept in a glass case and this is enclosed in vessels of silver and gold. It is credited with miraculous powers for curing diseases and ailing. Bevin who came here was shown a special

The Temple of Katharagama

exposition of this relic to ensure his cure. Every year it is taken out in a grand procession, enclosed in its golden and silver case on the back of a decorated elephant, followed by a number of elephants and preceded by Kandyan dancers and drummers. This pageant is called a perahera and is considered to be the grandest pageant in the world. Thousands line the route of this procession and bow down before the sacred relic.

Besides the Tooth Temple, there are a number of other temples in Kandy, even bigger than that, though less famous. But temples and palaces are not the best part of Kandy. It is not a city of architectural or religious interest alone. The beautiful lake that reflects the glory of the sacred temple is in itself an enchanting thing but the pleasant drive on all its four sides make it a piece of fairy land indeed. Then there are places nearby where the elephants that make Kandy's pageant an unforgettable sight, play about in the cool waters. There are thousands of corners and bends from where the watchful eye can discover landscapes of unsurpassed beauty. Every minute one is there, one forgets the pettiness of the world below which the wise Kandyans have shut out through the Kadugannawa Pass. And as one stands on a quiet afternoon on the shores of the beautiful lake dreaming, one cannot but agree with the famous ex-Premier of France, "Tiger" Clemenceau, who said so truly: "Kandy! Yes, but it is a place to die in. It is so extremely beautiful that one should go there after the struggle is over and live in its beauty till you glide away....."

Nizam's State Railway News Letter

By Our Correspondent

THE Nizam's State Railway has completed the rebodying of two more Metre Gauge bogie Second and Third class coaches and these have been placed in service. Each of the two Second Class compartments of these coaches has been provided with a table, shelves and mirror; fitments which were hitherto not provided. The lavatory in one of the Second Class compartments has been fitted with a combined Indian and European style commode while the other is fitted with an Indian style commode. The lavatories in the Third Class compartments of these coaches have been provided with washhand basins, mirrors and shelves. There are now five such coaches in service on the Metre Gauge.

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The N. S. Railway Road Transport department, which has been of late geared up to greater efficiency, have introduced two additional bus services on routes 50 and 50 A, linking Kacheguda Railway station with Nampalli and Afzal Gunj providing suitable connections with the suburban and main line trains.

Buses on route 50 will operate from Kacheguda via Lingampally Police Station—Residency—Abid Road etc.

Buses will operate 36 trips on each route daily to a regular frequency of 20 minutes commencing from 8 hours and terminating at 20 hours.

The process of integration of the N. S. Railway is being accelerated by the arrival of Mr. M. G. Iyer and two other officials of the G. I. P. Railway. Mr. M. G. Iyer, Chief Traffic Manager of G. I. P. Railway, arrived here on 10th August and during his two-day-stay held discussions with Mr. T. M. Jagtiani, General Manager of the N. S. Railway and other high-ranking Officers of the N. S. R. at Headquarters on various matters. He later left for Bombay on 11th evening leaving instructions to his subordinate to carry on the discussions on certain integration details.

News of the integration of N. S. R. has been received with mixed feelings in the official circles. The staff, do not like the proposal, particularly in view of the prospects of leaving Hyderabad, at least a good many of them, whose Headquarters will be far away from Hyderabad State.

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As an experimental measure with effect from 1st August, reservation of berths from Intermediate stations will be made in the Second Class over the N. S. Railway on payment of fares from the Intermediate stations and a reservation fee of annas eight.

A limited amount of accommodation will be set aside for Second Class passengers entraining from Intermediate stations but requisitions for such reservations will not be accepted unless they are made at least 48 hours before the date of departure of the train from the reserving station. If received later no reservation can be guaranteed but will be made, should accommodation available.

In pursuance of the progamme to provide amenities to the travelling public permanent drinking water shelters have been provided at Mohamadabad, Bidar, Nawandgi, Vikarabad, Purli-Vaijnath, Seram,

Zaheerabad, Udgir and Ghatnandur Railway stations.

At Shankarpalli and Kurnool town, additional station name boards have been provided. The passenger platform at Purli-Vaijnath has been paved with Shahbad stones. Reinforced concrete cement platform benches have been provided at Bhalki, Purli-Vaijnath, Udgir, Morangapalli and Mohamadabad-Bidar.

For the convenience of the workmen and staff of the Engineering Workshop and Stores Department an additional hall and verandah has been added to the canteen and necessary utensils and furniture provided.

At Latur Road a masonry water-cistern for the use of the staff has been constructed.

The suburban train service on the N. S. Railway from Hyderabad and Secunderabad stations to adjoining areas are far from satisfactory. No one appears to take much interest in improving the service. The trains especially during peak hours of business invariably make it a point to run late and frequently scheduled trains are cancelled, without reasons. This is making the already bad situation worse.

There is an indicator on the Secunderabad suburban platform showing when a particular train is expected to leave for Bolarum or Falaknuma. This is only there, for namesake and more often than note the trains rarely leave at a time shown and they start from different platforms than the ones indicated.

At the last moment passengers are asked to change from one train to another which is a regular nuisance, men and women jostling each other and scrambling for seats. The plight of women passengers carrying marketing baskets at such times is pitiable in the extreme. There is an official posted here to guide passengers but he is rarely available on the spot as he has a hundred other duties to perform. The net result is utter confusion and there are not a few instances of passengers bound for Bolarum travelling jantily to Kacheguda and vice versa. It is highly undesirable that such a state of affairs should exist on a Class I Railway.

We do not of course ask for automatic indicator as on the suburban platforms of the electric section of the Southern Railway but we would urge the authorities to see that trains leave from the regular platform and as far as possible at the scheduled time.

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Virtue is free, and as a man honours or dishonours her, he will have more or less of her. The life of man is "rounded" by necessity: there are circumstances prior to birth which affect him. But within the walls of necessity there is an open space in which he is his own master. —PLATO.

In war, three parts of the task depend on moral considerations: relative resources account only for the remaining quarter. —NAPOLEON I.

Our London Letter

By A Correspondent

IN the last London Letter mention was made of the improvements to be carried out to Euston Station at a cost of £ 300,000. News has been received that Messrs. Westinghouse Brake & Signal Co. Ltd. are the main contractors for the electro pneumatic signalling equipment. The work will include the provision of a 100 sets of electro pneumatic point layouts involving some 2½ miles of main air piping and branches. Hitherto electro pneumatic signalling has been used exclusively by the Railways of London Transport so that this will be the first main line terminal in London to be signalled by this method. There will be 110 a. c. condenser fed track circuits, 31 field locations using 44 apparatus cases, 1000 a. c. relays, electrically driven and diesel driven air compressors and other gear. The new signal box will contain a 227 lever all electric Westinghouse power frame.

A new motor ship the ***Shanklin*** has joined the Southern region fleet of vessels of British Railways operating between Portsmouth and Ryde, Isle of Wight. Built by William Denny and Sons, it is the third ship to be brought into service for this class of work since the war. It is a one class ship and replaces a paddle steamer of the same name which was withdrawn after 26 years' service. The new vessel is a sister ship to the ***Southsea*** and the ***Brading***, also built by the same firm and put into service in 1948. Since their introduction, these vessels have carried a larger number of passengers at a greater speed and in greater comfort than their predecessors. In appearance the ***Shanklin*** is very like the other two ships. She is 200 feet long and weighs 965 tons. Accommodation is provided for 1,377 passengers and a crew of 33. The vessel has a speed of 14½ knots and is propelled by twin screws directly driven by two Denny Sulzer eight cylinder diesel engines each of 950 b. h. p. There is considerable seating accommodation for passengers and abundant refreshment facilities.

Some years ago, before the nationalisation of British Railways, the Southern Railway experimented with double decker trains with the idea of avoiding expenditure on lengthening of platforms and attendant structural alterations. The experiment was abandoned since it was found that the travelling public did not like these trains and there was an ever increasing tendency to travel on the lower deck and avoid the upper one. The German Federal Railways have now started experiments on the same lines and put into service on December 17th last a three coach double deck train with Second and Third Class accommodation between Dortmund and Frankfurt. Apparently the first modern double decker coaches were introduced in 1936 by the former Lubeck-Bushen Railway; they were twin articulated vehicles seating in all 300 and were 14 feet 2½ inches above rail level. The new coaches, built by Westwaggon of Cologne, are 73 feet 5 inches long and 15 feet 5 inches and are not articulated. A second set has just been put into service. Some important differences are that the Second Class accommodation is now provided on the lower deck and not the upper and the restaurant has been re-arranged. The two trains are on a daily return run between Dortmund and Frankfurt via Cologne and Mainz. The trains are painted blue and are highly polished on which account they have been nicknamed the "bluebirds." The route is over 212 miles and is certainly the

longest at present worked by double decker stock.

Mention was made in the last London Letter of the new Woodhead tunnel through the Pennine range. The tunnel passes through a sandstone formation and is being excavated by blasting. Bands of shale in the sandstone and faults in the strata caused some difficulty and much of the pilot tunnel had to be lined with steel ribs. Water in considerable quantities was struck at about a mile from the Woodhead end of the tunnel at a junction between the sandstone and the shale. The matter did not present any great difficulty and was overcome.

The pilot heading is 12 feet square and the floor is about 6 feet above the invent of the completed tunnel. It is now being enlarged to the full section 31 feet wide and 24 feet high. It is to be lined with concrete throughout and it is expected that this work will be begun in a few months' time. The excavation of the full size tunnel is being carried out from both ends at the same time and is progressing at the rate of 30 to 40 feet per week. It is expected that progress will be more rapid when arrangements for disposing of the spoil to tips have been completed. The width of the tunnel permits three lines of narrow gauge tracks to be laid for the passage of the skips. These tracks are spanned by the gantry on which the drills for boring the blasting holes are mounted.

The trains of skips are shunted in and out of the tunnel by electric battery locomotives which in normal service require charging every 24 hours. The tunnel is situated in a very isolated position, in the heart of the Pennines 1,000 feet above sea level, and necessitated adequate accommodation for the workmen. A site was selected on the open hillside at Dunford Bridge and a contract for the design and supply of prefabricated timber buildings was placed with the firm of F & H Sutcliffe Ltd. The construction of the camp was begun in April 1949 and although there was the initial difficulty in providing accommodation for the men engaged in this work, the main dining hall and kitchens had been erected by the autumn of that year and a sick bay provided and staffed. One of the terms of the contract was that all the buildings provided should be capable of complete dismantlement after the opening of the tunnel.

The camp was completed in May 1950 and provides accommodation for 1,000 men although only about 700 are employed at present. The final scheme includes semi-detached bungalows, dormitories and ablution buildings; for other workers, staff quarters, medical inspection hut and sick bay, offices and a large garage. There are also rest rooms, a cinema seating 200, an inn and a post office.

1950 proved tourist traffic to be Britain's chief dollar earning export. Overseas visitors spent £54,500,000 in the country and paid £26,500,000 in fares to British carriers. This shows an increase of nearly 25% on the previous year. Receipts from U. S. A. visitors including fare payments amounted to £35 million. The annual report of the British Travel & Holidays Association ststes that the facilities offered by British Railways in the form of the 1,000 mile ticket were much appreciated and there was growing popularity in road transport and car hire industry the latter earning £1,000,000 in foreign currency.

During the current financial year India is to receive from abroad 182 locomotives, 250 coaches and 7,571 wagons. Of the 182 locomotives 119 are being supplied by Great Britain.

On June 23rd a party of Thurso girl guides set out on what is claimed to be the longest journey in Britain to the Festival of Britain. The round trip was 1,544 miles, from Thurso to London and back. The girls, five adults and nine juveniles left Thurso station in the Scottish region at 8-25 a. m. on a Saturday and arrived at Euston on the Sunday morning. British Railways made the arrangements for them to visit the South Bank Exhibition.

York held a Festival of Britain fortnight during which the Railway exhibited 12 modern and historic locomotives and rolling stock which attracted 47,590 visitors of which 15,628 were children. Attractive programmes were sold at 3d. each and unfortunately only 5000 were printed which sold like hot cakes. 7,000 more were printed and these went just as quickly. At York Old Station the private saloons of Queen Adelaide, Queen Victoria and the present Queen were on view each with their different fitments visible through the windows. Comparisons in locomotives were Locomotive No 1, Mallard locomotive No. 700000, Britannia; Ivatt "Atlantic" No. 251 and a Bo-Bo electric locomotive for the Manchester Sheffield Wath electrification which will haul trains through the new Woodhead tunnel described earlier in this letter.

Thirteen Yorkshire people who had visited the Festival of Britain, were stranded in London. They were left behind at Euston at 1 a. m. . The train taking their party of 413 back to Otley had only nine coaches—seating 400—instead of ten. The extra 13 refused to stand all night for the 197 mile journey so they split up and stayed at three hotels. British Railways are to pay their bills!

A new Japanese Railway Station was to be opened at Matau Ichikawa. It was all conducted with great dignity and a girl singer in traditional robes stepped on to the rostrum and bowed to the crowd. Ah! An old Japanese ballad, thought the crowd. She struck up the current hit "I've been working on the railroad."

Reorganisation and Improvement of Railways Working

By "Railwayman"

FUNCTIONS OF THE RAILWAY BOARD

THE following scheme is drafted on the basis of general principle that the subjects referred to the Railway Board are of a general nature like Rolling Stock Programme, laying down targets, implementation of recommendations of various enquiry committees etc., fixing standards for Rolling Stock, amenities for passengers, dealing with staff rules etc. The present practice of referring minor cases to the Board only causes delay with no special advantages. The Board shall concentrate to undertake the running of Railways efficiently and economically obtaining a proper return for the Capital, acceding to Parliament directions etc. The duties of the Board shall be the same as the Board of Management of a Firm who employ Managing Agents.

ORGANISATIONAL SET UP OF THE BOARD

Recently reorganisation of Railway Board has been undertaken to include three Functional Members and a Financial Adviser. One of the Functional Members it is said, will act as Chairman of the Board of Members. This does not precisely show what sort of organisation would be retained of the Railway Board. Apart from Members, the Board now consists of Secretary, Directors, their Deputies, Assistants etc. The point arises as to whether in addition to the Functional Members having a small Secretariat under each of them, Directors and Deputies etc. are necessary. If the policy of decentralisation is to be effected and if the efficiency is to be improved, the Board should be completely abolished. Each of the Functional Members shall have a small secretariat attached to him. Each Member will be responsible to lay down policies for guidance of Railways in his Department and give expert advice to Minister. The Chairman who shall be the seniormost member of the Functional Members shall be referred in cases where correlation is required unless it is decided that the orders should be obtained from the Minister. In fact, subjects which are of a correlative nature requiring orders from a Chairman-member should not exist as on such subjects orders from the Honourable Member or Minister of State would be necessary. The Functional Members shall be as follows :—

i. Engineering (Mechanical, Civil & Electrical).

ii. Traffic & Commercial.

iii. Staff.

iv. Finance (Officer lent from Finance Ministry).

The most important Member would, as can be easily appreciated, be the Member of Expenditure which necessarily means Member, Engineering who shall act as Chairman as well. The Board shall meet once a week.

The scales of Members are to be made the same as of General Managers or in the alternative, not more than Rs. 500 higher than the Heads of Departments plus the usual Delhi allowances. This is

to avoid the temptation of looking forward for a higher post than the General Manager which results in too many changes of the General Managership but, at the same time would give the same status as a General Manager to dictate policies and to give opportunity for experienced Heads of Departments to aim for a higher post by dint of merit and special work. This would enable suitable Administrative Officers to be selected, so that they would remain in the Board for periods over 6 years, as otherwise continuity of policies etc., would be jeopardised if frequent changes are made in the personnel of the Board.

The Railway Secretariate will require to be under the control of a Secretary (Railway Board) in the Senior Scale.

The Secretariat for the Member, Engineering, shall be as follows:—

If the Member is a Civil Engineer, he may be assisted by a Deputy who shall be a Mechanical Engineering Officer and vice-versa. This shall ensure perfect co-ordination on the expenditure side of Engineering, Workshop, Rolling Stock Maintenance, including Stores and Electrical. The Deputy Member shall be in the grade of a Senior Administrative Officer.

The Members shall be assisted by the following Officers:—

i. Director, Mechanical Engineering, (Senior Scale).—1
ii. Director, Civil Engineering. (Senior Scale).—1
iii. Director, Stores including duties of Liaison Officer etc. (Senior Scale).—1
iv. Assistant to the Deputy for co-ordination of Rolling Stock Programme. (Junior Scale). —1
v. Assistant for Parliamentary work, Statistics and etc. (Junior Scale). —1
vi. Personal Assistant to the Member (Junior Scale).—1

TRAFFIC AND COMMERCIAL BRANCH

The traffic and Commercial Sections shall consist of the following Officers, apart from the Member and Deputy Member.

i. Director, Claims & Rates. (Senior Scale). —1
ii. Director, Movement. (Senior Scale). —1
iii. Director, Budget. (Senior Scale). —1
iv. Secretary to the Member. (Junior Scale). —1
v. Secretary to the Deputy. (Junior Scale). —1
vi. Assistant for Claims, Complaints and other miscellaneous work. (Class II). —1

ESTABLISHMENT BRANCH

The Staff Section of the Secretariat may consist of the following staff apart from the Member and Deputy Member:—

i. Director (Rules, Regulations, Provident Fund, Appeals, Interpretations etc.) (Senior Scale). —1
ii. Director (Transfers, Staff Requirements, Amenities, Sports, Institutes, etc.) (Senior Scale). —1
iii. Director (Special work, investigations, Parliamentary matters,) and Prescribed Scales etc.) (Senior Scale). —1
iv. Secretary to Member. (Junior Scale). —1

v. Secretary (Complaints) (Junior Scale). —1
vi. Assistant for Parliamentary work. (Junior Scale).—1
vii. Class II Secretary to be in charge of Secretariat. —1

ECONOMIC ADVISER (RAILWAYS)

The Economic Adviser shall work directly under the Minister of State. He shall be assisted by:—

i. Director (Statistics). (Senior Scale). —1
ii. Director (Publicity). (Senior Scale). —1
iii. Secretary to Economic Adviser. (Junior Scale). —1
iv. Secretary (Secretariat and Information). (Junior Scale). —1

The organisation at Delhi shall therefore cater for work of an Administrative nature and not of executive.

The Ministry shall, for instance, lay down targets for every department including Workshops and in so doing lay down a five year programme of Rehabilitation and Improvement with special regard to equipment of Workshops and Rolling Stock, etc., additions to and replacement of Rolling Stock including locomotives and extension of Railway lines etc. The Board shall exercise control over their performance and find means and measures to augment resources and rectify defects in any part of the Railway which fails to reach targets or show improving trends.

The General Managers shall be advised by the Board that it shall be their sole responsibility to running the particular railway efficiently and economically to declare 4% dividend on the capital cost of the Railway, which shall be periodically checked for accuracy (Say once in 5 years).

The Board at Delhi shall lay down rules and regulations for Staff Wages, Dearness Allowances, Appeals and Disciplinary Rules, Recognition of the Unions and bringing in effect Parliamentary Rules and Regulations regarding Workers e. g., Industrial Relations Act, Welfare Organisation and other subjects on which Labour Department issues rulings.

The Board shall lay down budget allotments for the various Railways, arrange for foreign exchange so that the complete stores imports for the Railways is arranged exclusively by the Railway Minister and not through Director General, Industry and Supply. The Railways are one of the biggest concerns of the Government of India and are competent to arrange their own requirements both of indigenous and foreign supplies. The Railway Stores Organisation is one of the most efficient and costliest sections. Highly paid Controller of Stores are now unable to function efficiently due to their powers limited by reference to D. G., I. & S. who neither have experience in Railway work nor have status higher than Controller of Stores. Such references are dealt with by a far lower grade Officer in D. G., I. & S. Delays and increased value of stock on hand are the result. Of course other points, unnecessary clerical work, uneconomic movements of materials from far off places where local purchases could be made quickly and at cheaper prices, are too easily understood. More "Hold-up" due to delays which can be easily laid at an average of 6 months with D. G., I. & S. will be completely avoided. Incidentally encouragement to local Industries will be

appreciated by the Public who agitate for "Regional Developments" etc. The D. G., I. & S. shall only be consulted every year in regard to allotment of foreign exchange for purposes of Railway only. The Railways shall have their own import and inspection organisation and shall address Embassies etc. in the United Kingdom and United States of America.

Control and sanction on large improvements to Workshop, additional Railway lines and provision of increased rolling stock, laying down standards for amenities to passengers, enter into partnership with State Governments for Road Transport, exclusively to act as feeders and not for parallel traffic, etc.

To lay down uniform policies and simple rules by arranging for an immediate re-issue, after proper investigation of State Railway Codes which are obsolete, and outdated and in some cases inapplicable to a Government concern.

Except expenditure of a single item costing over Rs. 5 lakhs, the General Manager shall be given the powers for anything less than this but subject to the funds being provided for in the budget.

ABOLITION OF THE CENTRAL RAILWAY SERVICE COMMISSION

First and foremost the best out of staff cannot be got unless they are aware that by meritorious, loyal and good service there will be suitable recognition of the same. One recognition is to give employment to his children. Secondly if the Officers have no such previleges, extraction of work can only be through fear. This is undesirable and anyway is not the best way to get men "put their shoulders on to the job." Therefore unless the Executive heads namely the District Officers are competent to appoint staff at least of the lowest category, the service rendered by those who are under him will merit no recognition. This is the very reason why devotion to duty, respect for and keenness in their work to merit distinction from the Executive Officers was immense and of a high order during the Company management. If therefere. the Indian Railways are to create a body of wilful, devoted, dutiful and loyal workers who can be called upon to give their best with all the energy and enthusiasm, then there must be a machinery by which special recognition is possible to be shown. There is no better method for this than by giving the District Officers the powers to recruit their own staff subject of course to certain limitations.

A second object can also be achieved if recruitment is left to the District Officers. Efficiency of outturn and quick dealing and disposal of papers etc. will be assured. Up to a stage, transfers even infrequent, are not to be encouraged. But this is not so with our present system. A Tamilnad Clerk selected by the Central Railway Service Commission posted to Andhra like Bezwada or Karnatak like Belgaum, is continuously engaged in getting himself transferred to Madras or to his own regional areas by hook or crook. Quoting family illness, financial difficulties and as a last resort to agitation, are common methods with such men.

If the District Officers are authorised to recruit their own staff, they would have selected a man from Hubli for Hubli Offices, a Belgaum-man for Belgaum Offices etc. and in view of the present scales of Rs. 55/130, many would remain at the stations for over 15 to 20 years acquiring efficiency and

knowledge of work. As only 25% will be eligible for the higher grade, very few would be transferred to higher grades on promotion. Thus it would obviously result in a local man being kept at his job for longer time which would result in prompt and proper disposal of letters etc.

