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SOUTHERN RAILWAY

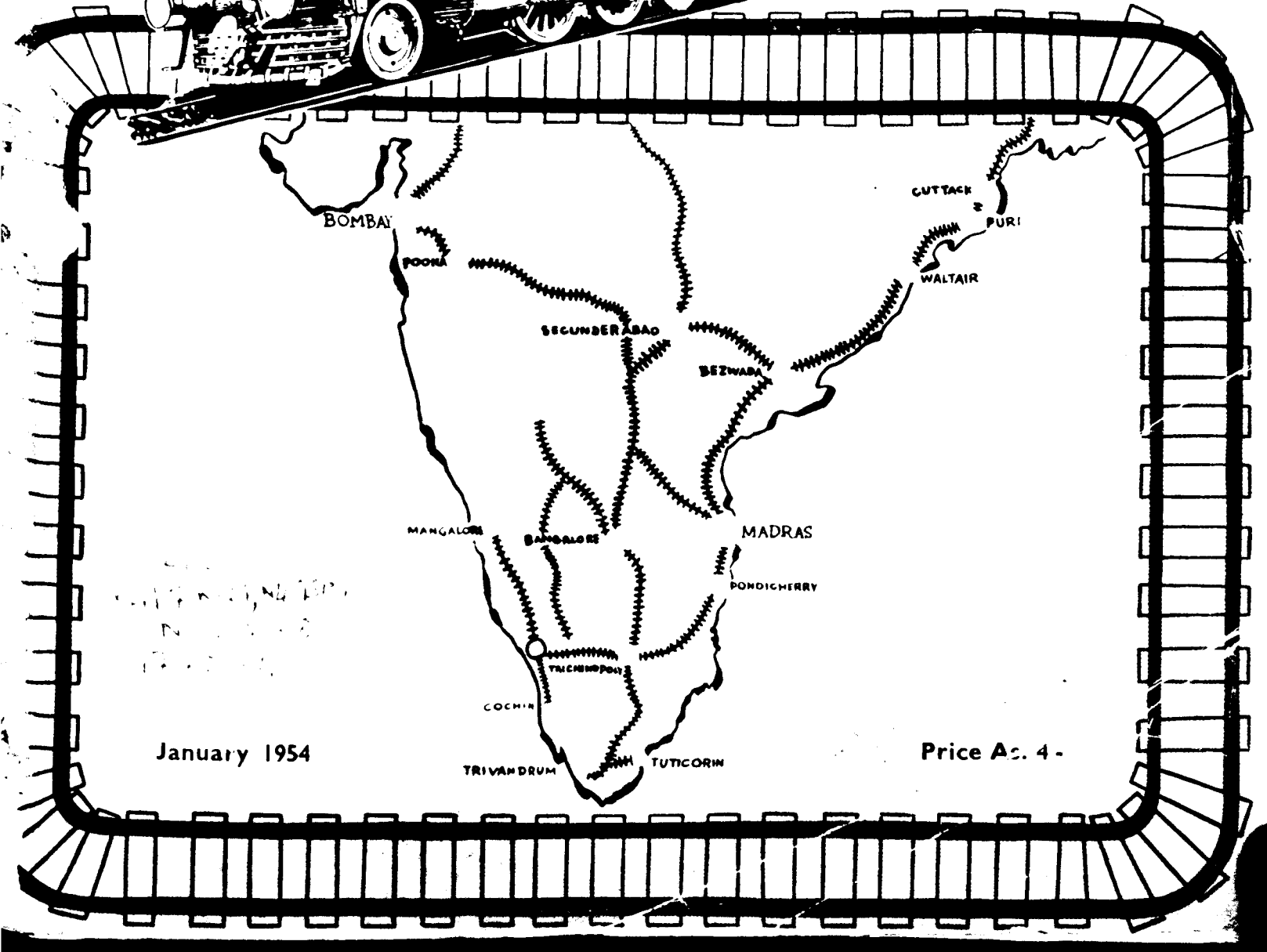
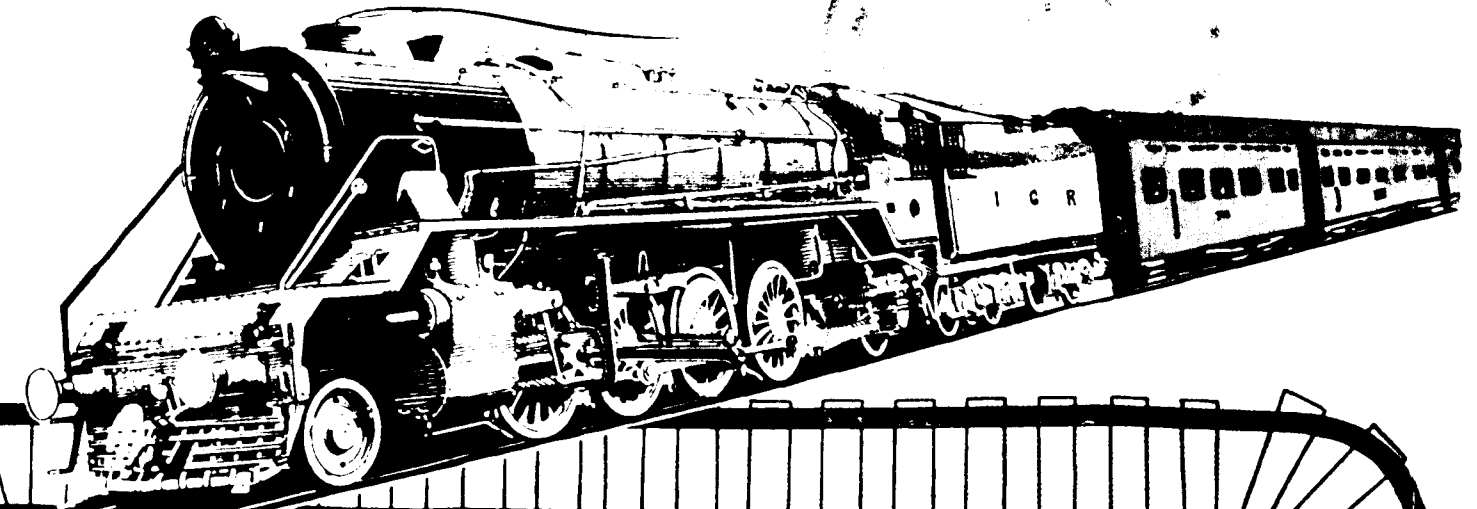