In regard to the other categories of staff, those who are illiterate and are not very ambitious, those are not capable of reaching higher grades because of limited abilities will yet be satisfied at a particular station on their grades to reach the maximum of which will be their ideal without much discomfort etc. Staff required for Workshop can never be properly selected by the Central Service Commission, for instance, Apprentice Mechanics who are to be future supervisory staff are recruited by Central Service Commission. It has been sadly experienced that the majority of Apprentices selected by the Railway Service Commission are far below the average. This is not casting any aspersion on the bonafides of Central Railway Service Commission but it is stressed that the recruitment for the Workshop is to be done on a scale and method far different from what the Service Commission Members are accustomed to. For a Workshop, a brilliant high school lad is not always suitable. If recruited, when he finds the Workshop attendance and nature of work too taxing, he constantly thinks of going to some other job including the Provincial Government. Secondly an educated type does not wish to dirty his hands. Thirdly, many do not have requisite physique and stamina to continue their training by working 8½ hours a day. First an appeal is sent to change trade category etc. Strong and healthy lads are required for Workshops, apart from special qualities of keen observation, dexterity with his

own hands etc. He must also be technically minded, have an Engineering aptitude and be above the average in Mathematics. To select them from various linguistic zones for a particular Workshop is also disadvantageous, for reasons far greater than that mentionedf or Clerks. This will give greater satisfaction to the zonal-minded public and also Railway Staff.

It needs no stressing therefore that the advantages of local recruitment of Unskilled, Semi-skilled, Skilled, Menials, Semi-Clerical, Apprentices and lowest Clerical Grades, far outweigh the disadvantages of the present system. Of course, for higher posts, the Central Service Commission organisation must exist as distinctive from the present set-up for all staff. Merit from highly qualified candidates should be the main criterion of selection.

It needs no stressing that the withdrawal of the existing special privileges of giving preference to sons of employees has caused the greatest discontent amongst the Railway Staff. With a father and a son working under the same employer, it was very rare when one of them turned disloyal. Instances can be proved to show that the turbulent, disloyal and mischieveous elements in Railways have always come from outside recruited in large numbers during the War. In a private firm and in Company-managed Railways, the system of giving preference to "known" candidates had gained loyalty and gratitude. Further the father looked after his boy and the boy having developed an idea to solicit service from his father's employer is well under his control and usually refuses to be made a tool in the hands of Political dieheards. It would therefore meet the spirit of the Constitution if the District Officers are advised to do their own recruitment subject to no restrictions to sons of employees only. But the sons of employees would automatically get weightage in the recruitment. It is appreciated that new blood (outsiders) is to be welcomed in a governmental organisation but this can be regulated as and when recruitment is made by the District Officers. In this case, special attention is drawn to the State Railway Mechanical Code Appendix I Paragraph 212, where special consideration for those who have done meritorious service to the Government is mentioned. This is a laudable one. If healthy principles are laid down, the District Officers, can confidently be looked upon to do their best both for his staff and for "injecting" new blood. After all, only retired Railway Officers constitute Members of Central Railway Service Commission.

What after all can be the special advantages in having a Central Railway Service Commision at Bombay to recruit staff for all over India, when an Officer has to travel to various zones? The selection by an individual District Officer who is conversant with far more details of the lad and the place is not likely to defeat the objects for which this Service Commission has been set up. From any point of view like favouritism, idfluence etc. one is susceptible to such failings as the other. In the case of the executive head, it behoves on him to create the right atmosphere at the particular station at which he works. This acts as a negative to "Pulls." The whole army of District Officers will no doubt conscientiously and impartially do their duty to the staff under them in recruitment and more to the satisfaction of local men and thus in a great manner, obtain devotion and hard work from his employees. Exceptions there may be; but are officers denied of powers because of possible misuse?

At the present moment the threat of punishment alone keeps the men at work and the District Officers exercise little control. But they can get far more out of their staff if they are competent to do special acts of kindness for which no opportunities exist at present. True, the Services Commission, for higher posts, will have to function as the best talent that can be available is required to be marshalled for the service of the country especially for running the greatest National Industry namely 'Railways.' The Central Railway Service Commission may recruit for only posts which are higher than the lowest grade in any particular category of Class III staff excluding workshop staff and all grades of Apprentices.

The expenditure in maintaining the Central Railway Service Commission for this limited purpose will be considerably small. Their work can be enlarged to include recruitment of Special Class Apprentices and other posts for Superior Railway Establishment.

It is stressed here that there shall be no necessity for additional staff or organisation required by the District Officers for recruitment of staff to meet their own requirements as the Staff Section can do the same as before. To encourage outsiders and conform to the principles of our Constitution, the District Officers may be empowered to publish notices in the local papers calling for applications giving minimum qualifications etc. laying a small levy of Annas Four to Annas Eight as the case for obtaining application forms etc. Even this would be a costly procedure. If only the Railways can publish their own monthly bulletins and sell them at a nominal rate. it would be self-paying. Application for appointment, tenders for stores, information of a general nature for the benefit of the public, special rules and regulations re: tariff, activities of Institutes and Railway Sports achievements etc. can all be published in these bulletins.

(To be continued)

Do You?

Do you throw empty bottles or tins from a moving train? A Gangman or other Railway employee working on the line may receive serious injuries if you do.

Do you light a methylated spirit stove in your compartment or throw a burning match on the floor? Fires often result when you do.

Do you lean out of a window or rest with an arm or leg protruding out of the window? Serious accidents have happened to passengers who do.

Do you attempt to board or alight from a moving train? If you do, please don't; for many fatal accidents have resulted to people who do.

Do you cross the Railway lines on the level or do you use the overbridge provided? It is safer to climb the stairs.

The Elberfeld Barmen Railway

By A Correspondent

THE Elberfeld Barmen line or Langen's suspended Railway was fifty years old on March 1st this year. It connects the twin cities that give it this name. The line is carried well above street level and crosses a river. The cars are slung from electrically driven motor trucks that travel on the upper rails and the principle is in effect a development for Railway purposes of a type of conveyer that has for long been used in factories and mines for the transport of ore and other heavy material.

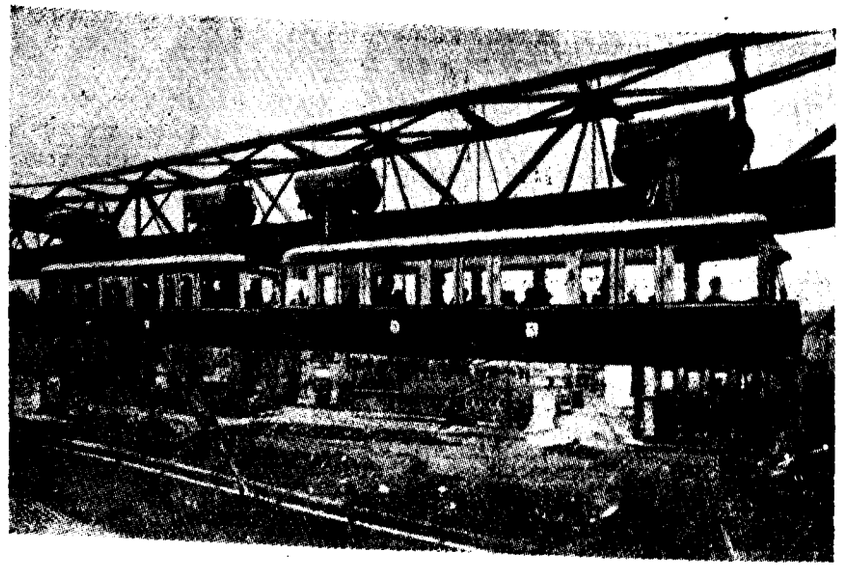
The first section of the Elberfeld Barmen line was opened on March 1st 1901 and runs along the the course of the Wupper Valley in Germany. The system was devised by Eugen Langen. This type of Railway was not adopted elsewhere but it offered considerable advantages in that particular locality where the only practical path for a new line was over the river. Its construction was commenced by a Nuremburg firm in 1898 and completed through between Vohwinkel and Barmen, about 8¼ miles, in 1903 with stations at an average distance of 765 yards and loop termini. The line is suspended from U shaped girders over the road but A shaped ones are used over the river. Including supports the weight of the track is about 2,000 lbs. per yd.

The trains are operated on 600 V d. c. taking current from a conductor Rail. The signalling on the line is completely automatic operated by a system of contacts designed by an F. Natalis. This has ingenious circuits using colour light signals by day and night, approach lighted this being the earliest known example of such working. The difficulty of constructing and working points is a great disadvantage in the case of special systems such as Langen's or Lartigue's and reduces their chance of adoption except where the route is a simple one.

The Elberfeld Barmen Railway celebrated its fiftieth anniversary by receiving 20 new all steel cars which were formed into two car sets. The superstructure of the line had become considerably weakened which process started during the 1914—1918 war, the boom years 1926—1929 and heavy damage between 1943 and 1945. The running of three car trains had to be suspended, regulations forbade overcrowding and queues at main stations became prevalent. To overcome this trouble it was decided to introduce stock of greater capacity but lighter in weight and a contract was placed with Vereinigten Westdeutschen Waggonfabriken, Cologne and Siemens-Sckukert.

The cars are composed of a frame of pressed profiles with lightweight panelling, welded throughout. The tare weight is only 11 tons allowing overcrowding where necessary. 80 passengers may be accommodated compared with 68 in the existing cars. Each car has a second and third class saloon: access to the former is by one door only but there are two doors to the latter. A sliding door separates the two saloons. There are upholstered seats for three passengers each, on the inner side. Doors are operated by compressed air, controlled by the driver. The dead man's handle operates only when all doors are closed One axle of each bogie is driven by a 45 k. w. motor through a worm gear which makes running almost noiseless.

All the former cars, except two, are in service. When all twenty cars are in use the railway will be able to cope with all traffic demands for many years.



New lightweight stock in service on Wuppertal Railway

Presenting Mr. Railwayman
"The Lost Propertyman"
By A. H. Pearson

FATHER, mother and perhaps three or four children are on a train journey. They are all off to visit a relative. The train reaches destination. The whole family bundle out of the train, each carrying some light, handy article of baggage, and the heavier stuff is taken over by the station porters. The train rolls on, and the family moves off to the relative's home. When they get there, mother suddenly cries, "one trunk is missing, we must have left it in the train!" So she gets a little frantic with worry, perhaps bemoaning the loss of the trunk. But she need not be so anxious. Even though the missing trunk may not be noticed as a left-over until hundreds of miles away, there is an organization on the Railway, whose job is to take care of the absent-mindedness or temporary loss of memory of passengers. This is the Lost Property Office.

Now let us have a quick glimpse of how the men in the Lost Property do their daily job of work.

Here is one example. A trunk containing the personal luggage of a passenger is left unclaimed under the berth of a compartment. The owner is not in a position to retrieve it for sometime, and apart from a name, and perhaps not even that indication, there is no clue. The unclaimed trunk is then taken out at the station where found, and deposited in the parcels office. Here it is kept for a stipulated period, and if not claimed, the parcels office staff will despatch it to the Lost Property Office, giving particulars of how, where and when found. When the trunk arrives at the Lost Property office, one of the staff of that office will then get to work on it. First he gives it a number and ticket. If the outside of the trunk bears no name or clue to the possible owner, the trunk will then be opened in the presence of a supervisor. The first objective is to try and ascertain the name and address of the owner. If this is found, well and good. Next, a detailed inventory of its contents is made and recorded. One copy of the inventory goes back into the trunk, and the other kept on record.

If the name and address of the owner is found, the Lost Property Official will notify him by letter, requesting him to arrange to take delivery of his property. Now supposing the owner turns up to claim his trunk, what happens? Does he merely sign a receipt and take away his trunk? Not at all. Ownership must be proved to the entire satisfaction of the Lost Propertyman. The person claiming the lost property must give a fairly accurate description of the contents of the trunk. This is checked with the inventory already made, and if the tally is reasonably accurate, then only will the claimant be given delivery and the transaction completed.

But dealing with lost property is always not so straightforward. Most people when they are able to recover their lost baggage are grateful for this service, but there are the exceptions, with their suspicions. Someone who prides himself on possessing a photostatic memory will reel off the contents of his trunk or suitcase and try and stump the Lost Propertyman with an item which is not there. In spite of the written record of the inventory he will insist that some item is missing. Obviously, this is a veiled implication that the Lost Property staff are petty pilferers—not quite a kindly thought, is it? But the Lost propertymen must patiently and tactfully convince the doubter that they work on written records.

Who hasn't, on going a train journey, locked away articles of real value in a trunk or suitcase—perhaps gold or silver trinkets, jewellery, wrist watches, cameras etc. Well, if any such items are found on checking a 'lost' trunk, these receive special care. A special inventory is made of such articles, and these are not replaced in the trunk, but suitably ticketted and put into more safe custody in the Lost Property strong-room until claimed.

It is commonly believed that man—and woman for that matter—prides himself on his possessions. But the Lost Propertyman will probably disagree if you tell him this. One would think that things lost would be pursued with zest until found. But ask the Lost Propertyman. Of every hundred odd letters sent out to forgetful owners, perhaps about fifty per cent bother to reply, or claim. The others do not seem to care to get their lost possession back. It is these unclaimed items which clutter up the vast floor space in a Lost Property Office, where they must be stored for about six months, after which according to law, this unclaimed property can be sold by public auction.

A short stroll around the floors and galleries of a Lost Porperty Office will make one realize the result of a man's memory lapses. Here are only a few examples of what one finds in the Lost Property Warehouse. Hundreds of steel trunks and suitcases of varying sizes, shapes and colours: boots, shoes, slippers, chappals, some new, some well-worn and others sad relics, hats and caps, wearing apparel of all sorts and sizes: machinery parts of all kinds: milk cans, kitchen and cooking utensils: tiffin carriers, some even with left-overs of a journey's meal: motor car and cycle tyres: umbrellas: walking sticks from the dandy's elegant malacca to the stout skull-cracking lathi: hurricane lanterns, electric flashlights: cycles complete: sacks of all sizes containing an amazing variety of odd assortments. The variety and extent of what the Lost Property holds can only be believed when seen.

The Lost Propertymen do not only deal with what is left in trains, but also with unclaimed merchandise. How do such cases arise? One trader will perhaps place an order on a supplier for more than he can pay for. It may be a wagon load of some market-table commodity, or just a few maunds of something. When this reaches destination, the consignee is notified to take delivery. But he does not turn up. When the time limit is up, the consignor is advised, and if he does not want his goods returned, or perhaps despatched to another destination, this unclaimed consignment, or consignments then becomes unclaimed property and is disposed of in accordance with the law. Here too, the extent and variety of unclaimed property is amazing. Foodgrains, iron and steel goods, textile products, cases of medicine, tea, butter, etc. are only a few examples. Precious foodgrains and controlled commodities are not usually auctioned, but instructions taken from the State Government authorities concerned. Other merchandise goes up for public auction.

(Continued on next page bottom)

Accounting as a Factor in Railway Management

By Argus

THE purpose of a Railway organization is not only to give the public adequate transportation service but a transportation service that yields a profit. This profit depends upon the revenue received and expenses incurred and the revenue must be greater than the expenses to carn a profit. It is, therefore necessary that the Railway operations should be carried with the greatest efficiency and economy so that the expenses may not eat up all revenue leaving no margin of profit.

Owing to the many complexities of modern Railways the management is unable to exercise personal supervision over the myriad of Railway activities. It must therefore depend upon the numerous reports and statements to know to what extent the various activities, either single operations or departmental activities, are being carried on profitably.

Here enters the science of accounting as a factor in Railway management.

Through the help of accounting, the management is able to have the facts grouped and summarised and presented in such a complete form as will indicate what has actually happened during any period. "To a considerable extent it is the eyes, the ears, and the perceptive brain of the company and without its assistance it would be absolutely impossible for a railroad to function at a profit."

The management requires a great mass of statistics relating to every phase of Railway activity. These statistics are based on the analysis of accounts or on the information that the accounts convey. These details are required for administrative purposes. Accounting produces figures which show the results of operations. An analysis of these figures will indicate weaknesses and will reveal conditions that call for remedies. It can be determined where economics may be effected, where waste is prevalent, where better methods may be introduced. They present a key to the efficiency with which the carrier is operated and with which each department is conducted.

In an address made before the Railway Accounting Officers' Association, a Railway executive outlined what information he expected the accounts to furnish the management and what results should accrue. He said, in part: "one of the most important functions of the accounting department of a railroad is so to order the procedure in every transaction as to show to the management what the transaction really amounted to, both for purposes of operation and for purposes of financial accounts. In that sense the Auditing Department becomes the watchdog of the Treasury in a very real sense.

Besides this, the greatest single phase of railroad administration which has constantly to the watched is summed up in the one word "Waste." Waste in railroad operation as a rule does not come from any desire on the party of anybody to be wasteful. It comes from lack of full knowledge of what are the factors of expense, what are the factors in distribution of the expense in the work as it proceeds; and to what extent expense can be curtailed and wasteful methods avoided. Work for which a sum of money has been appropriated and which is only half done after all the money has been spent shows a case of incapacity or waste and probably both. Close accounting promotes close calculation by all concerned, from engineer to foreman.

The Auditor should find every factor to expense. It is his function to find every factor of cost that goes into that transaction, and to the extent that he fails to note every factor, the auditor still has to pursue his path until he does devise ways of finding it. He can find these factors only in conjunction on the one hand with the administrative officers, and with the operating management on the other hand.

It is the province of the Accounting Department, so to arrange and to provide accounts that the operating and engineering officers will not only realize what are the factors that enter into their costs, but that the auditor also will have access, as the work proceeds, to a knowledge of the expenditures as they are made, so that they will know whether in the work those doing it are exceeding their expenditure allowance and can tell them in proper time whether they are drifting as a practical matter.

The fact of it is that what is needed in the railroad business is a closer check than at any time in the past on how much money from day to day goes into the business, for what it is spent, and how economically it is spent.

Finally, accounting officers are in the best position—because they have all the data before them—to summarise from the more diffuse statements which now amount to volumes, and present them finally in such forms as to show at a glance what are the points of efficiency, what are those calling for praise and encouragement and what those calling for words of caution and instruction."

Through reports of operating expenses and revenues, performances, traffic, and cost statements, the operating, traffic, and other department heads of a carrier are kept advised of the status of their activities. They are able to gauge the performance of their department through the figures supplied by the accounting department.

Without these financial statements and statistical tabulations used for purposes of comparisons, it would not be possible for them to carry on their work efficiently and economically.

In no other business does accounting play such a part in the property where results, economy, and managerial skill are so dependant upon what the accounts and statistics reveal. In the operation

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When the Lost Propertyman looks around the vast warehouse in which he spends his working day, he may be tempted to say—what a junk-heap. But he knows this is not the case. It is his job to take care of all this evidence of man's absent-mindedness until claimed by the rightful owner, or dispose of it, when it is no more wanted by the owners.

of a Railway the study and the analysis of the accounts and statistics take the place of personal supervision. This is true because of the physical impossibility of personally supervising the great extent of Railway's operations covering hundreds of miles of lines stretching over many states.

Railway accounting embraces three distinct phases:

II

(1) Accounting. (2) Auditing, and (3) Statistics.

1. Accounting work consists in the writing of initial documents and records, prescribing the records, books and accounts to be kept and the rules relating thereto; maintaining the books, records and accounts; classification of revenues and expenditures; compilation of financial statements such as the income balance-sheet, profit and loss etc. and correct interpretation of all records and statements compiled.

The result of proper accounting is a clear and concise picture of the financial position of the carrier at any time and for any period.

2. AUDITING: The purpose of auditing is chiefly to protect the finances of the business—to see that it receives all the moneys due, and pays no more than it owes. The important auditing functions of accounting department are as follows:—

1. To see that every ticket, way bill and invoice show the correct rate and charges, that they are correctly accounted for and the staff collect the correct amounts on all local and foreign traffic received and forwarded as required.

2. To see the correctness of the amounts received on each ticket, way bill and invoice issued and to see that each issue is properly accounted and reported.

3. To verify the correctness and collection of miscellaneous goods and coaching earnings such as demurrage, storage, dining car receipts etc.

4. To see that foreign Railways are credited with the amounts due to them and debited with amounts due by them and that proper settlements are made for through transactions.

5. To investigate all claims of overcharges.

6. To verify all expenditures represented by salary bills, vouchers or cash payments.

7. To see that bills against other Railways, firms and individuals are correctly and promptly rendered and collections made.

8. To check the books for correct entries and proper classification of accounts.

Auditing is necessary to correct accounting as incorrect accounting not only causes direct losses, but also more serious indirect losses by furnishing facts on which wrong conclusions are based.

3. STATISTICS: Data on the various phases of the transportation business is sought much of which has no financial significance. It deals with the quantity of transportation produced, the business done expressed in tons, mileage, and number of passengers carried; the work spent in terms of man-hours instead of rupees and the relationship of values to production. In other words, the accounting department is the agency of the carrier chiefly engaged in the compilation of statistics of the transportation business.

(Continued on next page bottom)

"Railway statistics are numerical statements of facts presented in such a way as to bring out relationship and indicate comparisons, and are used in the management, operation, and regulation of the Railroad property.

They relate to every phase of railroading-finances, traffic, operation, the railroad plant labour, wages, accidents, and all other subjects involved in the administration of the railroad property."

They are submitted in the form of monthly and yearly reports to the Railway Board, in the form of regular and special reports to the management and as statistical reports to the various departments.

Accounting is the basis of all financial statistics and is a necessary factor in statistics relating to the physical plant or the production of the carrier when value or costs are involved. Financial statistics cannot be tabulated, nor can statistics relating to the value of the carrier's property, or the cost of business determined without accounting. Uniform accounting further permits the compilation of statistics that are comparable, enabling those interested to compare the growth, or the increase or decrease of any factor over a period of time or of like situations over like periods.

Train Speeds— Europe, America and India

By Saroj B. Biswas

IN preparing a survey of the train speed of European Railways the most striking feature is the amazing recovery evident in the war torn France and Italy. Happily the the American the Titan builder being better placed had no war damages to repair though during the war there was a slowing down of the principal train services; albeit the pre-war speed of serveral crack trains has been restored but of late an handicap has been imposed by the Interstate Commerce Commission which has got a controlling influence in train operation there restricting the maximum speed to 80 M. P. H. on all tracks not fitted with automatic train control with the result there has been a deceleration of some crack trains.

TABLE NO. I

Aggregate Mileage of Railway Runs in Europe Booked at start-to-stop speeds of 60 M. P. H. and over. 1950.

Country	Traction	65 M. P. H. and over	62 M. P. H. and over	60 M. P. H. and over	Total for each country
		miles	miles	miles	miles
France	Electric	414 (3)	2,543 (25)	6,577 (65)	
	Diesel	1,602 (17)	3,526 (31)	4,124 (47)	
	Steam	315 (2)	408 (3)	979 (8)	
	Total	2,331 (22)	6,477 (59)	11,680 (120)	11,680 (120)

Country	Traction	65 M. P. H. and over	62 M. P. H. and over	60 M. P. H. and over	Total for each country
		miles	miles	miles	miles
Italy	Electric	498 (5)	633 (8)	916 (14)	
	Diesel	—	198 (6)	326 (14)	
	Steam	—	—	19 (1)	
	Total	498 (5)	831 (14)	1,261 (29)	1,261 (29)
Switzerland	Electric	219 (7)	484 (16)	569 (19)	569 (19)
Sweden	Electric	—	93 (2)	512 (11)	512 (11)
Denmark	Diesel	77 (2)	290 (6)	455 (9)	455 (9)
Germany	Diesel	—	145 (1)	289 (2)	289 (2)
Belgium	Electric	165 (6)	165 (6)	165 (6)	165 (6)
Great Britain	Steam	—	—	44 (1)	44 (1)
Totals		3,290 (42)	8,485 (104)	14,975 (197)	14,975 (197)

The figures in brackets in each column indicate the number of individual runs making up each aggregate mileage figure. This table shows that for a speed of a mile a minute and over out of the total of 14,975 (197), France alone claims and books 11,680 (120) miles. The Electric, Diesel and Steam haulage is 58½%, 34½% and 7% respectively of the total mileage and this reflects the development of Electricity as the chief motive power in Europe against Diesel Electric of U. S. A. which hold 75% of the total train mileage at a speed of 60 M. P. H. and over.

A study of the recent European Time Tables also reveals some interesting facts.

In the realm of speed Germany which led in the pre-war time is now supplanted by Italy which now holds the highest record of 70 M. P. H. on Electric Traction for 91 miles between Bologne and Pianza followed by Switzerland 69 M. P. H. for 16·1 miles Electric Train, France 68·6 M. P. H. for 55 miles—Diesel traction. Belgium 66 M. P. H. for 27·5 miles Electric traction. Denmark 65·6 M. P. H. for 38·3 miles—Diesel traction. Germany 64·8 M. P. H. for 144·7 miles Diesel traction, Sweden 64·1 M. P. H., 31 miles Electric traction, England 60·2 M. P. H. for 44·1 miles—Steam traction respectively. On the other hand in Steam traction France tops the list with a speed of 65·2 M. P. H. for a distance of 157·6 miles by her crack train the famous rubber-tyred Strasbourg—Paris Rapide and the French National Railways are now determined to wrest the laurels of speed from the Italian

State Railways and in all likelihood she will succeed.

No doubt the recovery on the French National Railway has been spectacular and Phenomenal though she has still 2,915 miles of runs at speed of 60 M. P. H. and over to exceed her pre-war figure and position, the overall recovery in respect of European Railways is not very encouraging as in 1939 the grand total of the speed of 60 M. P. H. and over for all European Railways was 54,587 miles (1,065 daily runs) against the current one of 14,975 (197 runs) so there still remains a much lee-way to make up.

Apart from France and Italy-Switzerland is showing up, she has got at present a total run of 569 miles at a speed of 60 M. P. H. and over against pre-war of 519 miles. Sweden comes into the picture for the first time but Holland with her pre-war of 7,382 miles (393 miles daily run) fades out of the same.

The position in Germany and Great Britain is most tragic. Germany, which was in the forefront in the pre-war time, had 33 runs, all diesel Electric-booked at 75 M. P. H. and over from start to stop for 3,558 miles, 94 runs (8,011 miles) at 64 M. P. H. and over and 207 runs. (13614 miles) at 60 M. P. H. and over, has at present got 2 runs of over 60 M. P. H. and that, too, in the Russian occupied Germany. British Railways which in 1939 had 116 daily runs of 60 M. P. H. and over with a mileage of 12,016, and for time keeping a speed of 90 M. P. H. was developed with regard to 2 runs, are now to rest content with the run for a trifling distance of 44.1 miles. There is very little indication, at present of her speed schedules improving in near future though the proceedings of the last International Time Table Conference suggest—substantial development in the train speed on the continent in the near future.

TABLE NO. II

AMERICAN RAILWAYS

Aggregate mileage of runs booked daily in the U. S. A. at start-to-stop speed of 60 M. P. H. and over.

Traction	75 M. P. H. and over	70 M. P. H. and over	65 M. P. H. and over	60 M. P. H. and over
Diesel Electric	3,259 (49)	15,260 (209)	45,355 (645)	106,710 (1,680)
Electric	—	200 (3)	5,856 (105)	19,176 (554)
Steam	—	305 (5)	3,503 (56)	15,814 (318)
Grand Total	3,259 (49)	15,765 (217)	54,714 (806)	141,700 (2,552)

The figures in brackets in each column indicate the number of individual runs making up each aggregate mileage figure. The aggregate mileage of runs of 60 M. P. H. and over reaches in respect of 21 First Class Railways the formidable total of 141,700 with 2,552 daily runs and of these 217 (15,765 miles) are timed at 70 M. P. H. and over and 49 (3,259 miles) at 75 M. P. H. and over. It is none the less remarkable that 134 daily runs totalling some 6800 miles are booked at 72 M. P. H. and upwards.

A study of the Time Tables of the American Railways show that for 285 miles a speed of 80 to 86 M. P. H. with 9 daily runs is booked. A time keeping for this high speed demands a speed of 100 M. P. H. at least. In the sphere of highest speed—the Diesel has the field to itself so *much so*, all the speeds booked at 72 M. P. H. and over are in the hands of ubiquitous Diesel and it shoulders 75% of the *total*, leaving the rest to be moved by Electric and Steam Traction. The vast oil reserve of the U. S. A. weighed with the Railway Executives there to plump for Diesel in preference to Electricity which is developing as the Chief motive power in Europe due to power obtained from water. One cannot withhold tribute to the remarkable performance of the Diesel Engine that the same Engine works the train *might* after night—one day East bound—and next day West bound showing weekly 7,350 miles or so at these high sustained speeds, and this performance seems all the more remarkable and noteworthy in view of the fact on the way three (3) summits—one at 7000′, the other 7617′ and the 3rd at 8013′ above the sea level with a gradient of 1 in 28-5 have got to be negotiated. The fastest runs still with the steam power include four at over 70 M. P. H. chief of which are 71·1 M. P. H. and 70·5 M. P. H. for 59·3 miles and 123·4 miles respectively thus exceeding the present highest speed of 70 M. P. H. held by Electricity in Europe. The Electric traction tops 70 M. P. H. with 2 runs, the one at 70·4 M. P. H. *for* 48·1 miles and the other at 70·1 M. P. H. for 76 miles. The steam power though out-distanced by Diesel has got no Jeremiad to tell. On Pennsylvania Railway recently a Giant 4—4—4—4 steam locomotive with a Passenger train of 1,000 tons covered 103 miles at an average speed of 75 M. P. H. with the maximum of 87 M. P. H. So in spite of incursion by the Diesel on the duties so long carried out successfully by the Steam Power in the U. S. A.—the steam locomotives can still render a first class account of themselves when occasion demands it. The general load of a Passenger Train of any Fraction in the U. S. A. is 1,000 tons against the average of 400 tons of European ones. When viewed in the perspective of these facts the American Railways appear to stand head and shoulders over their European Compears but this apparent superiority is dwarfed by the fact that the American Railways had no war reconstruction work to undertake, nor was America a theatre of war subjecting the motive power and the permanent way to a severe strain with consequent heavy depreciation. Now let the speed position of Indian Government Railways be reviewed. The maximum permissible speed on our Railways is generally restricted to 60 M. P. H. with a relaxation permitting 65 M. P. H. over certain lengths of G. I. P. and E. I. Railways with sound track. So, for the purpose of comparison and analysis—a much lower means should be taken with regard to Indian Railways.

TABLE NO. III

Runs booked at a speed of over 45 M. P. H. from start-to-stop.

Railway	Traction	Train No.	From	To	Distance miles	Time minutes	Speed M.P.H.	No. of Daily Runs
G. I. P.	Electric	34 Up	Kalyan	Dadar	28	31	54·1	1
,,	Steam	37 Dn. (Weekly)	Bhopal	Bhilsha	34	40	51	—
,,	Electric	48 Up	Kirkee	Lonavla	36	43	50·2	1
B. B. and C. I. Rly.	Steam	4 Up	Baroda	Surat	82	98	50·2	1
,,	,,	1, and 31 Dn.	Surat	Broach	37	46	48·2	2
E. I. Rly.	Steam	5 Up	Pertab-garh	Rae Barelli	60	75	48	1
G. I. P.	Electric	9, 19 and 47 Dn.	Lonavla	Kirkee	36	45	48	3
,,	,,	33 Dn.	Kalyan	Veral	20	25	48	1
,,	,,	10 Up	Kalyan	Dadar	28	35	48	1
E. I. Rly.	Steam	5 Up	Pertab-garh	Rae Barelli	60	75	48	1
G. I. P.	Electric	9, 19 and 47 Dn.	Lonavla	Kirkee	36	45	48	3
,,	,,	33 Dn.	Kalyan	Veral	20	25	48	1
,,	,,	10 Up	Kalyan	Dadar	28	35	48	1
,,	,,	47 Dn.	Bombay	Kajrat	62	78	47·7	1
,,	,,	6, 8 and 198 Up	Kalyan	Dadar	28	36	46·6	3
B. B. and C. I. Rly.	Steam	*Dn.* Flying *Rani*	Palghar	Borivili	35	45	46·6	1
			—	—	—	—	—	—
			—	—	—	—	—	—
,,	,,	3 Dn.	Balsar	Surat	42	54	46·6	1
G. I. P.	,,	8 and 28 Up	Jubbul-pore	Narsing-pur	52	67	45·5	2

Railway	Traction	Train No.	From	To	Distance miles	Time Minutes	Speed M.P.H.	No. of Daily runs.
B. B. & C. I.	Steam	2 and 32 Up	Baroda	Broach	44	57	46·3	2
G. I. P.	,,	38 Up Weekly	Itarshi	Harda	47	61	46·2	—
,,	,,	Up	Badnera	Murtazapur	27	35	46·2	1
,,	Electric	1 Dn.	Kalyan	Veral	20	26	46·1	1
B. B. and C. I. Rly.	Steam	Up	Palghar	Dahanu Road	20	26	46·1	1
		Flying Rani	—	—	—	—	—	—
B. N. Rly.	,,	1 Dn.	Raipur	Bhatapara	39	51	45·9	1
,,	,,	3 Dn.	Bhadrak	Balasore	39	51	45·9	1
G. I. P.	,,	37 Dn. Weekly	Dholpur	Gwalior	41	54	45·5	—
,,	,,	6, 8 and 198 Up	Itarshi	Harda	47	62	45·4	3
					904			29

These 904 miles are made up of 29 daily runs of 782 miles and 3 Weekly ones of 122 miles, the relative shares of the four Railways are as follows :—

	Electric Miles	Steam Miles	Total Miles
1) G. I. P.	258	248	506
2) B. B. & C. I. Rly.	—	260	260
3) B. N. Rly.	—	78	78
4) E. I. Rly.	—	60	60
	258	646	904

It is the definite finding of a small Committee of French Experts recently appointed to report on the design aud behaviour of the W. P. Engines that these Locomotives are highly efficient and quite suitable for the track and soil of our Railways. The W. P. is meant for Fast Mail and Express services and it can now be expected that all our crack passenger train services should be soon accelerated scheduling several individual runs of 50 M. P. H. and over.

The materials concerning Europe and America are drawn upon from Railway Magazines December 1950 and February 1951.

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INDIA'S GREATEST NATIONAL ASSET
IS
HER RAILWAYS

The country's prosperity depends to a large extent on the efficiency of her transport system. Railways, as the principal arteries of the nation, are now engaged in an all-out effort to contribute to national progress. You can help the Railways to serve the nation by:

* Discouraging Ticketless Travel, an anti-social activity which causes a tremendous loss of revenue.

* Promptly loading and unloading wagons which are heavily in demand for carrying food and other essential commodities.

* Using Railway carriages, platforms, waiting halls, etc. properly and maintaining hygienic conditions.

* Tendering your packages for booking by rail, securely packed, neatly labelled and clearly marked, thereby reducing the incidence of claims.

Inserted by : Public Relations Officer, Southern Railway.

SOUTHERN RAILWAYS MAGAZINE

VOL. III NO. 3 — SEPTEMBER 1951 — ISSUED MONTHLY

"Time For Important Negotiations"

PROMPTED apparently by patriotic sentiments in view of the nation's emergency, the All-India Railwaymen's Federation decided early in August to defer the strike for two months. Wisely using this short period of time, the Railway Ministry and the Federation have started fresh negotiations on the contending issues. The first phase of these negotiations concluded at the beginning of this month on what is reported to be an optimistic note. It is understood in the first phase both the Railway Ministry and the Federation generally agreed on the procedure to be observed in tackling the outstanding grievances of the Railwaymen, such as dearness allowance, gradation of staff and restoration of pass privileges. As soon as the necessary materials have been collected on both sides, the talks are to be resumed.

In the meanwhile, at a rally of Railway workers held at Secunderabad early this month, Sri Jai Prakash Narayan, reminded Railwaymen that the Railway Strike had not been abandoned, but only postponed, and that they should be ready to strike if the Government failed to satisfy the demands of the Railwaymen.

At the time when the A. I. R. F's decision to defer the strike was made public there was a vast sense of relief throughout the whole nation, and Railwaymen in particular must have welcomed this decision, as it eased the uncertain tension in their minds, and enabled them once again to get down to their jobs with this anxiety cast off.

The prompt resumption of negotiations, especially in what is reported to be a note of optimism, will obviously reflect a similar feeling of optimism in the minds of all people, and particularly amongst Railwaymen.

If the time limit of deferment of the strike by two months is not extended on the part of the Federation, the time in hand for negotiations and decisions is short; in fact, too short when big issues are at stake.

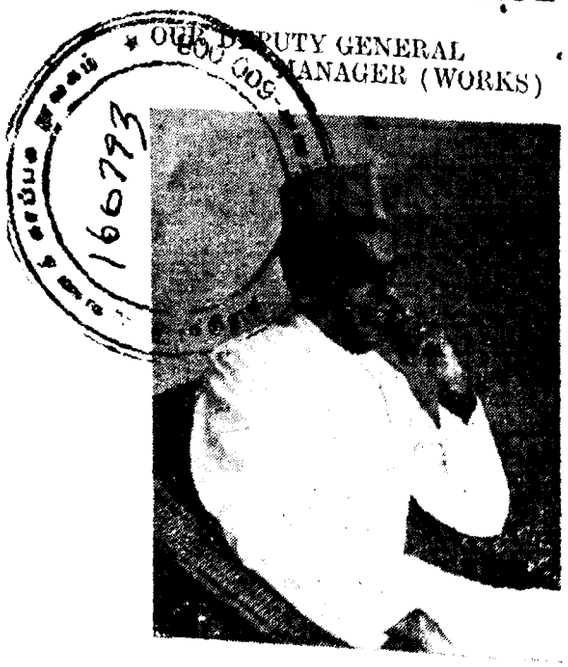
As we go to press we learn that negotiations between the All-India Railwaymen's Federation and the Railway Board are to be resumed in New Delhi on the Twentyseventh of this month.

As a result of the negotiations held early this month, the Federation has submitted the memorandum to the Railway Board. The memorandum and the points arising from it will be discussed at the meeting.

It is hoped that, that throughout these negotiations, a sincere spirit of conciliation will prevail on the part of both the Railway Ministry representatives and those of the Federation.

Every citizen of the nation is now looking hopefully to the Government and the Federation in the hope that a permanent and satisfactory solution will be found on the outstanding issues which will once and, it is hoped, for all time, allay the recurrent menace of a strike threat.

Notes and Comments



Mr. T. A. Joseph, M. A.,
...justice tempered with mercy...

At the outset we owe an apology to Mr. T. A. Joseph, Deputy General Manager (Works), Southern Railway for publishing below a psycho-analytical study of him. Sometime back when we approached him for his photo and write-up, he curtly replied that he shuns all sorts of publicity. We, as publishers of this Magazine having the full support of Railwaymen on the one hand and the trading public on the other, will not be doing justice to our profession, if we do not convey the sincere feelings of our Railwaymen to the general public what they feel about him. Besides, many a Railwayman on the ex-M. S. M. and Mysore State Railways may not know him and his temperament. When we publish these few lines we do not mean flattering Mr. Joseph, but our intention is to tell the public why the Railwaymen adore him. With this object in view, we are publishing below a brief note about Mr. Joseph and it is our earnest request to him not to take any serious exception to this.

To all those who have known or come in contact with Mr. T. A. Joseph this name stands for a great concept, for he is really a great man. Most people on the Ex-South Indian Railway term him as a "Gandhi in Office," for his qualities of head and heart are as great as the great Mahatma's, his internals and externals are equally pure and simple; he is a devout and true Christian, and therefore a true Hindu and a true Muslim (for in the higher rungs all religions are one, and true Christianity is synonymous with true Hinduism or true Mohamedanism), and in his thoughts, words and deeds, he is the embodiment of virtue. He always dealt with men and subjects fairly and squarely. No man was too small for his kindness and attention. Whoever sought his interview, the

Our D. G. M. (Works) is seen here unfurling the National Flag on the Independence Day

Mr. T. A. Joseph, Deputy General Manager (Works), Southern Railway and Superintendent, Watch and Ward are seen here chatting intimately on the Independence Day.

The Watch & Ward Parade is being inspected by our Deputy General Manager (Works) on the Independence Day.

interview was never refused, and the interviewer always left a wiser man, with a very high impression of him, and feeling that he has achieved his object. He is a scholar, no doubt. He writes and speaks chaste languages though he may not be ornate or dabble in rhetoric. His rich ideas are always clothed in dress as simple as those around his own person, and the knack of driving home his ideas into the most determined interviewer is almost a speciality with him. You can occasionally hear him illustrate his statements from the Bible, the Quran, the Gita or the Ramayana, according to the nationality of the interviewer; he will spare no pains to make himself plain and intelligible. There is no subject which he cannot handle successfully, or on which he does not hold sound and settled views. So much so his compeers and his superiors hold him in great esteem, and have great regard for his views. When he was posted as the Chief Traffic Manager of the South Indian Railway, there were many doubting Thomases, who wondered how he was going to fill this complex post, which was a jumble of Transportation, Operation, Commercial, Power (Mechanical) Signalling, Interlocking and Communications, not a few of which were of a highly technical character. He belied all the doubters, and rose equal to the occasions, which were, of course, numerous. As an administrator, he belonged to a very high order. He was seen at his best by the vast majority of staff as an appellate authority. A feeling has come about that anybody's case is quite safe in his hands, and would receive the most truthful and honest attention. It looked as if he had an instinct, a sixth sense, which always led him to the truth and correct conclusion. His justice is always tempered with mercy and the staff of his department soon develop a sense of relief and adore him for his sense of justice and proportion. Such an all-round and perfect man is hard to find. We make bold to predict that a yet brighter future lies ahead for him, and through him for the Southern Railway in particular, and for the Railway World in India in general.

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INAUGURATION OF CENTRAL & WESTERN ZONES

We understand reliably that steps are now being taken for the formation of Central Railway which will consist of the existing G. I. P. Railway 3,625 miles, the Scindia State Railway 291 miles, the Dholpur State Railway 55 miles and 1,461 miles of the Nizam's State Railway thus making a total of 5,432 miles. It is said that headquarters for the new Railway will be at Bombay. Preliminary examinations for undertaking this regrouping has already been started in right earnest whereafter the matter will come up before the Central Advisory Council for Railways during this month. It may be recalled here that the Chief Traffic Manager of G. I. P. Railway Mr. M. G. Iyer visited Secunderabad last month and held discussions with Mr. T. M. Jagtiani, General Manager of the N. S. Railway and other high ranking officers on certain matters relating to this regrouping.

It is said that the existing pattern of the Divisional system which is in vogue on G. I. P. Railway, will be retained while doing this regrouping. Thirtyfirst October has been earmarked as the D-Day for inaugurating not only the Central Zone but also the Western Zone. This day will naturally be a red letter day in the history of the Railways in India.

Thus we shall have one large, compact geographical and economic unit. The formation of the Central Railway will be a stepping stone in the ideal of the rationalisation and regrouping of the Railways in India. For this remarkable piece of work the credit must necessarily go to the Ministry of Railways for having brought about such an important change within so short a time.

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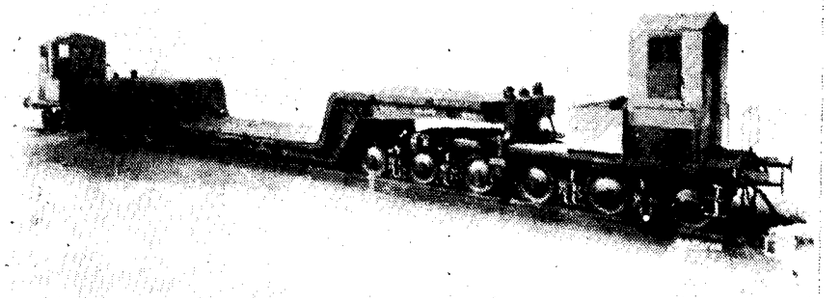
GIANT WAGON FOR INDIAN RAILWAYS

A giant wagon capable of carrying a load of 130 tons, distributed evenly over a short well, will soon be put into operation on Indian Railways. This "Well Wagon" which is of all welded construction, has been built by a Swiss firm in accordance with the leading design particulars and specifications prepared by the Central Standards Office, Ministry of Railways, and is probably the only one of its kind in Western Europe and Asia.

With the various multi-purpose irrigation, hydro-electric and other projects now under construction in India, the need for wagons to transport heavy and out-of-gauge machinery required for such projects was keenly felt and, accordingly, orders were placed, sometime ago, on a Swiss firm for the supply of this special wagon.

The "Well Wagon" incorporates a number of new features. The main girder of the well is supported through specially designed pivots which are cushioned with rubber springs to take initial shocks on two sub-structures at either ends which are, in turn, supported by two six-wheeled bogies fitted with roller bearings. On the pivots, manually operated hydraulic jacks have been incorporated and these can raise or lower the main girder to the desired height when passing through fixed structures with out-of-gauge loads. To maintain a satisfactory brake-load ratio, the brake gear has been provided with three different settings to provide for different brake powers to suit the various ranges of loads that are likely to



Photograph of the giant wagon incorporating a number of new features and capable of carrying a load of 130 tons, distributed evenly over a short well, which arrived in India recently and is being assembled at a Railway Workshop. This "Well Wagon" will soon be put into operation on Indian Railways.

be carried. One brake cab has been provided on each sub-structure for the specially trained crew who will accompany the train and operate the brake gear, hydraulic jacks, etc.