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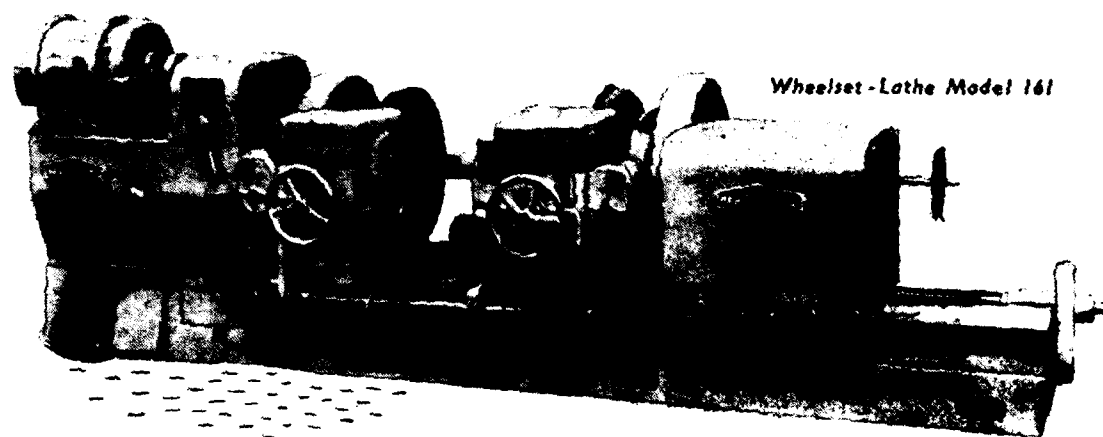
SOUTHERN RAILWAYS *Magazine*