The design also embodies an important feature which permits the wagon to take a right-angle turn with a turn-table of only 27'-0" diameter at or near the site of project.

In order to reduce the tare weight to the minimum all welded construction has been used throughout which has made possible a reduction in the tare weight from 115 tons to 90 tons. The other interesting design features are a length of 90'-5" over buffers and 56'-7" between the main pivots.

This giant wagon arrived in India recently and is now being assembled at a Railway workshop.

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CONGESTION AT EGMORE PLATFORM NO. 1

We have received several letters from the public complaining that No. 1 platform in Egmore Station from where the Indo-Ceylon Express starts, is crowded with parcels and packages stacked in a disorderly manner to the annoyance and inconvenience of passengers who come helter-skelter to board the train. We would invite the attention of the Railway Administration to this inconvenience and suggest either the parcels may be removed to some other place or the starting of No. 1 Express may be arranged from some other platform where passengers may have direct access to the platform when they come in taxis and other vehicles. The Administration would be rendering a great service to the travelling public if it could give immediate attention to this.

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SM.'s PLIGHT ON SOUTHERN RAILWAY

Following his speech in the Union Parliament during the last Railway Budget debate, Dr. V. Subramaniam, M. P., President of the S. I. Railway Station Masters and Council, Srirangam corresponded with the Hon'ble Minister for Railways for improving the conditions of Station Masters. It is too clear that there is a genuine case for Station Masters at least on the ex-S. I. Railway, of partial treatment in as much as they have been let down throughout. What little recognition of their responsibility and status was made by the Central pay Commission and the Adjudicator, is later taken away by the Joint Advisory Committee by enabling many other categories to gain easy walk-over above the Station Masters. This state of affairs is mainly attributable to the fact that the peculiar nature of their duty posts sparingly distributed, prevented them from bringing about facilities to take collective decisions and make co-ordinated representations. Dr. Subramaniam has, therefore, been invited for a personal discussion with the Hon'ble Minister. In order to prepare the ground for such a discussion, he has had talks with the concerned Railway Board Member during which he was assisted by a delegation of Station Masters drawn from the Central Executive of the Council.

The following *ad hoc* measures would be pressed to be taken with immediate effect, besides the appointment of a Special Commission to examine the anomalies: —

(*a*) The starting scale for a Station Master be fixed as Rs. 80-180, salaries to be calculated as on 1-1-1947 other rules of weightage etc. being normally applied.

(*b*) Distribution of posts to be made on the following percentage of the present total number:

Scale	A	:	½%
Scale	B	:	2%
Scale	C	:	2½%
Scale	D	:	25%
Scale	E	:	30%
Scale	F	:	40%

(*c*) To remove the glarin inequality in privileges of trave bonus etc.

Who is Who on Indian Railways

By Our Special Correspondent

GENERAL MANAGER, B. B. & C. I. RAILWAY

Fortyeight-year old, tall, handsome and stout with whiskers Sri. K. P. Mushran is the present General Manager of B. B. &. C. I. Railway. He was born in 1903. Mr. Mushran graduated from the Thompson College of Engineering, Roorkee. Immediately after his graduation, he joined the N. W. Railway as an Assistant Engineer at the age of twentytwo. It is not an easy thing to become an Assistant Engineer at such a young age. From this it is evident that Mr. Mushran is a man of dash-push nature coupled with his intelligence.

Later on he was appointed as Divisional Personnel Officer, Karachi. He did well in this post for some years. In June 1946, he was posted as Divisional Superintendent, Delhi.

Mr. Mushran was for sometime Deputy General Manager and Deputy Chief Engineer of N. W. Railway at Lahore. After the March riots in 1947 he was sent as Divisional Superintendent, Rawalpindi. In the summer of 1947, he went on deputation to the International Railway Congress at Lucerne. Soon after his return to India in October, he joined the Railway Board as its Director, Establishment in the same year. Nearly for two years he continued in this post until he was promoted as General Manager of B. B. &. C. I. Railway in September 1949.

Mr. Mushran is loved and respected by every Railwayman of B. B. &. C. I. Railway. In turn he has also the highest respects for average Railwayman. He knows perfectly how to control the Railway labour and with what. That is why he is called popular General Manager of this Railway. As a General Manager, he has done yeomen service to the country. We take this opportunity of congratulating him on his

Popular General Manager, Sri. K.P. Mushran of B B. & C.I. Rly., Bombay

BRIDGING THE GULF

With a view to instil in the minds of Railway Staff the need for courtesy in their actions and dealing with the public, the East Indian Railway recently inaugurated a "Courtesy Week." This gave an opportunity to foster a spirit of goodwill between the staff and the public.

achievements and hope that he will continue to serve the Railway and the public to the admiration of all.

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CHIEF ADMINISTRATIVE OFFICER, ASSAM RAILWAY

Sri B. Arora who has been the Chief Administrative Officer, Assam Railway since June 15 1948, was born in a small village in the Mathura district of Uttar Pradesh in June 1904, in a Hindu family with a high tradition of patriotism and public service. Tall, handsome, fortyseven-year old Sri. Arora graduated from the Allahabad University at the age of 22. Having passed successfully the Competitive Examination conducted by the Public Service

Efficient and Energetic Sri. B. Arora, Chief Administrative Officer, Assam Railway, Pandu.

Commision in 1926 he joined the Indian State Railway Service as Probationer Assistant District Traffic Superintendent, E. B. Railway in May 1927. He got to the senior scale early in 1933 and later occupied many specialised posts viz., Statistical Officer, E. B. Railway, Deputy Director (Statistics), Railway Board, Officer on Special Duty (Post-War Reconstruction) in the Railway Board, Joint Director, Project (Statistics) also in the Railway Board, Deputy Chief Commercial Manager and Deputy General Manager (P), B. A. Railway. During the hectic days of partition when the former B. A. Railway was broken up in segments Sri. Arora did magnificent work as Transfer Officer (India), Calcutta.

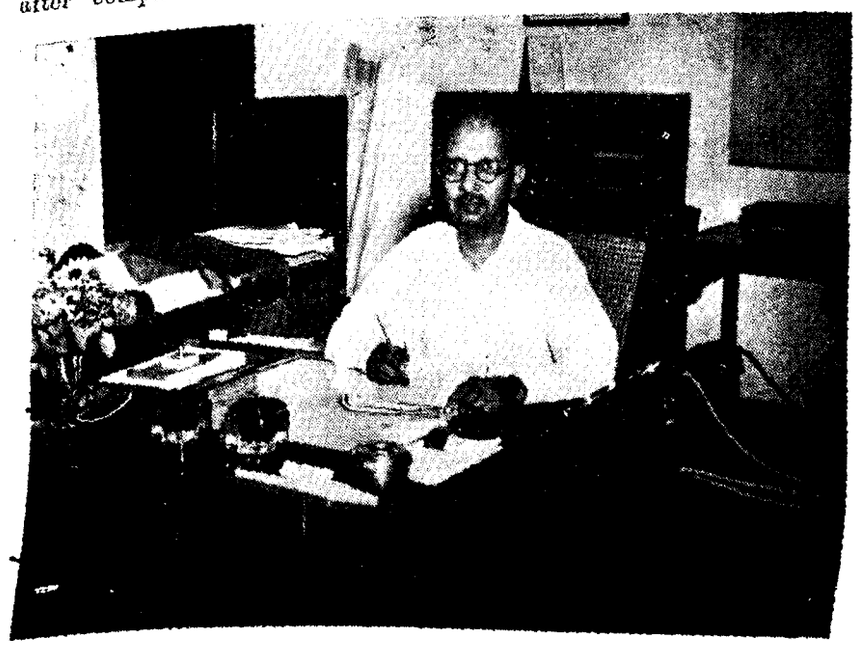
After a short stay in New Delhi as Director (Traffic) he came out to Pandu and it is during his tenure of office as Chief Administrative Officer that Assam Railway has been linked with the rest of India by an all-India route after completion of the Assam Rail Link Project and its boundaries have been extended by the merger of old Darjeeling Himalayan Railway and the Katihar District of old B. A. Railway.

Sri. Arora is a man of very pleasing manner, possesses an endearing personality and his approach to staff matters is broad-based and sympathetic. In spare moments outside office hours, he relaxes in gardening and indoor games although he still remembers his college days where he was a member of the College Team in Rugby, one of the most strenuous outdoor games.

We extend our good wishes to Sri. Arora and believe that he will bring up this infant Railway as an essential limb of our Indian Railways.

CHIEF ADMINISTRATIVE OFFICER, EASTERN PUNJAB RAILWAY

Bald-headed, tall, bespectacled Sri Daya Chand Jain is the



Sri Daya Chand Jain, Chief Administrative Officer, Eastern Punjab Railway, Delhi—whose name will go down in the history of Indian Railways for his invaluable services during partition, and flood havoc.

present Chief Administrative Officer of Eastern Punjab Railway, Delhi. Fiftyfour-year old Sri. Daya Chand hails from the illustrious Jain family. He was born on 30th October 1897. At the age of twentyfour he entered Railway Service as Apprentice Engineer on the North Western Railway. A year later he was confirmed as Assistant Executive Engineer.

During his thirty years' career on Railways, Sri Daya Chand Jain has held many posts, for the most part as Engineer, but on an occasion as Personnel Officer also. He has seen service over a wide field both on the undivided N. W. R. and E. P. R. after partition.

An initial spell of ten years as S. D. O. on the Lahore, Delhi and Rawalpindi Divisions, as well as at Headquarters Office, he was posted as D E. N. Karachi and later on as D. P. O. Ferozepore, D. E. N. Lahore and D. E. N., Delhi in quick succession. For over a year and a half, between August 26, 1944 and April 26, 1946 he held the post of Deputy Chief Engineer in the Headquarters Office, Lahore. He was appointed as Divisional Superintendent, Multan on May 2, 1946 and after a year there, he was transferred as Divisional Superintendent, Ferozepore on July 7, 1947 almost on the eve of partition.

During the troubled times which followed the partition and the flood havoc, under his guidance the Ferozepore Division successfully weathered an unprecedented storm in Railway history. With conditions more or less settled in the Province, on April 30, 1948 he was placed in charge of Delhi Division, where he continued to guide the affairs till his appointment as the Chief Administrative Officer on May 12, 1949.

Sri Daya Chand Jain is the most unassuming and unostentatious among Officers of Eastern Punjab Railway. He has rendered valuable service to the country during partition and undoubtedly his name will go down in the history of Indian Railways. His approach to problems howsoever complicated they might be, is broad-based and in fact he knows how to handle the Railway Staff. He believes that contented labour is an asset to the administration. Since he always keeps this aspect in view while dealing with staff problems, he is loved and respected by one and all. Although Sri. Jain has thirteen months more to retire from Railway service we hope that the Railway Board would utilise his services for the benefit of our country even after his retirement. We wish all happiness and prosperity to Sri Jain and his family.

It is universally acknowledged that we are not to abandon the unhappy to their sorrows, but to endeavour to console them by rational discourse, or by turning their attention to more agreeable objects; in the same manner as we desire those who have weak eyes to turn them from bright and dazzling colours to green, or others of a softer kind.—PLUTARCH.

It is only by the spread of education that the public, to whom the Press, speaks, will become every day less liable to be misled by absurd reports, or carried away by hollow declamation, and more capable of forming their own independent judgment on what concerns their own interests, and impressing it upon those who profess to speak in their name.—LORD RIPON.

Southern Railway, News Letter

By T. Moorthy

PERSONNEL BRANCH

It is said that the Railway Board has recently sanctioned continuation of the Personnel Branch in the integrated system of Southern Railway.

The newly integrated Southern Railway employs a personnel of 138,678 employees distributed as under:—

	Mileage	Total No. of staff employed	Staff for 100 miles
Ex-M. S. M.	2,938	71,449	2,432
Ex-S. I. R.	2,349	57,257	2,437
Ex-M. S. R.	712	9,972	1,401

The total cost of Class III and IV staff is estimated to be nearly 15½ crores of rupees per annum yet if the huge amount spent on staff is to be productive and the large number of railway personnel are to be enthused for work under the new national set up, the staff must have absolute confidence that their welfare is safe under the Administration in the integrated railway system. Readers of our Magazine may be aware of the two articles published in our issues of July and September of last year—one advocating the abolition of the Personnel Branch and the other proposing its continuance with some improvements learned after experience. Both the articles were contributed by men of outstanding ability and has created a great enthusiasm not only amongst the railway staff but among high ranking officials including a General Manager. The one forthrightly criticised the Personnel Branch for its defects in that it deprived the personal touch and contact between the work-exacting officers and workers and also criticised in regard to the delay in dealing with staff appeals. The other retorted with an objective analysis of the working of the branch and stated that there was no truth whatever in this criticism. In the view of the defender of the Personnel Branch, the Executive officers do exercise absolute control over the staff without which it will not be possible to maintain and improve upon the efficiency. The Personnel Officers step in only to (1) carry out the instructions of the Executive Officers (2) meet their requirements from time to time (3) ensure that all the establishment rules and regulations laid down for observance, are duly taken into account and followed in day to day working (4) the Personnel Officers supply the much needed corrective to the Executive Officers in order to ensure strict compliance with the Establishment Rules, such as Discipline and Appeal Rules and (5) what is called the 'Personnel Equation' of the Executive Officers might come into play, resulting in injustices and unfair decisions. It was stated that the Personnel Branch was only the hand-maid of the Executive Officers and as they both work in conjunction and cooperation with each other, the one supplies what the other is lacking in. The Executive branch supplies the intimate knowledge of the men required for making proper selections, and the Personnel Branch supplies the knowledge of Establishment rules and procedure, so essential to ensure that justice and fair play are not denied to any one. Thus by publishing both points of view, we paved the way for the Railway Board to arrive at an objective decision of such an important matter and we are

happy to learn that the Railway Board have finally sanctioned the continuance of the Personnel Branch confined to the General Managers and to the Heads of Departments and to the Regions only in the integrated system. While this is a welcome measure, we would very strongly urge its establishment in the Districts also without which the benefits of the system cannot be felt. We are sure that while implementing the Board's decision, the General Manager and Deputy General Manager (Personnel) would take into consideration the constructive suggestions given in the article published in our September issue of last year and also the suggestions given by us in our letter dated 14-1-1951 to the General Manager. In this connexion we want to introduce to our thousands of readers—the rank and file of Railwaymen and the public at large—our Deputy General Manager (Personnel) Sri N. Kamalakara Rao Naidu the policy-maker of the Personnel Branch. General George Marshall the greatest living Administrator of America said once when some one called him on the telephone to urge the promotion of some friend "If the man is a friend of yours, the best thing you can do is to avoid mentioning his name to me." Sri Kamalakara Rao Naidu scrupulously follows the ideal of Mr. Marshall and it is very dfficult even for his nearest relatives to approach him. He is as straight as a stick and strict to to the core. We Indians who have yet to appreciate the value of such strict Administrators especially when dealing with a huge personnel, often feel an infused pride and misunderstand him. But what of that? He is the friend of thousands of honest and hard-working Railwaymen spread over the nook and corner of 6,000 miles and in their heart of hearts they will have the satisfaction that at least there is one man on whom they can depend for their well-being. Sri. Rao Naidu is a great Tennis Player and a sportsman and a member of the Cosmopolitan Club, Madras.

Fifty-year old, tall, bespectacled Sri. N. Kamalakara Rao Naidu entered Ex-M. S. M. Railway

Sri. N. Kamalakara Rao Naidu
...controls Railwaymen's destiny...

Service some two decades back in the Operating Department and held various positions. He was also Deputy Chief Operating Superintendent, Staff. In the Railway, the Operating and Engineering Personnel are the largest and much dissatisfaction is felt among them for various reasons. With an intimate knowledge of the conditions under which an Operating or Engineering Staff works, Mr. Rao Naidu will surely make the Personnel Branch grow from strength to strength.

In this notable but hard work, he is ably assisted by Mr. R. Nagarajan, Personnel Officer to whom talent and administrative capacity are as inborn and inseparable as milk from water. He is another giant product of rank and file of Railwaymen. Mr. Nagarajan entered the Railway Service as an ordinary clerk and

Sri K. R. Ramanujam
...Our patriotic General Manager...

rose to the present position by sheer merit and capacity. At many grave moments in the history of the Ex-South Indian Railway he has been assigned the task of taking critical decisions and in each moment he came out successful. It is stated by great Administrators that when they face critical situations only 'Patient and Proportion' can save them. Mr. Nagarajan has both the qualities in abundance and thus he has earned the love and respect of the high and low in the Railway Service. It is stated that cadres decide everything. Mr. Nagarajan who is a good organiser always cares for the cadres who work under him and it is this capacity that endears him to all the successive General Managers. In concluding this note we will be failing in our duty if we do not pay tribute to our patriotic General Manager who has been able to harness such varied talents for the noble cause of the country at a critical period and this because he feels that he would strain every nerve to see that the Southern Railway is a model of perfection and that it plays the role that is expected of it in full measure.

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OUR NEXT ISSUE

Our October issue will contain an article entitled "*Some Suggestions for increasing the efficiency of the Railway Personnel in India*" contributed by no less a personality than SRI KAILASH NATH, M. Sc., A. M. I. Mech. E., A. M. I. Loco. E., District Mechanical Engineer, O. T. Railway, Gonda, who won a first prize of Rs. 250/- in the "Indian Railways Conference Association's Competition for "Suggestions and Inventions" for the year 1950—51.

Editor

IMPROVEMENTS TO CENTRAL STATION

The Central Station, Madras has attained much importance. Situated in the heart of Madras the Central Station caters to the needs of thousands of passengers going from one end to the other. Our General Manager, immediately after his assumption of Office, ordered the improvements to be carried out to prevent thefts etc. and to make the really travelling public comfortable. The enclosures have been shifted and the Gate towards Waltax Road is closed. The improvements are no doubt welcome but these are handicapped for want of space. Further, the reception lines at the Central Station have no cross over with the result that when an Engine brings a train it has to

stop in steam for a long time till the rakes are moved. This would be a waste but we are sure our Chief Operating Superintendent must be deeply thinking of this problem of allowing the Engines to shed after their arrival. This is the observation of a non-technical man. Another bright future that was noticed in the Central Station is with regard to "Complaints by Passengers." Here it is clearly stated "You can make your complaints *as well as your suggestions.*" On the Ex-S. I. Railway we were constrained to write sometime back about this but this new word "as well as your suggestions" is really a noble idea to please the staff and whoever is responsible for this idea must be congratulated.

RULES COMMITTEE FOR THE SOUTHERN RAILWAY

The Indian Railways Enquiry Committee in their recommendation No. 80 stated :—

"We recommend that the whole subject of the General Rules should be approached from first principles and a committee should be appointed to evolve a new Rule Book which will not only contain all orders necessary to secure safety but will also pave the way for the future development of systems of working and signalling on progressive lines."

The Railway Board in order to implement the above decision appointed Mr. Sidney Smith Ex-C. T. M. of S. I. Railway as Chairman and Mr. R. N. Sinha retired Deputy Chief Engineer (Signalling) as member. The Committee started work in July 1949 and completed in 1950. After touring the whole of Indian Railways and holding discussions with all grades of Railway Staff from the General Manager to the Pointsman they revised the General Rules and this is under print. Mr. Sidney Smith has stated :—

"As a result of these discussions, three facts emerged which indicated that the existing Rule Book was extremely difficult for the Staff to understand. Firstly it was a common complaint that Rules relating to a particular subject were often in various parts of the Rule Book, and it was difficult to find them. Secondly, the Staff as a whole found the wording of the rule difficult to understand in view of their legalistic forms. Thirdly, the rules in the present form were very incomplete and called for the issue of a large number of subsidiary rules and other instructions which make it difficult for the staff to follow them readily."

On the integrated Southern Railway each Railway viz., Ex-S. I., Ex-M. S. M. and Ex-M. S. had different rules and procedure in regard to traffic working, commercial matters and so on. On the Ex-M. S. Railway the rules were very primitive. In order to evolve a uniform procedure, the Railway Board, it is understood, are

Sri. L. R. Natarajan
...an able Engineer plus Administrator...

appointing a Rules Committee to come into effect from 1-10-1951. We understand that the name of Sri. L. R. Natarajan, Deputy General Manager (Regrouping) is being proposed for the Chairman of this important Committee on which work alone the future well-being of the Southern Railway depends. In this connection it is very necessary for the Public and Railwaymen to know about Sri. L. R. Natarajan who has done a signal service to our national railways. He has been asked to shoulder difficult organising jobs at difficult periods and never was he found wanting. Though an able Engineer having a high qualification, he was asked to take charge of the Grain-shops organisation when the Grainshops Enquiry Committee was appointed. He brought the change over of the Grainshops as smoothly as possible without dislocation and absorbed the surplus staff. Added to this the Railway Staff of Ex-South Indian Railway will remember him with kindness for effectively organising the Canteens Services which is a real boon in these hard days. As a Deputy General Manager (Personnel) he efficiently tackled various problems such as disposal of cases resulting in the strike on the Ex-S. I. Railway and Sri. Natarajan has spent anxious moments to this great problem and succeeded admirably. When the regrouping came with its attendant complications, Sri. Natarajan shouldered the responsibility and it is a feather on his cap to see that the regrouping is a great success. It is no easy matter to physically arrange the transplantation of established staff and Mr. Natarajan's perseverance was responsible for this achievement. He is shrewd, but easily approachable and never gets ruffled even at critical times. He has abundance of tact—a quality which is essential in dealing with men and his selection as Chairman for the Rules Committee is most proper. We wish him all success.

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MOVEMENT WORK ON SOUTHERN RAILWAY

In the month of June, I wrote about the control organisation as the nerve centre of the Operating Department. In effect, it is part and parcel of the wider organisation called the Movement Branch of the same department. In the new set up the Movement Branch plays such a vital role that each Region has a Senior Movement Officer called (SOM) working under the Regional Traffic Superintendent and each DTS has a separate ATS (Movement) for movement work. In the Head Office, the COPS is directly assisted by another Senior Movement Officer. The secret of organising a great railway system is nothing more than a carefully arranged system of devolution combined with watchful supervision. The role of the Movement Officers is therefore very very important. Only men of outstanding ability, capacity to take quick but no less correct decisions and last but not the least men with wide operating knowledge are needed for these posts. The Southern Railway has such peculiar problems in dealing with freight traffic. It serves a net work of important Ports such as Madras, Cochin, Tuticorin, Cuddalore, Calicut and Marmagoa. With the import of foodgrains, these ports must be fed with goods stock. Then the different gauges which is a problem itself presents difficulties at various tranship points. Their number is great on the new set up and every ingenuity is needed to watch the working of feeding of stock, avoiding congestion, labour problem and so on. Then, the Ex-M. S. M. Railway with a long line of Transit Traffic at various foreign junctions has to be tackled. Above all the Movement Officer is

responsible for prompt supply of wagons to the public and he has to bear the brunt of criticism in this respect. The late running of trains, arrangement of Tourist Traffic, Reserved Accommodation and revision of timetables all come within his purview. The Control is therefore the hand-maid of the Movement Officer and an efficient Control means, efficient operating department. In the integrated Southern Railway the COPS has done the best thing to attach greatest importance to this aspect and has selected the cream of Railway officers to this work. It is, therefore, necessary to introduce the Senior Movement Officer Mr. R. Seshadri, B. A. to the public. The vast army of railwaymen on the Ex-S. I. Railway knows him as the strict but a kind officer but many on the M. S. M. Railway may not know him. He is really the leader of the younger officers. I was surprised to see the large number of younger railway officers giving him a hearty send off at Trichy Junction platform prior to his joining the Head Office. One great quality which is essential to an Officer is looking at things objectively and without prejudice and judging things on its merits. Mr. Seshadri has this in abundance. It is to the good fortune of many hard working railway operating men that they have such an officer.

He hails from a very high and respectable family and is the son of the Ex-Chief Auditor and thus inherits a noble Railway tradition. Of course he is a hard task master and no task is too great for him. His very sharp intellect, quick grasp of things and above all capacity to work hard with a very wide administrative experience in the Movement Branch makes him an ideal movement officer. *He is an able assistant to an able chief.*

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ANNOUNCEMENT

We have pleasure in informing all our Readers and Advertisers that we propose to bring out a special supplement to our Magazine entitled "*Indian Railways Loco. Carriage and Wagon Workshops*" sometime in April 1952. For the first time in the history of Indian Railways such a splendid supplement is being published by us. We are thankful to the Ministry of Railways, General Managers and Chief Mechanical Engineers of Indian Railways for their so kind assurance to extend to us their full support and cooperation.

Editor

INSTALLATION OF WASH BASINS IN THE DINING HALLS OF VRR MANAGED BY RAILWAY

To the average Indian, tradition and sentiment is more important than anything else. When he takes food, he wants calmness and neat atmosphere. Yet these feelings of an average Indian seem to have been overlooked by the authorities when they installed the Wash Basins in the Dining Hall itself at the VRRs of Mayavaram and Tanjore. When one is taking food, another enters, washes his hands and spits making an objectionable noise to the annoyance of co-passenger who is taking food. We understand that this will be extended to other VRRs also. We suggest to the authorities that such installation of Wash Basins in the Dining Halls is neither desirable nor appreciable as it affects the sentiments of passengers. These can be placed outside the Dining Halls in a convenient place. We hope the administrating will consider this in the interest of the travelling public and remove them outside.

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TEN-YEAR PROGRAMME TO INSTALL MODERN SIGNALLING ON RAILWAYS

The Railway Board, it is understood, have programmed to modernise the Signalling on the Railways on a ten-year plan. This step is another land mark in the history of the regeneration of the Indian State Railways. To a layman this may not be appealing unless he knows that the speeding up passenger trains, increasing the number of passenger trains to stop overcrowding and speeding of freight traffic to build up the line capacity depends entirely on the installation of the advanced methods of modern signalling. At a small wayside branch line station say Toputurai, on the Tiruturaipoondi — Agastiyampalli Branch the station is controlled by elementary signalling of Outer and Home signals only without being interlocked as the density of traffic is very low. While on the Madras—Tambaram suburban section when the traffic is very heavy the most elaborate and safest signalling called "Automatic Signalling" is installed. The essential feature of this kind of signalling is that the signals are controlled directly by the trains. At less important sections two aspect signalling is in force. The various Railway administrations have been asked to prepare a realistic programme of installation of signals in relation to the traffic potential offering and when the programme is finalised and implemented we may hope to get increased line capacity with resultant advantages to the travelling public. Thus, the creation of separate Head of Department called Chief Signal and Telecommunications Engineer (CSTE) on the Southern Railway is to implement the decision enumerated above and reveals the importance attached to modern Signalling and Communication in working of the Railways.

MR. C. A. WHITE
Chief Signal & Telecommunications Engineer

A fortune is usually the greatest of misfortunes to children. It takes the muscles out of the limbs, the brain out of the head, and virtue out of the heart. In this world, it is not what we take up, but what we give up, that makes us rich.—H. W. BEECHER.

If we leave things to take their free and natural course, Western learning will combine with each of those great forms of Indian thought—Hindu, Buddhist and Mohammedan—in a different and characteristic manner and, like the great forests of tropical climes, preserve that rich and infinite variety which is one of the principal sources of the beauty of nature.—LORD RIPON.

Nizam's State Railway News Letter

By Our Correspondent

THE N. S. Railway administration have received the recommendations of the Equation Committee and they will be implemented in the course of the next few days.

The Equation Committee was appointed by the Railway Board at the instance of the Ministry of Railways, Government of India, immediately after the financial integration of the State Railways with the Indian Railways in April 1950.

The Members of the Committee visited several centres of State Railways and held discussions on the pay scales.

They also visited Hyderabad in May 1951 and held discussions for several days with the General Manager and other Heads of Departments over the pay scales existing on the N. S. Railway in different departments. The Members of the Committee also invited representatives of the N. S. Railway Employees' Union and held discussions.

The Representatives of the Union submitted a lengthy list of anomalies in pay scales in existence over the N. S. Railway and made several demands for the revision of the pay scales in certain categories and thus remove the anomalies. The committee gave a patient hearing to the demands of the Union Representatives.

But the report of the Committee, it is learnt, is not very encouraging. The N. S. Railway Employees' Union is not enthusiastic about the recommendations of the Equation Committee and have condemned them as "most disappointing."

A spokesman of the Union told our Correspondent that the recommendations would not benefit even a couple of hundreds on the Railway which has about 26,000 employees, and even those who are benefited are in the lowest categories and the extent of benefit is not substantial. Some will get only a few annas by way of increment per month, the spokesman, sarcastically added.

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Active steps are being taken for the amalgamation of the N. S. Railway with the G. I. P. Railway by the end of October this year. Several Officers of the G. I. P. Railway have so far visited Hyderabad and had discussions with the heads of departments of the N. S. Railway including Mr. T. M. Jagtiani, General Manager, Mr. Pothan, Financial Adviser and Chief Accounts Officer, Mr. Patel, Deputy General Manager, etc.

The visiting Officers included among others Mr. Hira, General Manager, G. I. P. Railway, Mr. Gore, Deputy Financial Adviser & Chief Accounts Officer, Mr. Patel, Chief Electrical Engineer, Mr. Balaram, Chief Liaison Officer etc.

Plans are being prepared to bring about integration before the end of October and considering the shortness of time ahead, the preparations are very brisk from the administrative view-point.

Meanwhile the N. S. Railway Employees' Union is busy canvassing the opinion of the employees

on the pending integration. Most of the workers are not enthusiastic about the coming integration particularly in view of the dislocation in several spheres of their lives.

The Union protested against the proposed integration but the Railway Board has not sent any reply to their protests. Dr. N. M. Jaisoorya, head of the Union, sent an urgent letter to the Ministry of Railways, to receive a deputation of the Union Officials so that they can explain their grievances arising out of the integration. So far there has been no reply from the Ministry of Railways.

The Union circles wanted clarification on several matters relating to the integration of the N. S. Railway and the following are a few among the important items from the Union's viewpoint :—

Shifting of Offices and Staff; Retrenchment of surplus staff; Ban on promotions pending integration; Consultations with the Unions on important matters affecting the welfare of the staff.

The Union has blamed the Ministry of Railways for not even caring to take preliminary interest in the representations of the Union on such an important and vital matter as that of integration.

The Union is of the opinion that there is no need for changing the original regrouping scheme under which the N. S. Railway would have been part of B. N. Railway in the Eastern Zone.

They also want clarification regarding the future of the Road Transport Department.

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Subsequent to the financial integration of the State Railways with the Government Railways on 1—4—1950 the Railway Board announced that the State Railwaymen would be placed on a par with other Railwaymen in India in regard to service conditions. Now they propose to introduce an option from placing alternatives before the State Railwaymen.

1. Whether he wants to opt for conditions of service existing on Indian Government Railways or
2. He wants to continue on the same conditions as were existing on the State Railway prior to 1—4—1950.

Apart from various other major and minor differences in these two alternatives if N. S. R. men opt out for conditions of Indian Government Railways after 1—4—1950 they would stand to loose the grainshop facility. All employees who are holding white Railway ration cards will get brown cards and have to purchase foodstuffs at public rates. It should be noted that this one aspect is not existing on other Indian Government Railways. There, the employees enjoy white and brown cards whichever they opt for. This is one major difference in which the N. S. R. men are discriminated.

In the opinion of the Union the option form is a trap to reduce Railwaymen to brown cards and abolish grainshops on N. S. Railway gradually.

Union's detailed views on the Equation Committee's recommendations :— The financial integration of the Railways also resulted in the equation of pay scales of State Railway employees. Their varying pay scales were fixed on the basis of CPC scales. In so fixing the State Railway scales which are generally low ought to have been improved upon and the spirit of the CPC recommendations viz. to improve pay Scales applied liberally. So all States Railwaymen pinned their hopes on the Equation Committee for bettering their lot. On the N. S. Railway, the Committee nearly after one year sent its recommendations which proved to be very disappointing.

The Union expected better and liberal consideration in fitting this Railway's Scales in CPC. scales in certain scales and also more number of higher grades being provided. These expectations proved false and in some cases, there were reductions on account of the reclassification of trades of the personnel, while, the benefits if any, were, in many cases, not more than a rupee or some ten annas.

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Direct Action contemplated by the Union against the integration of the N. S. R. with the G. I. P. it is understood. Although the wave of resentment among Railwaymen of the N. S. Railway is very great against the proposed integration of the State Railway with the G. I. P., nothing is so far known about what steps the Union will take to bring home to the authorities the disasters contained in this move, more particularly in bustling through the plan.

The Union is meeting on Saturday September 22, 1951 to consider various issues in this connection and it is learnt reliably that the Union Officials will make very clear to the higher authorities about their attitude on this and also their plans to thwart the integration move by resort to what is called "direct action" within their legitimate means.

*** *** ***

The All India Inter-Railway Hockey Tournament conducted by the N. S. Railway on behalf of the Indian Railways' Athletic Association at the Railway Recreation ground, Secunderabad, recently provided a fortnight of hockey festival to local fans unprecedented in the annals of Hyderabad sport.

The tournaments had a successful termination and has left behind a trail of enthusiasm and interest among the budding Dayachand's of the twin cities of Hyderabad and Secunderabad.

It was clear that schemes for the Tournament were chalked out long before the scheduled dates and arrangements were par excellence. The site transformed almost overnight into a trim hockey stadium and the ground engineered in lightning time to present an acceptable arena for stalwarts and the envious boarding and lodging arrangements made for the visiting teams constrained the onlooker to shower lavish encominms on Mr. M. A. Ashruff, the brain behind the entire drama. One should nevertheless not forget the host of voluntary workers who put their shoulder to the wheel and gave impetus for the successful consummation of the gala entertainments.

Much has been said and flashed in journals regarding the matches played in the tournament. We shall now confine ourselves to the display given by our own N. S. Railway team. It cannot be gainsaid that the N. S. Railway team gave a splendid account of itself. But our team was not without defects. I shall recount a few of them with the hope that they may be remedied for future encounters.

It was quite visible that some of the players indulged in individual play. This greatly impaired their chances of success. There was lack of teamwork and coordination. The team very rarely advanced with a plan. The spirit of sportsmanship was also found lacking in certain cases. Some players though good were misfits for the position they were allotted. All this go to show that there was lack of judgment with regard to the selection of players.

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Many Railwaymen of the N. S. Railway are bitterly complaining about the treatment meted out to them at the Lallaguda hospital. Their main grievances hinge around certain departmental rules which prohibit Assistant from prescribing medicines other than routine mixtures, although such Assistant Surgeons are well qualified.

One cannot understand such restrictions being placed on a Doctor by departmental fads. Another difficulty is the C. M. O., A. M. O. or M. O. remain in the hospital premises generally only up to 1 P. M. every day and afterwards they do not remain till the next morning. In the meanwhile if any patient requires important medicines, he can neither get them from the Assistant Surgeons nor from the C. M. O. or M. O. who do not remain on duty.

There are numerous other complaints about the diet, quality of milk, coffee etc.

Generally it is alleged, the quality of foodstuffs supplied by the Hospital contractors are not checked by the Medical Officers on duty and whatever supplies are received are passed on as fit for patients without any inspection. According to one source there has not been a single instance or rejection of the foodstuffs supplied by the contractors to the Lallaguda Hospital and one is left to wonder how could this be. Does it mean that all the foodstuffs were so very nice and clean? It is not possible and the truth is also the other way about. It is hoped that the N. S. Railway administration will look into this matter.

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Our London Letter

By A Correspondent

CARRIAGE washing by hand is a lengthy process and costly. The London Transport Executive has long been aware of the problem particularly as in their case, speed is of the utmost importance. The last trains terminate at about 1 a. m. and are on the road again by 5 a. m. In four hours only they have to be thoroughly cleaned, inside and out. Twenty years ago mechanical washing plants were installed through which trains were driven at a low speed. Each side of the train was subjected to the treatment of a series of high pressure water sprays and oscillating brushes, arranged alternately.

Plant has recently been installed at the Hammersmith Depot which, apart from improved mechanical devices, is different in construction. The other plants were enclosed in a shed while the Hammersmith one is open, the cleaning devices being attached to a wall at each side of the track. Eight vertical and four horizontal cleaning spindles are provided and each is driven by an independent, weather proofed motor combined with an enclosed reduction gear. A settling tank for the water is provided between the track and water collecting in this is returned by pumps to the sprays except for the last set, at the end where the carriages emerge, and here fresh clean water is used.

Mr. Alfred Barnes, the British Minister of Transport, announced that Government had under consideration the deferment of military service of some 2,900 Railwaymen mostly in certain "key grades." The decision has been welcomed. The precedent for deferment of essential workers has been that of mine workers and certain agricultural grades. The exemption from military service for workers in various industries naturally causes difficulty for the Government and the application to Railway Service will in all probability occasion a large number of applications from others. It is probable that it is for this reason that the low numbers of young Railwaymen considered for derferment is comparatively few having due regard to operating efficiency. The recent difficulties on the Railways and the prospects of the coming winter have possibly been taken into consideration. Much of the trouble has been caused by shortage of firemen which in Railway Service must include a fair percentage of men in the National service age group. Many men who leave Railway Service under the conscription scheme do not return to it which creates further difficulties in regard to the ever increasing numbers of recruits which have to be trained. Britain is very short of Railwaymen as also is the Government of New South Wales who seeks recruits from the Mother country for her own Railways.

The shortage of skilled hands, and the growing percentage of men barely out of the training period, is reflected in Brigadier C. A. Langley's report (Inspecting Officer, Ministry of Transport) on the collision at Wortley West Junction on December 2, 1950. He had also dealt with the Whitehouse West Junction accident on May 13, 1950 and which was due to what he was compelled to call gross negligence in the signal box. In the Wortley case, he again found it necessary to refer to a lack of sense of responsibility revealed in recent months and said that "unless the right type of man is attracted to the service and the discipline and morale of signal-

men as a whole maintained at the standard which has been expected in the past, more expenditure on safety equipment will be needed to prevent inevitable failures of the human element."

Competitions for Railway Staff are quite common and they contribute in no small way to efficiency. Prizes and shields for station cleanliness are generally popular as also are similar competitions for station gardens. The London Midland Region has recently instituted a competition for best kept lengths of permanent way. Every winning inspector in each of the 15 districts on this region is to be presented with a challenge cup while each of the winning gangers and his men will receive a cash prize for having the best kept length of track. The first presentation took place at Wigan on July 13 when Mr. J. Taylor Thompson, Civil Engineer, L. M. R. presented prizes to the winning gangs from Manchester, Liverpool and Blackburn.

The last war developed the 'music while you work' idea. Music while you travel is the next step. At Waterloo Station in London, an elaborate loud speaker system is used to announce trains. In the interval between, music is played, and many a passenger, weighed down with hand baggage, has his footsteps accelerated by such tunes as "The march of the Gladiators" or some other such spirited composition. The German Federal Railways have started a music hostess. She starts her duties at the terminus and travels with some of the long distance expresses. She works with a gramaphone which distributes music through loud speakers before the train starts. Joining a special coach attached to the train, the music hostess plays music records while the train is running, loud speakers being provided in the various compartments. She also does running commentaries on the scenery and distributes a little advertising matter. The B. B. & C. I. Railway are experimenting with a similar scheme, music being played at certain times on the journey in one of the dining cars.

A move to abolish level crossings in Europe has been made by international experts of the United Nations Economic Commission for Europe. In a report to be sent to European Governments they have said that level crossings have caused many deaths. More than 500 persons have been killed and 600 seriously injured in 1949 in 4,500 level crossing accidents in fourteen continental countries. Realising that it would be impossible to remove all level crossings at once, the report urges that no new level crossings should be built and that at places where traffic is heavy and visibility poor, that they should be removed.

Radar is to be fitted on all ships owned by the British Railways. All sea going vessels, both passenger and cargo, will soon be fitted with radar. At present 42 vessels, covering most of the principal passenger routes, are equipped with radar leaving 31, mostly cargo ships, still to be fitted. On July 17th, two British Railway steamers acted as tenders to the line LIBERTE as she lay off Craigendoran at the Tail of the back anchorage. In the morning the P. S. *Waverley* did duty and the P. S. *Jeanie Deans* took over in the afternoon. About a thousand tourists from the liner joined special trains at Edinburgh. One train left at 8.56 a. m. and on the return journey brought the sightseers back via Stirling. The second train, which left Craigendoran at 9-20 a. m., returned direct from Edinburgh Waverley at 6-25 p. m.

During the week end July 23, British Railways cleared 201,940 tons of coal from deep mined pits and open cast sites making a total of 2,770,380 tons for the week. The latest figures for iron and steel show that 174,399 tons were conveyed during the week ended July 14 from the principal steelworks.

British Railways have a new train ferry, the m. v. *Norfolk Ferry* which was launched at Clydebank on March 8 and entered the train ferry service between Harwich and Zeebrugge on July 17. Before the war, there were three vessels in service on the Harwich—Zeebrugge route. When war broke out they were requisitioned by the British Government for the conveyance of ambulance trains and stores. Two were lost as a result of enemy action and the third, the *Essex Ferry*, after a conversion, resumed sailings on the same route in August 1946. A second vessel, the *Suffolk Ferry* was subsequently built and went into service in September 1947 when daily sailings were resumed. During certain periods of the year, especially in the summer, one sailing per day is insufficient as a result of which the *Norfolk Ferry* was constructed. Built by John Brown & Co., she follows the lines of the *Suffolk Ferry* except for some modification to the superstructure. The upper deck extends almost the full length of the ship and acts as a cover for the train deck. Four lines of tracks are provided for the accommodation of freight wagons on a deck constructed to be capable of supporting the heaviest type of modern locomotive. These lines converge into two embarkation tracks at the after end of the vessel only the forward end being of the normal ship form. The side tracks are 223 ft. long and the centre tracks 340 ft. giving a total of 1,126 ft. Between 32 and 38 wagons can be conveyed depending on size. Officers and crew are accommodated on the upper deck but in addition there are six two-berth cabins for the use of passengers.

Work is about to commence on the construction of a new terminal for the train ferry vessels in the outer harbour at Zeebrugge. This will avoid the necessity for passing through the lock and so reduce voyage time by about two hours on the round trip. The new terminal is expected to be ready in the summer of 1952.

DO YOU?

Do you throw empty bottles or tins from a moving train? A Gangman or other Railway employee working on the line may receive serious injuries if you do.

Do you light a methylated spirit stove in your compartment or throw a burning match on the floor? Fires often result when you do.

Do you lean out of a window or rest with an arm or leg protruding out of the window? Serious accidents have happened to passengers who do.

Do you attempt to board or alight from a moving train? If you do, please don't; for many fatal accidents have resulted to people who do.

Reorganisation and Improvement of Railways Working (II)

By "Railwayman"

STORES PURCHASE

Present procedure of calling for tenders from Firms for each purchase item, involves heavy clerical work and is not a satisfactory machinery by which all Firms in the market can tender for. In India the industrialisation is rapidly gaining ground and Factories may develop their own capacity if they know such large subsidiary industries can feed the Railways regularly. The Railways should also encourage small subsidiary factories to feed them with small and minor components and concentrate more on important manufacture and repair work. These industries if they know what the Railway Stores Department usually ask for, will make their own arrangements to develop on the lines for which Railway market exists.

It is therefore imperative to act as an incentive to private enterprises that each Railway Stores Department publishes a bulletin giving specifications and other details of their requirements and calls for tenders detailing the usual conditions of contract etc. These tenders may be opened and dealt with by the Stores Department. A Tender Committee should function including at least one officer of the "using department" to enable the most economical policy being followed. The cheapest offer need not necessarily be the most economical one. This factor is not taken into serious consideration by the Accounts Department who must have no say in the matter. The using Department is allotted a budget allotment and his special comments especially of mechanical stores is to be given due weight. Numerous instances can be given to prove that a material which is the cheapest is not the most serviceable one at favourable prices. Replacement of fire-bricks far more frequently, consumption of brushes etc. are pointers to this aspect of the question.

The fact remains that the Railways have got a very efficient stores organisation manned by an Head of the Department getting Rs. 2000/- and over. To limit their powers to Rs. 5000/- and ask the D. G., I & S., to arrange on an All-India basis or through imports, Railway requirements is an inefficient and slow process. The Railways since the War and after being taken over by the Central Government, are forced to keep large stocks of material due to this long drawn process of going through the D. G., I & S. even for items which are available in the local market. The D. G., I & S. organisation may be required for purposes of other government concerns which haven't got a separate stores organisation but not for Railways.

The I.S.D. Contracts, C.I.R.S. Indents etc. of Railway requirements should all be arranged by Railways who shall keep a Co-ordinating Officer in the Railway Secretariat under Member (Engineering). The Industries and Supplies Department in conjunction with the Finance Department of the Government of India should, when drawing out the budget, allot to the Railway foreign exchange in 'bulk' to meet the requirements of All-Indian Railways and thus allow the technically qualified Railway Department to procure and distribute all their requirements.

Similarly the Inspection of Railway fittings by Indian Stores Department either in India or in foreign countries should also be reorganised in such a manner that either the Railways test the materials in India in their own Chemists' and Metallurgists' laboratories or arrange for a Railway Section in the Testing and Metallurgical laboratories to be formed under a Railway Chemist and Metallurgist who could exclusively work for the Railways. To give an instance, if a proprietory article is to be changed over to indigenous, it cannot be done unless one is sure that it gives satisfactory service. The indigenous material which is offered must be tested to failure in a laboratory, if necessary on a model, under ideal or actual conditions of working before finalising report in regard to the suitability of the same. Only then the Railways can accept the indigenous product as suitable. Till then the import will have to be continued. Serious consequences would result if the policy of "putting the cart before the horse" is followed. One of the main reasons in recent years for deterioration in Rolling Stock and Engine availability is due to wrong material and 'make-shift' technique. Many instances like increased hot axles, furnaces capacity etc. can easily be given.

NEW LOCOMOTIVES AND ROLLING STOCK

To obtain new locomotives and coaching stock from abroad at the present inflated rates is not in the national interests of the country. It is necessary that the money so spent is redirected for four purposes :—

(i) Priority for developing the Chittaranjan Works to enable them to turn out locomotives even ahead of the scheduled date.

(ii) To allot on the recommendations of a Committee which should be appointed of three Railway Officers not below the Junior Administrative to be selected from those who have workshop experience and have shown themselves capable of improving outturn in Shops and who are keen to improve capacity in the existing Workshops, and thus bring better performance of engine usage, including speeding up repairs to engines in Sheds, both periodical and out of course. This Committee must consist of Officers with at least 10 years' experience in Workshops of proven merit in Workshop outturn, with special accomplishments of penmanship and detailed knowledge of workshop practice.

(iii) To allot more steel, other imported raw materials and other fittings etc. so that components may be manufactured in Workshops in India. The Committee mentioned in para (ii) above should give this special consideration and plan the next 5 years' requirements.

(iv) To immediately arrange for machinery and equipment for increasing capacity in the Workshops including special purpose machines, extension and addition of buildings and plant and equipments. The above schemes are to be planned on a five year programme from 1952 to 1957 and implementations should

be placed on above hards. The question of buying any locomotives from abroad should pend till Chittaranjan can supply Locos. Increased availabilty of locomotives should be made possible within a year if effective action is taken on the above four points.

IMPORTING OF CARRIAGES

This is absolutely unnecessary as unlimited facilities exist in India and Railway Workshops. Only timber and other materials are to be arranged for specially. Re: Underframes, the present Railway Workshops in India can easily be expanded to undertake underframe building; of course necessary machinery and plant would have to be provided.

The most important aspect that should not be lost sight of in the above proposed scheme is that not only will the major portion of the finance required will be in Rupees especially regarding extention of buildings etc. but more men could be given employment in India which will give great relief to unemployment which is increasing.

Even if 2% improvement is made immediately in respect of the % of engines under or awaiting repairs, it will release about 120 locomotives and Indian Railways should surely manage for say three years without Rolling Stock and Engines being imported.

Another important aspect of development is building up of boilers. Each Railway Workshop may be laid down a target to build certain boilers. The Committee which is proposed to be appointed under sub-para (ii) on Page 29 may go into this question fully and should recommend machinery, equipment and extension of workshop buildings etc. for this purpose.

Thus even granting that improvement could not be made quickly, it is essential that the importing of Locomotives more than what has already been entered into contract should be stopped. Concentration should be made on obtaining greater efficiency from the Locomotives and reducing the percentage of engines under or awaiting repairs in Shops or Sheds and remodelling of existing Workshop to increase capacity.

REGROUPING AND DIVISIONAL VICE DISTRICT SYSTEMS

The Southern Railway viz. MSM, SI & Mysore Railways have been regrouped under the control of a single General Manager. It may perhaps be necessary later to transfer a few sections, say Guntakal-Raichur, Bezwada-Waltair etc. to Central Zone when question of N. S. Railway has to be tackled.

It is to be appreciated however that the Metre Gauge working and the Broad Gauge working are in many respects different and in view of the fact that all Nizam State Railway have Metre Gauge lines but are inter-connected with the Southern, it would be far more efficient and economical and will ensure better pooling arrangements of rolling stock and locomotives if all the Metre Gauge Systems in the Southern Railway are brought under unitary control. It should therefore have been better if the Southern Zone had been formed into South West Railways and South Eastern Railways to include all Metre Gauge in the former including Nizam's State Railway portion and all Broad Gauge up to Poona, Wardha and Vizianagaram (B.G.) including N. S. Railway (B. G.).

The Workshops capacity would then have been balanced. Broad Gauge requirements would have been met by Perambur and Hyderabad and Metre Gauge capacity Golden Rock and Hubli Workshops. Mysore and Golden Rock should be developed for special Loco and Carr: Building purposes.

Further Regrouping beyond a mileage of 5000 miles is not conducive to efficiency as the distances will have to be taken into consideration. The personal touch of the General Manager through the Heads of Departments and District Officers in regard to working of Railways is not a factor to be easily ignored. From all consideration a South Western Railway for all Metre Gauge system in the South not inter-connected with the North Metre Gauge system would have brought about all desired advantages of regrouping under unitary control.

RE: DIVISIONAL AND DISTRICT SYSTEMS

There is yet great controversy regarding the advantages of the above system but if one would give an unprejudiced view from the point of Administration and ignoring the comments of those who have benefited by or are likely to benefit by the Divisional System, it can easily be seen that the Divisional System, has no specific advantages but has considerable draw-backs. The G.I.P. Railway Officers perhaps require this system to be continued because of interests conflicting with the above principles. Too much personal facts are not to be given consideration. It is not proposed to give an elaborate note but the following few points will bear the strength of the above argument which supports entirely the zonal set-up being introduced in the Southern Railways. More than one Deputy at Headquarters is really unnecessary except perhaps for General Manager but Deputies at Headquarters of zones of the three important departments viz. Traffic & Commercial, Engineering and Mechanical will ensure perfect co-ordination and efficiency of working.

In the Divisional System, practice has been to put a Senior Traffic or Engineering Officer in charge of the Division and the results are really bad. The ignorance of such an Officer in regard to the working of the department other than that which he belongs is easily understandable. Further the most important department viz. Rolling Stock Maintenance and Repairs which is responsible for the maximum expenditure of the Railway is controlled by a Divisional Superintendent who has little or no knowledge of the economical working and maintenance of Rolling Stock and Locomotives.

If an Officer is considered to be "Jack of all Trades," the relative efficiency in regard to his control over each section will correspondingly decrease perceptibly; in his own department he will have little time to think of improvement.

There is the likelihood of the Divisional Superintendent not bringing to the notice of the Heads of Departments difficulties etc. that arise in the various departments for fear of being "dubbed" tactless etc. The tendency therefore develops to just solve the problems as they arise and not taking effective action to avoid a recurrence. Indirectly the Zonal System would ensure the efficiency of the District Officers as they will have to answer the Zonal Deputy who is an expert of his own Department. The sense of responsibility, devotion to work

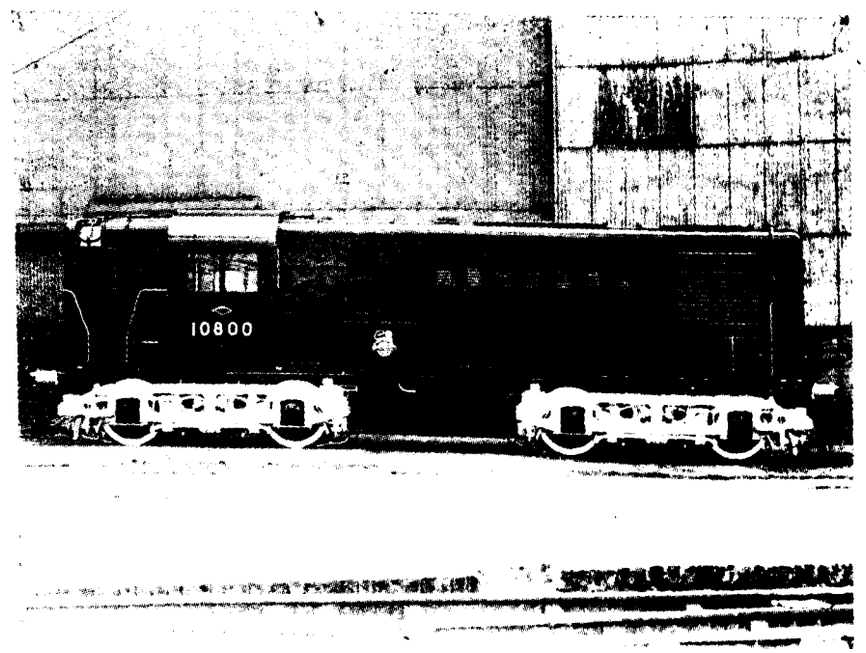

Fig. 1. General View of Locomotive

pressed-air reservoirs are suspended from the roof of the cab. Access to the boiler compartment, containing a Clarkson vertical boiler fitted with a Laidlaw Drew automatic burner, is also obtainable from the cab.

The engine is illustrated in Fig. 2 on page 35. It is of the makers' R. P. H. X. L. 16-cylinder type and in general design is similar to the 12-cylinder model which Messrs. Davey Paxman have been building for many years. It has been designed to develop 827 b. h. p. at 1,250 r. p. m., with a brake mean effective pressure of 110 lbs. per square inch and a mean piston speed of 1,615 ft. per minute. The cylinder bore is 7 in. and the stroke 7¾ in., the compression pressure is 850 lbs. per square inch and the fuel injection pressure 1,800 lbs. per square inch. The four cylinder blocks, which are of close-grained cast iron, each contain four bores, and have dry-type liners of chromium-plated cast iron. The single-unit cylinder heads are also close-grained iron castings and are jointed with reinforced bonded gaskets. Each head has well-cooled inlet and exhaust valves of large diameter and force-lubricated totally-enclosed rocker gear. The pistons are of heat-treated cast aluminium alloy, with five cast-iron piston rings, three being pressure rings and two for oil control. One scraper ring is housed above the gudgeon pin and the other below. The gudgeon pins, which are of 5 per cent. nickel case-hardened steel, are hollow-bored and fully floating. The small-end bushes are of phosphor bronze.

The connecting rods are heat-treated carbon-steel forgings and the big-end bearings are of blade and fork construction, in which a block attached to a forked rod houses a copper-lead crankpin bearing. This bearing has a chromium-plated external surface for the loose-shell blade rod bearing. Before being finally assembled it was lead-plated to assist running

The underslung crankshaft is of hardened Nitralloy. At the driving end is a flange and outer bearing, and between this bearing and the thrust bearing is a sprocket from which the camshaft is driven by a chain. All the bearings consist of steel shells lined with copper-lead. In addition to the usual retaining studs, the bearing housings are secured by traverse tie rods which pass through them to the outside of the crankcase. The case-hardened steel camshaft is made in two halves and is housed in a detachable box, which is secured to the crankcase in the space between the cylinder blocks. The cams run in oil and operate the vertical push rods through rockers.

The fuel pumps, which are of the C. A. V. monobloc type, are mounted on the cambox and are driven from the camshaft through gearing. The injectors are of single-hole spring-loaded pintle type. Lubricating oil is supplied to all parts by two pumps in the sump. The main pump, which is driven from the crankshaft, distributes oil to the bearings at a pressure of 70 lbs. per square inch through a relief valve, filter and distribution valve. A supply of oil to the valve gear and camshaft is given at a reduced pressure. The second pump draws oil from the sump and forces it through an external cooling circuit, which is independent of the main pressure system.

The engine is fitted with twin exhaust-gas turbo-chargers of the Buchi type and with a Paxman hydraulic governor, which has been modified to incorporate a load-control servo valve. This valve is actuated by a lever and controls the flow of oil to and from a vane-type motor which operates a rheostat in the field of the exciter of the main generator. The speed is controlled electro-pneumatically. The supply of compressed air to the cylinders is

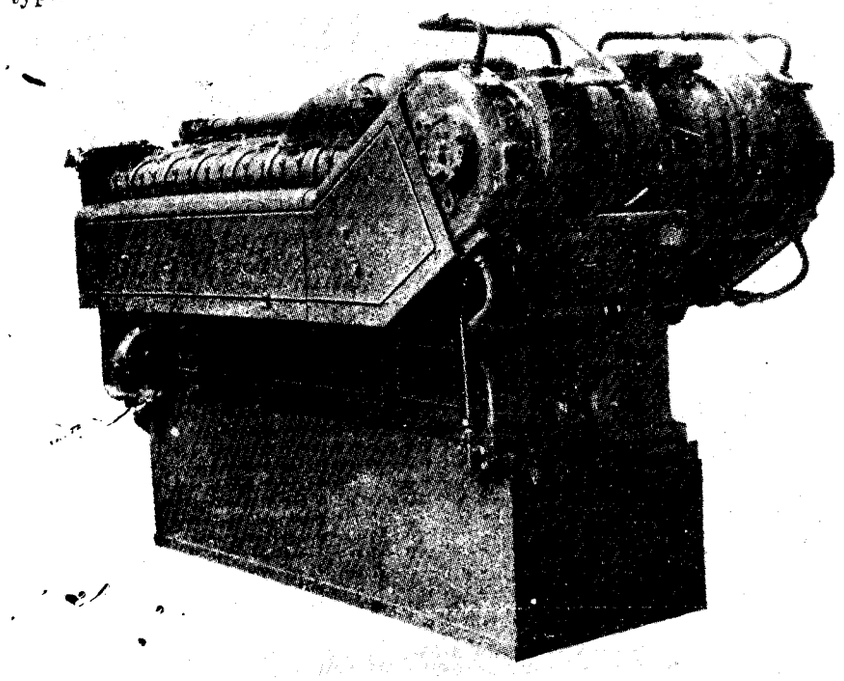

Fig. 2. 16-Cylinder Diesel Engine

controlled by magnetic valves, five different speed settings being obtainable. Auxiliaries, such as the radiator fan, fuel transfer pump and overspeed cutout, are driven through a centrifugal clutch and gearbox and come into operation just below idling speed.

The engine and generator are mounted on a fabricated steel underbed, which is supported at four points on the main frame. This underbed consists of two-side members of deep box section, which are tied at the front by a third member and at the rear through the main generator frame. The four-point mounting system includes Neo-K-Tex pads below, and springs above, the feet of the underbed, lateral and longitudinal movements are prevented by angle check brackets, secured to the locomotive platform plate.

The main generator, which is coupled directly to the engine through an adaptor plate, is a six-pole separately-excited self-ventilated machine with a direct-current output of 800 kW at 326 volts. An auxiliary generator and exciter are mounted above it and are chain-driven from an extension of the main generator shaft. The armature is built up on a fabricated cylinder on the full diameter of which the drive is taken and a pressed-in stub shaft is provided at the bearing end. This construction, it is claimed, ensures great torisional rigidity and freedom from the effects of cyclic variation of torque. The exciter is fitted with a differential series winding, which carries the main traction current and with a separately-excited winding, the current in which can be controlled both automatically or by the driver.

The excitation is so designed that the maximum current which can be delivered to the traction circuit when the engine is standing is limited. At this point, therefore, the demand on the engine is less than its rated output. The part of the characteristic which intersects the constant horse-power curve of the engine is artificially controlled by varying the separate excitation of the exciter, thus preventing overloading. The hydraulically-operated rheostat, by which this variation is effected, consists of a rotary valve. This valve is mounted on the engine governor and comprises two concentric members, which are provided with ports, in a cylindrical casing. The inner member (or stem) is connected to the fuel regulator of the engine and the outer member (or sleeve) to the speed control lever, the position of which is fixed by the driver's controller. When the engine governor changes its position, the stem is rotated and either the pressure or the exhaust port is uncovered. As a result, the hydraulic motor turns the field rheostat in such a direction that the electrical load again becomes equal to the rated output of the engine. The electrical characteristic is thus identified with the engine horse-power curve over the part where they would normally intersect and overloading of the engine is prevented.

The necessary control apparatus is divided into two main units, namely, the framework which carries most of the remotely controlled apparatus and is housed in the generator compartment, and the driver's control desk, which houses the master controller, the field control apparatus and the fuses, alarms and metres. The main traction circuit is controlled by an electro-pneumatic reverser and a single contractor. The latter is also electro-pneumatically operated and controls the four traction motors, which are permanently connected in parallel. Contractors, which are automatically controlled by a potential relay, are also provided for weakening the fields. Any one motor can be disconnected from the circuit by a cut-out switch, which is provided with contracts to ensure that the power supplied to the remaining motors is limited.

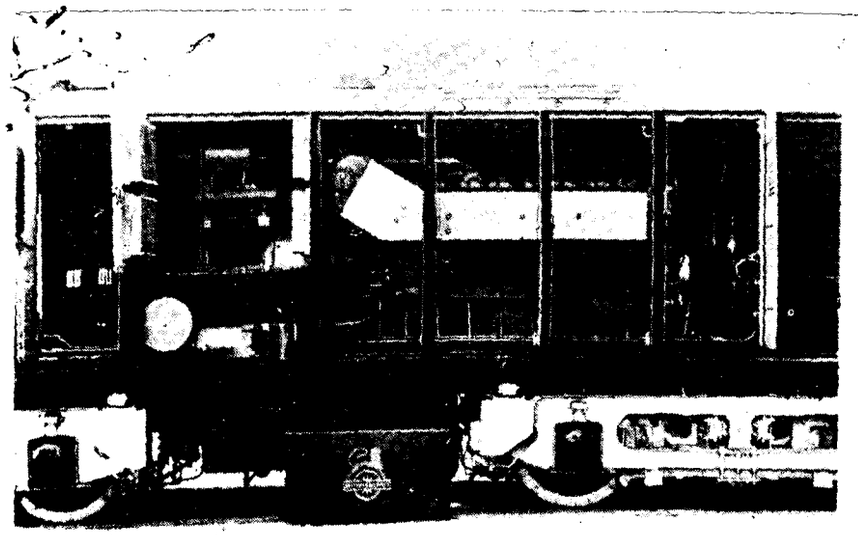

Fig. 3. Locomotive with Inspection Doors Open

As will be seen the driver's controls are mounted on a sheet-steel desk and consist of a master controller, which is fitted with seven power notches and an idling notch. It is used to vary the main generator voltage by alternately adjusting the exciter field and altering the engine speed. There is also a combined reverser and engine control switch, a vernier controller for use during shunting operations, and a vacuum-brake valve. All the controls are duplicated, there being a driving position on each side of the cab. As will be seen from the same illustration, there is an instrument and alarm cabinet on the top of the desk, on which a main ammeter, dual range speedometer and duplex vacuum gauge are mounted in duplicate. There are also push-button switches for starting the engine, and lamps for indicating the wheel slip and excessive generator temperature. Above the control desk is a "deadman's" emergency valve.

The series-wound motors, are nose-suspended. The fittings used for this purpose include oil-proof rubber blocks bonded between steel plates which are placed at an angle in order to provide side control of the mass of the motor, as well as to take up the torque reaction. An arm fitted on the axle side of the motor frame is held between resilient rubber blocks on the bogie side frames, so as to limit the movement of the motor relative to the bogie and thus to improve riding and reduce flange wear. All the rubber elements were supplied by Messrs. Metalastik, Leicester. The gear-wheels are of resilient construction and consist of a hub and toothed rim connected through Silentbloc bushes.

Normally, the starting sequence is that the driver depresses a button on his control desk, thus starting a motor-driven pump, which admits oil to the engine

lubricating system and the governor servo motor. When the necessary oil pressure has been built up, the starting contactor circuit is closed by a switch operated by the oil pressure and the starting field winding on the generator is connected to a 54-cell battery. This battery is charged continuously from the auxiliary generator, the terminal voltage of which is maintained constant by a carbon-pile field regulator. When the engine fires, the fuel regulator is withdrawn from its maximum position by the governor and the starting circuit is opened by a potential relay when the auxiliary generator voltage reaches a pre-determined value. A switch on the main control unit enables the traction motors to be used for motoring the main generator if the battery voltage is too low. The engine speed is controlled by contacts on the driver's controller. These contacts operate electro-pneumatic valves, which actuate four pneumatic pistons to give four fixed speeds above idling. The engine is stopped by interrupting the oil supply to the governor.

The auxiliary equipment installed includes two exhausters for operating the brakes on the locomotive and the train. One of these brakes, which is of the reciprocating type, is driven from the radiator-fan gearbox and continuously maintains a vacuum in the train pipe. The other is a rotary machine and is controlled by contacts in the driver's brake valve. It is started only when the valve is off and is used to assist in releasing the brakes after a full application. The pneumatic control devices, sanders and horn are supplied from a motor-driven compressor. There is also a motor-driven oil pump, which is operated by the engine-start push buttons and ensures adequate pressure for lubrication and for operating the servo devices before the engine can be started. The traction motors are ventilated by motor-driven blowers which draw in the air through filters.

The maximum designed speed of the locomotive is 70 m.p.h., while the maximum tractive effort is 34 500 lbs., and continuous rating at 12.3 m.p.h. is 18 500 lbs.

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Luggage Barrows

By A Correspondent

A New Zealand paper comments upon the obsolete types of luggage trollys still to be seen at modern passenger stations. Referring to the barrows in use at Christchurch Station (New Zealand Government Railways) he observes:—"I had a look at the fearsome things called luggage trollys at the Christchurch Railway Station last week and tried to move one of them loaded with a mountain of suitcases.

It's a wonder, the staff are not all foundered. That's what happens to a horse when it is asked to do too much. It would take a good horse to move some of these things as they were made in the days of Noah, a cast iron wheel with a hole in it, a nice sloppy fit on a lump of round iron with enough hard wood superstructure to build a bridge.

Is there no one at Addington who is modern enough to have heard of ball bearings and light steel frames? Or are these incredible abortions to be standard for all time? It is quite impossible to steer some of them. they have to be pushed over by sheer strength and it takes plenty of that. How about making things easy as possible for the staff and the public and try and get away from the stone age?"

Getting away from the stone age is the difficulty. Almost as soon as there is a possibility of some slight advance from this period, a financial crisis arises and the clock is again put back. Luggage barrows of the type described in the New Zealand journal are still to be found at Railway Stations all over the world. Many up-country stations on Indian Railways have similar

Another view of the Graisley electrically controlled vehicle.

Luggage Barrow on Southern Railway (Ex-M. & S. M. Railway)

contrivance though usually their steering equipment is a little more mobile judging by the way one has and to hop about, sometimes even down on to the track, in order to dodge the serpentinic progress of these vehicles.

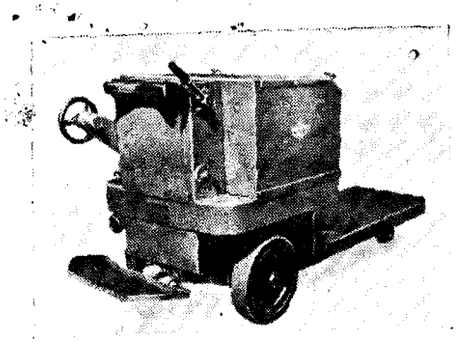
The standard luggage barrow still in use at many stations on the British Railways consists of a light wooden framework with two handles at the end similar to a short ladder. At the bottom is a small shelf and two small wheels. The suiteases are placed, one above the other, on the shelf. They are handled by one man and will take four or five suiteases of medium size.

A more modern type consists of a single wooden platform with two sides which raise it about six to nine inches above platform level. When the luggage is stacked ready the wheel portion is placed underneath. This consists of a light steel frame and handle with telescopic arrangement. After the frame is pushed under the platform, adjustment lifts the platform clear of ground level and the luggage is ready to be moved off. An advantage of this method is that there can be more platforms than transit frames so that the luggage can be stacked ready until there is a porter ready to move it. This type of truck is in use at several Indian terminal stations.

With the ever increasing cost of wages, it was necessary to consider mechanising the movement of luggage. This led to the development of small electric locomotives, which would run at low speeds along station platforms, and haul a train of many trucks, coupled together and loaded with luggage. Steering is easy and they are often handled by women porters. Luggage which would require the service of many porters is moved swiftly from the arrival platforms to the cab ranks or other places of despatch.

"Electric Eel" industrial trucks are in extensive use at main line stations on the British Railways and in factories and warehouses for transporting goods from one department to another. The frame is electrically welded and

"Electric Eel" Luggage Carrier



Another view of Electric Eel Luggage Carrier

there are no bolts or rivets to shake loose. Springing is semi-eliptical leaf springs which gives very smooth riding. The truck is powered by two series wound totally enclosed traction type motors with direct drive from motor to wheel by heavy duty pinion and internal cut gears. Special steering is fitted to these trucks on all four wheels on the 50 cwt. model and on two wheels on the 30 cwt. carrier. Electric and mechanical brakes are fitted. The truck has solid rubber tyres but can be fitted with pneumatic if required. If it is to be used on the public road, head lamps, stop lights and number plates can be fitted. Signalling of approach is given by an electric horn controlled by a button in the centre of the control wheel. Fitted with an 168 Ampere Hour Battery, the 30 cwt. carrier weighs 21 cwts. and has a speed of 6—7 m. p. h. The 50 cwt. model has a 196 Ampere Hour battery, weighs 1 ton, 10 cwts. and 2 qrs. and has a laden speed of 5—6 m. p. h.

Another type of truck is fitted with three rubber tyred wheel and is controlled by one man, using a patented combined power and steering unit. It has a carrying capacity of 12 cwt. and moves at a good walking pace. The operator walks in front and merely guides the vehicle, thus having perfect unimpeded observation.

This vehicle meets a demand in many forms of transport. Besides serving the Dairyman,

(Continued on next page bottom)

Luggage Barrow seen at wayside station on G.I.P. Railway.

Cold Cathode Lighting in a Railway Coach

London Midland Region restaurant car equipped by G. E. C. with first installation of its kind on British Railways.

SHORTLY after the war several passenger vehicles on the main lines now constituting British Railways were equipped with fluorescent lighting using 2 ft. lamps of the hot cathode type. An alternative fluorescent lighting system is to employ cold cathode tubes, which have certain advantages for railway applications and have been adopted to some extent overseas for this purpose. In conjunction with the London Midland Region of British Railways, The General Electric Co. Ltd. undertook the development of a cold cathode installation suitable for coaches with the standard British 24 v. D. C. lighting system, and the first vehicle equipped in this way went into traffic on April 7th, when it was included in the formation of a Grand National Special from Euston to Aintree.

The coach in which the new lighting has been installed is a first class restaurant car of the London Midland Region. In a vehicle of this type the quality of the lighting is of particular importance in order that food and drink, to say nothing of the complexions of the diners, may be seen with a colour rendering similar to that which the tungsten filament lamp has made familiar. In a cold cathode installation gold colour tubes can be combined with white, in order to impart a warm tone comparable with the effect given by the red rays emitted by tungsten lighting. Colour combinations of this type have been used successfully in a number of important liner installations carried out by the G. E. C., and it is becoming increasingly recognised among marine engineers that cold cathode lighting has some exclusive advantages when high levels of illumination have to be provided in dining saloons, lounges, and other parts of a ship where the passengers' social life goes on.

(Continued from previous page)

Baker and Confectioner, Postal Engineering Establishment, Hospitals, etc., it is eminently suitable, when fitted with a flat body, for use in Textile Mills, Foundries, Workshops, and Repair Shops for internal transport. Its freedom from petrol or oil fumes silence in operation, ease of manouvrability, general handiness and negligible maintenance makes it an all purpose vehicle.

The motors are driven by electric batteries which are charged at night during the idle period by a Charger. The Charger is fitted with an automatic relay which terminates the charge when the battery becomes fully charged. The relay is automatic in operation and relieves the operator of all charging worries. The vehicle is fitted with a reversing switch so that it can move both backwards and forwards. The ½ HP motor and gear box is made by the British Thomas-Houston Ltd. of Rugby.

Mechanisation of station platforms, goods sheds, factories and godowns expedites work and saves money with labour charges standing as high as they do today.

Cold cathode lighting in a first class restaurant car of the London Midland Region, the first installation of its kind on British Railways

Since the first fluorescent lighting installations were made in British rolling stock, new hot cathode fluorescent lamp colours have been developed which compensate for the deficiency of red light from the earlier types. Cold cathode tubes, however, have a further advantage for rolling stock installations in their long life. In railway terms, the life of the tubes should extend over four years' coach service, so that replacement should be required only when the vehicle is withdrawn for major overhaul at four yearly intervals. This consideration, of equal importance for all types of passenger rolling stock, was a major factor in encouraging the development of a cold cathode installation.

The new restaurant car lighting has had to be planned within the capacity of the existing 24 v. D. C. carriage installation. A motor-alternator set to provide a suitable supply for the cold cathode tubes has been developed by the Electro Dynamic Construction Co. Ltd. The machine has stable voltage output characteristics under the different input terminal voltage conditions encountered when the battery is charged or discharged. This result has been achieved entirely by the electrical design of the machine and no voltage regulator is used.

The A. C. output from the machine is 110 v., 400 cycles, this frequency having been already widely adopted for fluorescent lighting in transport vehicles and aircraft since it enables small and lightweight transformers and capacitors to be used in the lamp circuits.

Before the coach was equipped, a mock-up was built at the Research Laboratories of The

(Continued on next page bottom)

Principles of Railway Accounting

By Argus

FUNDAMENTALLY Railway Accounting is based on the same elementary principles as the accounting system of any other business. These include the principles of debit and credit, and of double entry, the use of the same form of account and the chief books of account such as the cash book, the journal and the ledger.

WHAT IS AN ACCOUNT?

An account is a device for classifying and summarising similar business transactions.

The purpose of an account, which is an intangible thing, can be understood best by comparing it to something tangible. If you visit a well kept stores depot you will notice how every kind of material and supplies are maintained. Each bin contains all the bolts, nuts and tools etc., of the same size, grade and name. Space is also provided for the storage of certain kinds of materials such as oil, lumber, spare parts etc. When a requisition is received for a particular kind of bolt, a certain grade of lumber or oil, the store-keeper knows exactly where to locate the material or supplies without any confusion. This is possible because the material has been classified and kept in the space assigned in the classification.

The account does exactly the same thing with respect to business transactions as a material classification does with materials and supplies. It classifies the details of the transactions.

For instance a Railway Administration wants to know how much

(Continued from page 46)

General Electric Co. Ltd. at Wembley and demonstrated to representatives of the Railway Executive. Further tests of the equipment were carried out at the Derby Works of the London Midland Region. On their successful completion, a first class restaurant car was withdrawn from service and the equipment was installed.

The restaurant car is divided into smoking and non-smoking sections. In each section the cold cathode tubes are mounted in a continuous triple row along the centre of the ceiling, the two outer tubes being Warm White and the centre ones Gold. They are contained in fittings 31 ft. long in the smoking compartment and 13 ft. 6 in. long in the non-smoker, each consisting of a sectionalised reeded "Perspex" enclosure with satin silver decorative end pieces and covers of similar material and finish at the junctions of the "Perspex" sections. Two lengths of cold cathode tubing are employed, 7 ft. 10 in. in the smoker and 6 ft. 10 in. in the non-smoker. The transformers, one for each tube, are installed between the ceiling and the roof of the coach.

Any tube can be removed by taking off the corresponding section of the "Perspex" enclosure. Interlocks incorporated with the covers ensure that the supply is cut off before access to the tubes is possible. The switching arrangements enable full or half illumination to be used, the latter being suitable for use during cleaning or other maintenance periods when the coach is at rest so as to reduce the load on the battery.

money it receives or becomes entitled to for certain transportation service. It sets up a large number of revenue accounts, gives them a number and a name and as the money is received or the service rendered it credits those accounts with the amounts received or becomes entitled to.

When a consignor pays Rs. 100 towards freight charges on a consignment, the amount is credited to an account called "Goods Earnings." When a passenger purchases a ticket the amount is credited to "Passenger Earnings." When he pays for the luggage the amount is credited to an account "luggage." By its system of revenue accounts a railway administration knows the exact amount received and the source from which received.

For example when money is paid for maintaining the tracks it is charged to an account "structural works;" when it is spent for repairing machinery in shops it is charged to an account "Shops Machinery." Thus every item of expenditure can be disposed of by charging it to the particular expense account set up for the purpose.

At the end of the month or year when the management or any other agency wants to know the amounts received from a particular source or spent for a particular object they need only refer to the concerned revenue or expense account as the case may be and make up a statement of the receipts and charges to each account during a given period to obtain the required information.

The primary purpose of accounting is to keep the records in such a manner that anyone interested may obtain any information desired relating to the business. Accounts are the principal means of indicating the facts in a systematic manner.

When a certain information is wanted regarding a definite transaction, the record containing the account of that transaction is referred to and the information obtained, just as the storekeeper in the stores-depot gets the materials ordered. When a balance sheet is to be set up the accountant knows exactly where to look for the facts desired, because they have been classified and summarised by accounts.

Suppose the management wants to know the amount of passenger revenue earned by a Railway from the sale of tickets. It refers to the records where the final results of its passenger transactions are recorded and there will be found under a specific account the exact earnings accrued during any given period from ticket sales.

Similarly if it wishes to ascertain the amount spent for sleepers, for rails, for maintenance of track, bridges or buildings it refers to the accounts under which the expenditures are booked and gets the desired information. This is an important use of the account. The classification of transactions to their proper accounts is one of the chief duties performed by the various Railway Accounting Officers.

In other words, accounting translates the operation of Railways into terms of Rupees and Annas. This is done largely through the device called the account.

From this it is clear that the accounts of a Railway department are simply the records of the financial transactions of the Railway kept in accordance with accounting principles and as prescribed by the government in the classification of accounts.

KINDS OF ACCOUNTS

Accounts may be divided into three groups—accounts with persons, property accounts, and source accounts that have no connection with either persons or property.

Accounts with persons are easy to understand because everyone has had some accounting experience in connection with a personal account. Suppose you loaned Rs. 10/- to Gopal and made a note of the transaction, you set up a personal account with Gopal. When he repays you the money, you credit him with the account and close the account.

When you buy goods at a store-house on credit the stores sets up a personal account with you to keep trace of your purchases and payments. If you buy goods, valued Rs. 50/- the stores charges your personal account with Rs. 50/-. As payments are made, your account is credited.

Personal accounts also include accounts with companies, partnerships, and similar organisation units.

Property accounts are represented by something of value such as land, cash, investments etc.

The third group of accounts called source accounts are represented by certain expenses, construction, income and revenue accounts. When we wish to know the source of any revenue, as for instance, the amount of revenue from the operation of a goods train, a goods revenue account is set up and all revenue received from this source is credited to the goods revenue account.

THE ACCOUNT FORM

What does an account look like? When you loaned Rs. 10/- to Gopal and recorded the transaction, you used an account form in recording it. This record may simply take the form of a memorandum as for instance, "Gopal borrowed Rs. 10/- on August 5." When the amount was repaid you marked the notation "paid" or simply scored it out. This form of account satisfied your requirements because you borrowed money only occasionally from your friends and only wanted to keep a record of the amount loaned out and when it was paid back.

It you were in the money-lending business, this form of account would be cumbersome and would be a poor way to record your business dealings. If you owned a business, in which hundreds or even thousands of transactions took place daily, you would require a more scientific method of recording them. This is supplied by the standard form of account.

From the stand point of the form which an account takes, it may be defined as a summarised record of a particular class of items or similar business transactions. The characteristics of an account form are as follows:—

1) The name of the account is written on the top of the page for purposes of identifying it.

2) The account form is divided into two parts by a vertical column made up of three single lines. The left side is called

(Continued on next page bottom)

"Controller of Disaster"

By Alpha

THE office bearer placed the visitor's slip on my desk. A side-glance at the slip revealed—

Name—Bhibuti Roy, M. A., Ph. D., S. D. M.

To see—General Manager

Business— Confidential information re : accidents.

Intriguing, I thought. The 'M. A.?' and 'Ph. D.' were familiar to me, but the letters 'S. D. M.' this was a new one. And 'confidential information re : accidents?' Perhaps he had some idea or invention which would help reduce or prevent railway accidents!

I told the office-bearer to send Mr. Roy in.

A few moments later Mr. Roy sat on the left hand side of my large office desk. He was a short, middle aged man, the upper-half of him enveloped in a large alpaca coat that had faded from a shiny black to a dirty, dingy grey. The coat was weighted down by well-filled, bulging pockets. His hair was cropped close to the head, and under his brows, two uncommonly bright eyes glared at me with hardly a blink.

Mr. Roy spoke first. "Are you the General Manager?"

I replied, "No, I'm his Secretary," and continued, "what exactly is the information about accidents that you have to offer."

Mr. Roy retorted, "I must see the General Manager. My information is confidential....."

I then explained to him that he must give me some idea of his information, which I could then pass on to the General Manager.

"I must see the General Manager himself," he persisted.

(Continued from page 49)

the debit side and the right side, the credit side. Consequently when a transaction is entered on the left side of the account, it is debited with the amount entered; when the transaction is entered on the right the account is credited. This is a fundamental principle of accounting.

Columns are shown on each side of the account for inserting a brief description of the transaction, the date when it was received and the amount involved. The column headed "folio" refers to the journal page from which the transaction is posted. This will be explained later.

THE STANDARD ACCOUNT FORM

Date	Item	Folio	Debits	Date	Items	Folio	Credits

I further explained it was part of my job to deal with all confidential matters concerning the General Manager, and that he need not fear that his confidential information would go beyond me.

His two uncommonly bright eyes seemed to blaze. His right hand then swiftly thrust its way into one of the bulging lower pockets of his coat, and pulled out a fat wad of dirty papers These he unrolled on his lap. He shifted his glare from me to the papers, shook his head, rolled up the papers and returned these to his pocket. Next he thrust his left hand into the other bulging pocket, and pulled out another fat wad of equally dirty papers. This time he found what he wanted. A letter written on a piece of cheap, white foolscap paper was passed over to me.

I read:

"The General Manager,

.....Railway.

Dear Sir,

I, Bhibuti Roy, M. A., Ph. D., S. D. M., have the honour to inform you that I am a Divine Messenger, Controller of Disasters calamities, and such like physical phenomena as Earthquakes, Floods, Violent Storms, etc. I being a Divine Messenger in constant communion with God Almighty, can be of valuable assistance to your Railway by preventing, averting or minimising such calamities as derailments, collisions, track removals by saboteurs etc. This is my calling and profession in life. But even a man of God must have the means to live. In return for my miraculous powers to prevent the aforementioned disasters, I demand five per cent of the annual profit from railway revenues and free first class travel over your railway system.

My testimonials and credentials, which I can produce for your perusal, will convince you that my claims are genuine.

'At your service'

(Sd.) BHIBUTI ROY,
M. A., PH. D.
Society of Divine Messengers.'

So that was the explanation of the letters 'S. D. M.,' the self-styled 'Society of Divine Messengers.' My immediate reaction to the letter was an irrepressible urge to laugh out aloud. The man was obviously a crank, but the wild glare in his eyes warned me to deny myself the pleasure of enjoying the joke. I would have to use tact and humour him.

I explained to the divine messenger that it was beyond the powers of the General Manager to pay him the enormous fee demanded in return for his valuable services, and the gift of a free first class travel. And in any case, if by getting into communion with the Almighty he could avert disasters, there was no need for him to travel about in trains.

Mr. Roy must have detected a tinge of scepticism in my explanation. "Perhaps you think my claims are fantastic, and that I am not a Divine Messenger."

I offered no comment. He continued. "Do you remember the great Bihar Earthquake of 1934? Well, I was in Patna a few days before the earth rocked, and had a message from God that a terrible earthquake would occur in a few days. Immediately I got into communion with God and prayed that the earthquake would not extend as far as Bengal because my old father and mother lived in Calcutta. And you know the results: my message was just in

time. Bihar was rocked with awful death and destruction, and Bengal did not suffer."

I listened patiently. He continued. "You're a Railway officer. Look up the accident record for your Railway in the year 19... and compare it with that of.....Railway. Yours was bad, and the other Railway was free from any major disasters. Why? Because I have a brother who is a guard on that Railway, and I always pray to God to keep that Railway free from serious accidents. Look up the records, and there is the proof of my powers."

Again I tactfully explained to him that it was not a question of belief or disbelief, but that what he had asked for was beyond the powers of the General Manager to grant. Perhaps I suggested, he could refer the matter to higher authorities.

His bright eyes again glared at me. "You still don't believe me, well....." He paused, dug his hand into one of those capacious, bulging pockets, and fished out what appeared to be a necklace of medals of various shapes and sizes strung on a piece of black cord.

"Take a look at those," and he abruptly flung the necklace of medals at me. These missed the mark and came to rest on my desk with a metallic clatter.

"And now I want to see the General Manager himself at once," he demanded loudly.

The divine messenger had now gone beyond his limits. I pressed a button under my desk, three times. The signal was answered. Within a few seconds the Security Inspector and two tough little Nepalese watchmen silently entered my room. The divine messenger was grasped firmly by the watchmen and led away. Before we parted, I dropped his precious necklace of medals in a bulging coat pocket.

The divine messenger gave me a parting shot. "So you won't let me see the General Manager," he shouted. "I shall now call down the wrath of God on this Railway for denying me my rights ..... Within a few weeks there will be a terrible accident... lives lost.....engine and carriages smashed up.....

The door closed on the divine messenger and I heard nothing more. Phew! I was glad to be rid of him.

Diesel Locomotives for Australia

The Commonwealth Railways, Australia, have placed an order for 14 diesel-electric locomotives of 955 b.h.p. for general service on the 3 ft. 6 in. gauge Central Australian Railway. The main contractor is the Birmingham Railway Carriage & Wagon Co. Ltd., who will build the mechanical portion and deliver the complete locomotives. Complete technical responsibility is vested in Sulzer Bros. Ltd., and the locomotives are to be known as Sulzer type. The diesel engines are to be supplied by Sulzer Bros. (London) Ltd., and the complete electric transmission and control equipment is to be supplied by Crompton Parkinson Ltd.

Presenting Mr. Railwayman "Wayside Assistant Station Master"

By A. H. Pearson

PICTURE to yourself a large Railway station, with its maze of tracks criss-crossing in the yard, a number of platforms, the huge station building with its innumerable offices, goods trains standing in the yards, and passenger trains coming and going at almost every hour of the day, and the constant stream of people who are going a journey by train, or ending one.

By way of contrast, take a journey about forty to fifty miles away from that large station, and hop out at one of those wayside stations and take a good look around. What do you see? A small red brick building, just big enough to contain two or three main rooms, and perhaps a couple of small rooms tacked on; one rail level platform, with one up and one down main running lines skirting the platform, and perhaps a passing loop line. In front, or to one side of the station building will be a signal lever frame which controls the operation of the few points, and these two to four lonely-looking signals about a quarter mile away on each side of the station. Looking further afield what do you see? Near the station a cluster of a few buildings which are the quarters of the Railway Staff who have to work at the station, beyond that trees, bushes, fields and somewhere in the far-away distance a tiny village hamlet.

After your passenger train has paused at this little wayside station for a minute or so, and you and a few more passengers have got off, the train moves on into the blue distance, and the station seems to lapse into a sleepy silence. Within a few minutes of the train having left the whole place seems deserted.

Has all the activity of Railway work ceased, and have the few Railwaymen who man this station locked up and moved off to their quarters? If you want to know, walk up to the station building and step inside the station master's office. Surprised! He is there on duty in spite of the outward torpor of the station. Now look round at his office, and then pursuing your curiosity have a chat with him.

In this office room you will see the table with the usual appurtenances of any office table of pens, ink, paper, some registers, and as well, a telephone or two, and a morse telegraph instrument. On one side of the office is the booking counter, with its ticket boxes and tubes, and ticket dating machine. In addition will be found a few almirahs for keeping various forms, books, registers etc. and an iron cash safe.

Now you can have your chat with the station master on duty and find out what he does during his turn of duty. The telephone rings and the station master has a brief conversation with the district or divisional control office over a hundred miles away. A goods train is on its way and has to be stopped at this station to allow a fast express to pass. Orders are then given for the signals to be lowered for receiving the goods train on the loop line. Sometime later the goods train rolls in and is safely berthed; then after a sufficient time margin, the fast express roars in and runs through. The station master then enters up his train signal register giving exact timings of all these movements. Throughout a turn of duty these train operational movements go on, even though the trains do not stop at the station.

And what happens when a stopping passenger train is due. About an half-hour before the train rolls in, the station master takes up his position at the booking counter. On the other side of the iron grille, some dozen or more passengers are waiting for tickets. The station master now issues the tickets and collects the cash paid until the train rolls in. Then he locks up his office and takes over the duty of ticket collector, gathering in the tickets of the few passengers who have alighted at his station. The train moves on, but the station master instinctively takes note of the time of arrival and departure. If there has been any detention beyond the scheduled halt of a couple of minutes, he makes a mental note of this too.

Then back to his office with the tickets he has collected. He counts and checks the tickets and enters up details in the appropriate register. Once again the station gets quiet, and he then tackles the station account books for entering up the tickets sold and cash collected.

And so his round of routine duties goes on. Receiving and despatching all stopping goods and passenger trains, selling and collecting tickets, giving orders to his pointsmen for signal movements, tapping out and receiving message on his telegraph instrument, keeping in telephone communication with control headquarters of all that is going on in the way of train operational movements, doing all the clerical work involved of writing up records of all transportation and commercial transactions of his little station.

Then comes the night. Is the station master on night duty just there as a sort of sentry on watch? No. Because even at night, trains must pass and perhaps one up and one down passenger train stops. By the light of an oil lamp the night man also does the same round of duty, and even though there may be fairly long stretches when there is nothing doing, he cannot say to himself, "well, time for a nice nap." He must be wide-awake and alert throughout those long dark hours, and usually more vigilant, as in the dark night, man can commit more mistakes than in the bright hours of daylight, and errors of omission or commision by Railwaymen who have to watch the passage of trains are extremely costly both in precious human lives and in material values.

There you have a cameo picture of the wayside assistant station master, who is in turn booking clerk, ticket collector, telegraphist and station master. Rather a lonely life for him, away from the hustle and bustle of the larger railway stations with big towns or cities nearby. But he does his work patiently and ungrudgingly and some day, as he grows older in experience and service, he will get his reward by being posted at one of those big stations, and who knows may even be the Station Master or Station Superintendent at one of the large Railway Junctions or Termini.

India Marches Forward Industrially

By Our Special Correspondent

THE Railcoach division of Hindusthan Aircraft Ltd., Bangalore, which is in the forefront of India's industrial progress, is now turning out with hundred per cent Indian labour and from India's own materials, railcoaches on a production basis and at the rate of one hundred per year.

The ten-year old Hindusthan Aircraft Ltd., which is well-known in aviation circles, started manufacture of Railway Coaches just after the war in order to relieve the acute shortage of coaching stock in Indian Railways. In 1947 the Railway Board placed orders for the manufacture of 100 all-steel Class III broad gauge Railway Coaches with the factory. These were already built and are now running on the trunk routes of the M. S. M. (now Southern Railway), G. I. P., and E. I. Railways. The allocation is as shown below :—

Southern Railway (formerly M. & S. M.) 17 coaches...For the Grand Trunk Express

G. I. P. Railway...36 Coaches...For Punjab & Amritsar Express

E. I. Railway...47 Coaches...For Delhi Mail, Toofan Express & Janata Express.

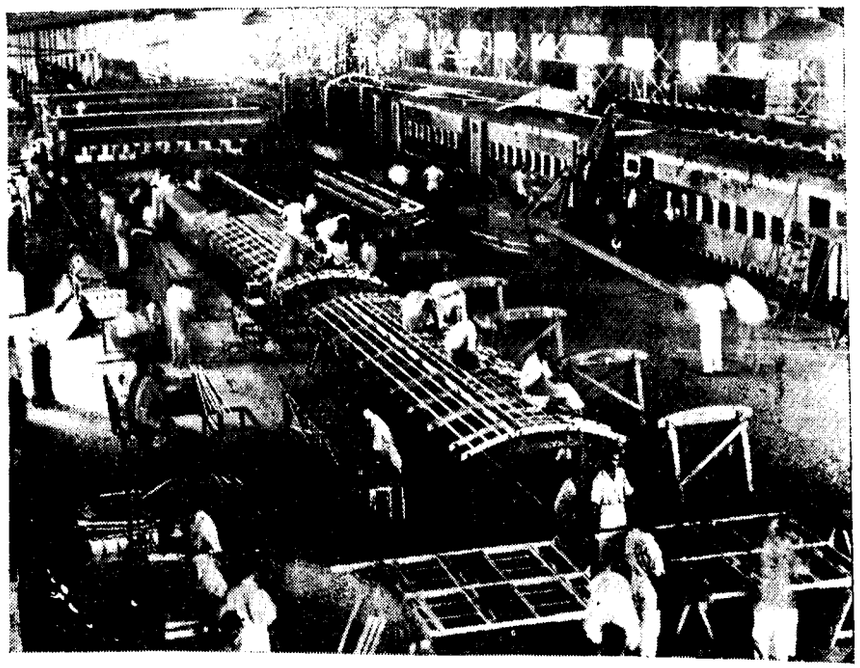
It is claimed that by virtue of the all-steel stressed-skin type of construction and the inside lay-out, these coaches offer better safety to the passengers in case of accident. The danger of fire-hazard is also claimed to be obviated. Two of these coaches, it is stated, were involved in the accident to the ill-fated "Toofan Express" train of the E. I. R. in August 1950. Several wooden coaches were smashed to pieces. Casualties were less in HINDUSTHAN-MADE coaches of which the steel body got deformed without breaking into splinters. One of these coaches was second in the rake from the engine and the other was sixth. The former which was turned over and thrown down the rail embankment had its body more or less intact except for local damages. The other coach got bumped by the rear coach buffers damaging only one lavatory end.

The Railway Board has recently placed orders for building 300 coaches of a later model (Model 407) incorporating special end structures intended to prevent telescoping. The production of Model 407 which is an improvement over the previous Model 404 was taken in hand by HAL. Some of the principles of aircraft construction have been applied in the manufacture of this coach. The structure is of stressed-skin type being built of mild steel in panel plate finish. All steel parts are treated to resist corrosion. A special end structure intended to prevent telescoping of one coach into another in case of accidents has been incorporated. It has been so designed as to absorb the force of collision with the result that the rest of the coach is relatively safe.

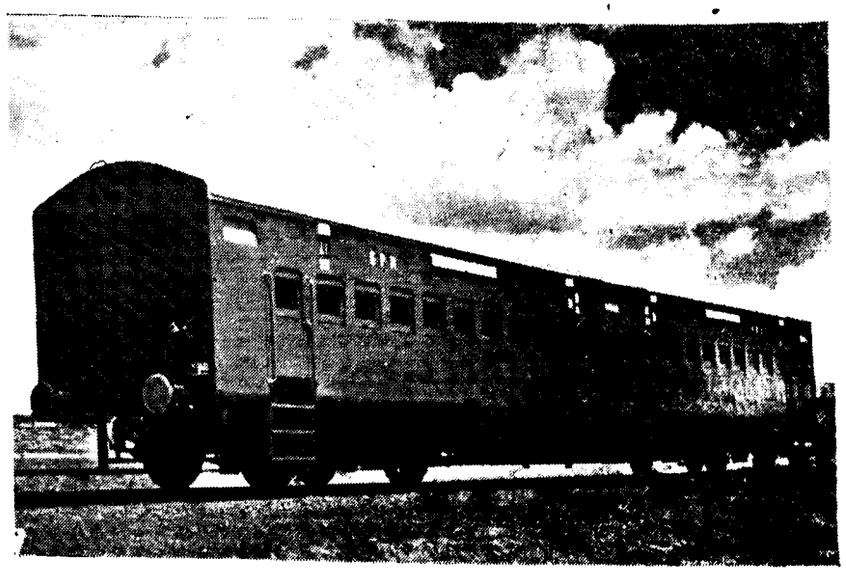
The coach is divided into four compartments, two large and two small. Each large compartment will seat 25 passengers and each small one, 13 passengers making a total of 76 passengers per coach. Broad seats and bunks have been arranged in transverse direction with one bunk and one parcel rack over each long seat. These upper bunks can accommodate heavy luggage during the day and sleeping passengers at night. The parcel racks accommodate lighter luggage. Extra luggage racks are installed along the length of the coach on one side. The two small compartments are made specially suitable for use as "Ladies" Compartments. The "Ladies" Compartments have special features such as safety bars for window openings, inside latches for window shutters, double inside latches for doors at bottom and top for securing the door from inside and extra mirror with shelf.

Two lavatories have been provided in each of the large compartments and one in each small compartment. The lavatory furnishings offer a high standard of sanitation. Stainless steel lavatory pans with flushing arrangement, stainless steel wash basins with push cocks, mirrors and mirror shelves form the equipment. The lavatory flooring is of polished mosaic. Water tanks are of large capacity.

Windows are so placed as to give maximum ventilation and comfort to passengers. Each window is provided with a glass and a louvre shutter with gravity type safety latches in three positions in order to prevent injuries to passengers due to shutters falling down accidentally. Exhaust type roof ventilators have been provided generously to ventilate the compartments and the lavatories. Ventilated air space is provided between the outside skin and inside panelling. This coach compares favourably with the wooden type of coaches as regards heat-resisting properties.



One aspect of railcoach construction in the Hindusthan Factory who are contributing their mite for building up of India's rail transportation facilities



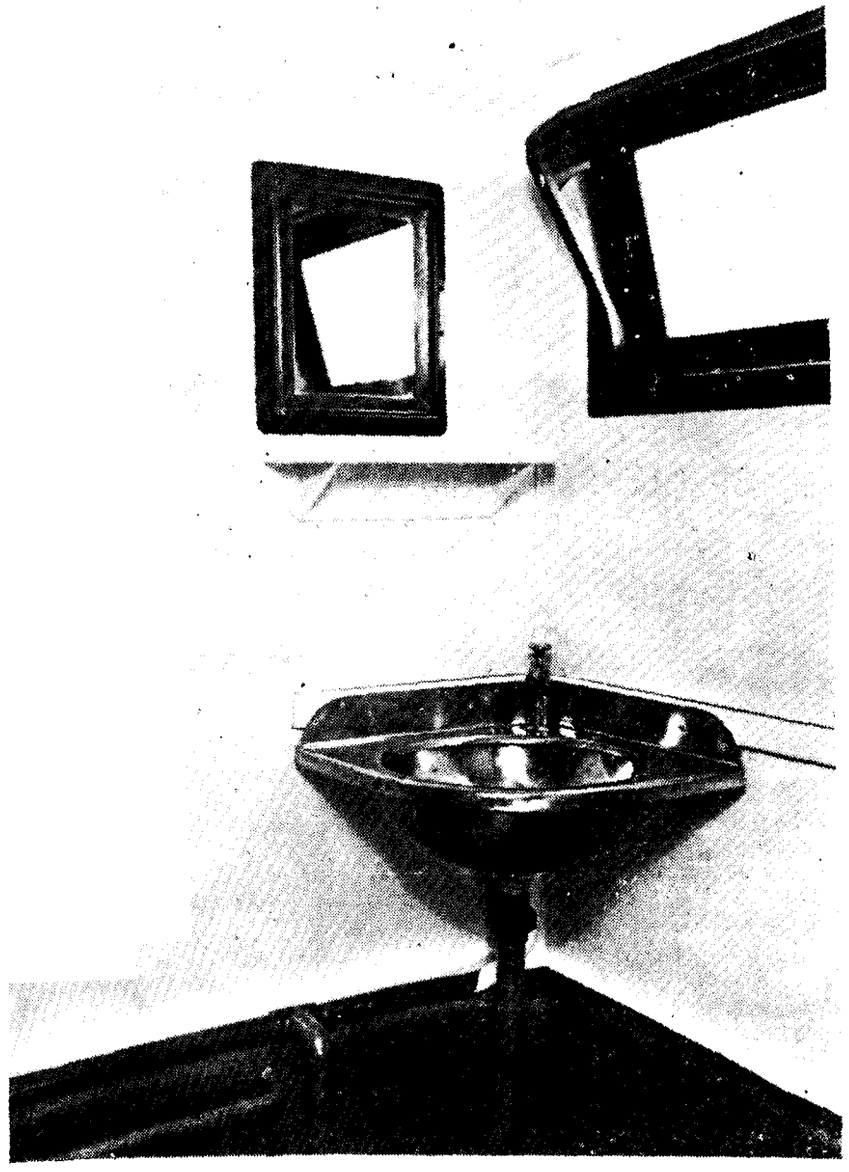
Exterior View of the Model 407 All-Steel Third Class Broad Gauge Railway Coach—10 Ft. Wide and 69'-4" Long built by Hindusthan Aircraft Ltd., Bangalore

Two fans have been provided for every double row of seats with individual switches, making a total of 20 fans per coach. The interior of the coach is illuminated by a total of 26 lamps. All lamps are equipped with frosted domes in order to give even illumination. Side embarkation lights are provided outside each door way. These lights automatically go "OFF" when the speed of the train exceeds approximately 15 m. p. h. During halts the side lights illuminate the platforms and the sides of the coaches and thus help passengers in getting in and out of the coach at night. This also helps detection of unauthorised travel while the coach is in slow motion.

Some of the main features of 407 Model Rail Coach are as follows :—

Structure	All-Metal
Provided with anti-telescopic ends	—
Width of body	10'-0"
Length of body	69'-4"
Length over buffers	72'-2"
No. of Compartments	4
No. of Lavatories	6
Total Seating Capacity	76
Tare Weight with Water-tanks empty	40·83 Tons
Total number of fans (16" sweep)	20
Total number of lights in compartments	22
Total number of lavatory lights	6
Embarkation lights	8
Maximum electrical load	55 amps

Equipped with 100 amp. dynamo 300 amp. hr. lead-acid batteries and necessary switch-gear as per I. R. S. 5-wire double-battery, block train lighting system.



Lavatory Interior showing Stainless Steel Wash-Basin with Push-cock, Mirror and Shelf in Model 407 B. G. Rail Coach

Inside panelling	Aluminium, "Holoplast" and "Limpet" asbestos.
Flooring	Oxy-chloride
Stainless steel wash-basins in lavatories	6
Stainless steel lavatory pans	6
Mirrors with shelves in lavatories and ladies' compartments	8
Water tanks (120 gallons capacity each)	3
Lotah cocks in lavatories	6

Interior of latest "407" Rail Coach—HAL Engineers posed for the Picture

Flushing cisterns in lavatories	Oxy-chloride
Roof ventilators in compartment and lavatories	6
COLOUR SCHEME	21
Exterior:	
Sides (up to cant rail)	Gulf-red (BSC 473)
Roof	Aluminium
Ends	Black
Interior:	
From floor to waist rail	Grass green (BSC 218)
From waist rail to cant rail	Sea green (BSC 217)
Roof	White

Already seventy coaches of this have been built and delivered to the Indian Railways. Fortyfour coaches have gone to Eastern Punjab Railway and twentysix coaches to B. B. & C. I. Railway. The target production is 150 coaches per year. The design has been developed in collaboration with Railway Board. The allotment of 150 coaches out of 300 is as follows :—

Eastern Punjab Railway	...	...	...	40 Coaches
B. B. & C. I. Railway	...	...	...	26 ,,
Eastern Punjab Railway	...	...	...	26 ,,
G. I. P. Railway	...	...	...	26 ,,
B. N. Railway	...	...	...	20 ,,
Southern Railway	...	...	...	12 ,,

The Railway Coach Project of HAL has been of considerable magnitude taking into account not merely the actual production of coaches but also the enormous spade-work and development work involved therein both on the design and execution side. The design was actually "started from scratch." The present success could not have been achieved but for the untiring and sincere efforts of a team of honest workers. The names of Messrs. A. Mitra, W. So-

Sri A. C. Banerjea, Sales Manager—a driving force in the Hindusthan Aircraft Factory

bol and A. C. Banerjea will remain permanently as long as the story of Rail Coach construction in HAL is remembered as being the pioneers and also the driving force for the rest of the fellow men. However it should not be forgotten that a good number of individuals in addition to these three, too numerous to mention here, have combined together to earn for HAL the deserved place it has already won even in the field of Rail coach construction as in Aircraft manufacture.

Hindusthan Aircraft leads the parade in India's modern industrial progress and in the building up of the country's rail transportation facilities.

He who is persevering gentle in disposition, subjugates the passions, shuns the company of cruel and wicked men, injures no sentiment, creature, lives, virtuous life, keeps his mind under thorough control and bestows on others the gift of knowledge, attains happiness.

Dasara a Famous Festival in Mysore

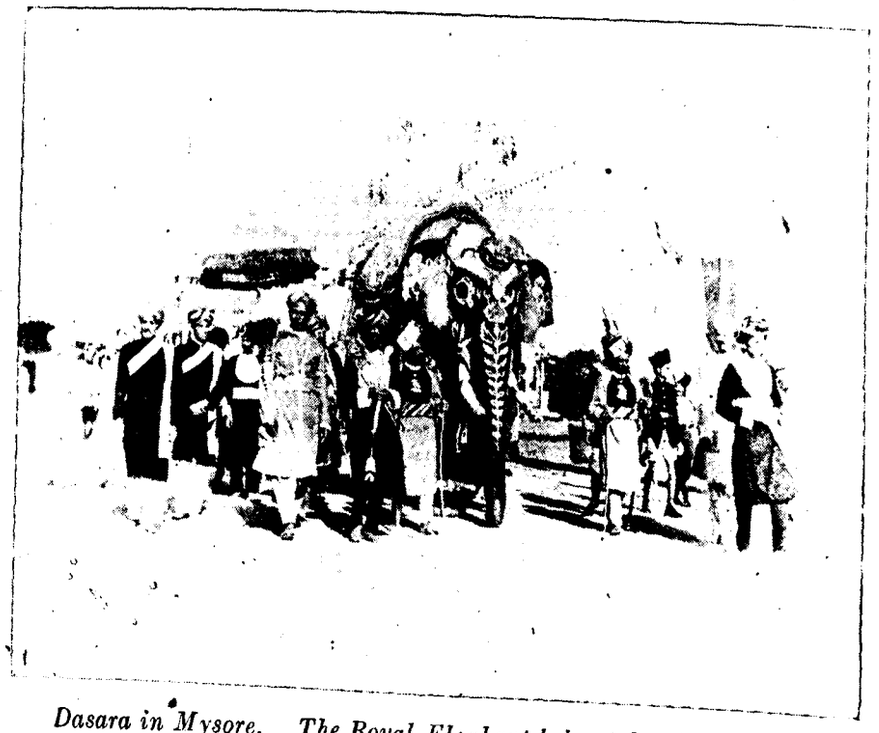
By Soundar Rajan

IT is a delightful look that Mysore peresents on the morning of the first day of the Dasara. Among its medley crowd, thronging the front of the palace or sauntering through its splendid streets, we find persons from all parts of India. The fair Northern Indians, with their huge turbans—the Bombaywallahs with their tilted caps—the dark Madrasi Chettiars with their gold-laced dhoties and glittering *kummerbands*—women with all sorts of sarees and of every colour of the rainbow—we meet there. And it is a merry crowd too. It has before it ten full days of unrestricted enjoyment and it is going to have it.

Every evening, for nine days, the Maharajah holds a durbar in his magnificent palace. All the responsible Officers of the State attend it and according to the custom of every Indian Court, offer *nuzzur* to their king. The state troops parade before the palace and are reviewed by the Maharajah.

Young wrestlers and boxers from all parts of the country gather before the Durbar and show wonderful skill in their manly arts. Fine, well-built men, brandishing naked swords in their hands, fight duels according to the ancient Mysorean fashion. Firework display is made and fire baloons are sent up by scores. All the while, the admiring crowd, standing in front of the palace lit up wonderfully with myriads of electric bulbs, enjoy the entertainment provided for it.

The eighth day is called Durgastami and is specially dedicated to Goddess Durga, who



Dasara in Mysore. The Royal Elephant being taken in Procession

Dasara in a Hindu Home, Dolls arranged for display during the Festival of Dolls which coincides with the Dasara Festival

was responsible for this festival. One need not mention here how enthusiastically the Bengalis celebrate this occasion.

The ninth and the tenth days of the festival are days of great importance. On the ninth or Mahanavami day, the Maharajah worships all the arms of the state. Everything, including the last carriage of the palace is cleaned and newly painted and decorated with flowers. This practice has become so very widespread that it is an ordinary sight to see motor-cars, tongas and gharries decorated with flowers and kunkum.

THE VIJAYADASAMI

It is on the last day of the Dasara, the Vijayadasami, that the kings of old used to go on their annual expedition of Victory. Now, the Vijaya Yatra is transformed into a harmless procession, gay and pompous.

It is indeed a grand experience to behold the Dasara procession. In the midst of the mile-long procession formed by troops, the Maharajah rides in a golden howdah, attired in magnificent robes of old Mysore. Bright lights carried by hundreds of men, light them on the way. Red and green firework are burnt before the howdah and the effect produced by them on it is marvellous.

The procession reaches the Banni Mantap, where, according to an ancient tradition, the Maharajah cuts a branch of the Banni tree with his sword. The cutting of that branch is expected to represent the conquest made by the king because no expedition can possibly be undertaken in times of peace.

In celebrating Dasara, the Hindus celebrate the victory of Right over Wrong and of Good over Evil. In ancient India it was a great festival having a national importance and every Hindu fervently hopes that it shall continue to be the same for ages to come.

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DURGA PUJA

The greatest and the most important of the festivals that the Hindus celebrate is Dasara, which falls during the month of October. Throughout the length and breadth of India, it is carried on for ten full days with true Oriental splendour and pompousness. No pains are spared to make those ten days and ten nights brimful of mirth, joy and gaiety. A true gala spirit reigns everywhere.

COMMEMORATIVE OF VICTORY

Dasara is a festival dedicated to Victory. It commemorates the triumph of good over evil and of right over wrong as previously mentioned. In commemorating this festival of victory, the Hindus also commemorate the greatest events from their epics. In celebrating Dasara, they rejoice over the victory of Goddess Durga over the demons, over the momentous victory of Rama over Ravana, the Rakshasa—emperor of Lanka and over the victory of the Pandavas overthe cruel Kauravas in the great war of Mahabharata.

Go to any Hindu and he will tell you why he performs his Durga Puja on the Navarathri (Sanskrit name which signifies the festival of Dasara). "Long Long ago," he begins, "the world became infested with a countless number of demons. By their cunning might, these children of sin conquered and overran the whole world and the seven mighty seas that surround it came under their sway.

"Wherever these demons went, they spread their seeds of destruction. Innocent men, helpless women and suckling babes were slain in millions for the mere pleasure of slaying. The blood that ran out of their gory wounds reddened the whole Universe and the dismal cries that they made in their death agony shook the heavens.

"Parvati, the Mother of Mothers and the Protectrix of Humanity, saw these acts of savagery and feeling the urgent want of her children, incarnated in

Goddess Kali at Dhakineswar Temple near Calcutta

the form of Goddess Durga to rid the world of these demons. For ten days and ten nights, she fought the demons in a deadly battle. On the last day the last of the demons was killed. The world was saved.

"Goddess Durga saved us. We are grateful to her and our humble gratitude towards her is shown in this great festival."

The last day of the "Dasara" the Vijayadasami has another important association with the Hindu myths. It was on this day that Arjuna, one of the five Pandava heroes, took back his bow

Gandiva, from the tree in which he had deposited it four years back, on the eve of the Pandava's living in disguise at the court of King Virata. The same day witnessed the beginning of the great war at Kurukshetra, which ended in a glorious victory for the rightful heirs of the Indraprasta throne.

But to Hindu Philosophers, Dasara has another but a more tremendous significance. It means to them the actual coming into the world of Devi—the mother of the Universe—to know whom a man has to meditate for a billion years. During those days, the Philosophers engage themselves in thinking of Her—the Being who has no limits of space, form or time.

A FESTIVAL OF GREAT ANTIQUITY

Dasara is a festival of very great antiquity. It was a very important event in ancient India and it had a great significance then. Every year, it was the custom of the monarchs of those times to go on a Vijaya Yatra (or an expedition of victory) planned either for conquering fresh lands or for meeting and defeating rival kings and old foes. This Vijaya Yatra was begun on the tenth day of the Dasara, for that day was the most befitting in calendar for bestowing victory on the armies.

Even now, this ancient festival has not lost its popularity among the Hindus. It is a great festival and is observed throughout the length and breadth of the land. Bengal celebrates it with more enthusiasm than any other part of India and every Bengali fervently hopes for the coming of Durga Pooja. But its popularity is even greater in the Indian States. Many Ruling Princes and Maharajas observe it with full and true Indian splendour.