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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 laymen, Aspects of Railway Working, places of tourist interest, News from home line, activities on Railway Institutes etc. All copy should be brief and typed as far as possible.

Photographs illustrating social functions, sports events, scenic sports etc. are also invited. All contributions should reach the Editor not later than 5th of each month. Rejected Mss. will be returned provided sufficient stamps for postage are enclosed. No responsibility 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, (South India).

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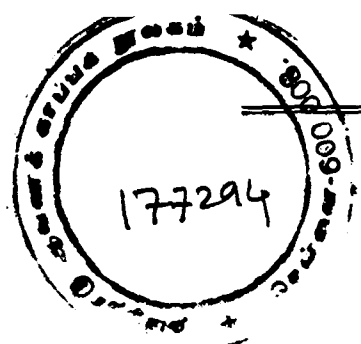
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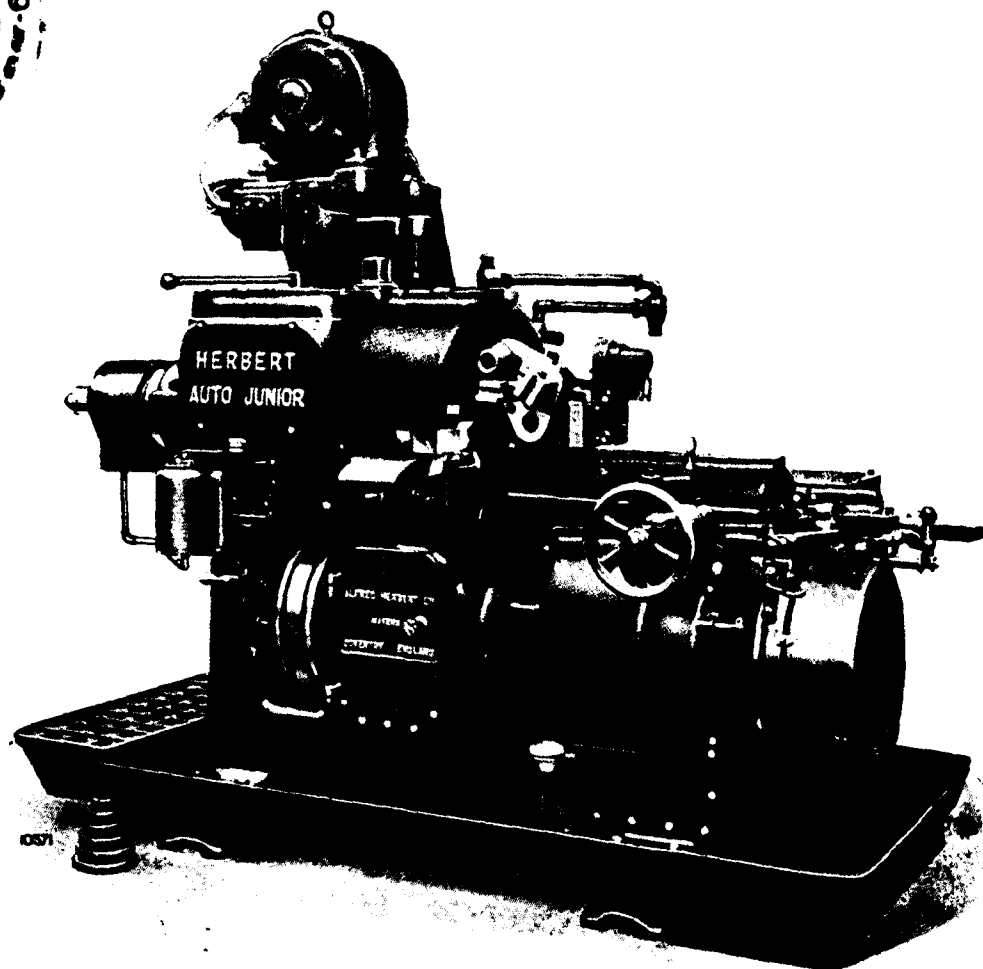
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SOUTHERN RAILWAYS MAGAZINE

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NO. 7

JANUARY

ISSUED
MONTHLY

“Electrification of Calcutta Railways”

EARLY in September 1953 the Ministry of Railways had appointed a team of officers to prepare a detailed survey for the electrification of Railways of the entire industrial belt in Bihar and West Bengal, and including the suburban sections of the Calcutta area. This survey also was to include the Grand Chord line from Howrah to Moghalsarai, the section Howrah to Chakradharpore of the old B. N. Railway, all important branches in the coalfields area carrying heavy coal and mineral traffic, the whole of the suburban area of the Sealdah Division, and the main line of the Eastern Railway between Sitarampur and Jhajha. The survey was to be completed within nine months so that by the middle of the year 1954 the proposals would be available for examination and conclusions reached as to future action to be taken.

Within the last thirty or forty years proposals for the electrification of the Calcutta suburban sections of the old East Indian and Bengal Assam Railways had been considered on a number of occasions, but these early investigations disclosed that electrification could not then be justified financially. These schemes were therefore shelved for an uncertain future.

With the advent of world war II, and an enormous concentration of commerce and industry in and around Calcutta, there was a tremendous influx of population to Calcutta, as well as in the smaller town with a radius of sixty to seventy miles. This resulted in a vast increase in the suburban traffic on Calcutta Railways. In spite of increasing the number of trains run each day in and out of Calcutta within the suburban areas, it has been found that with steam traction the Eastern Railway in the Calcutta area had reached a saturation point. At the present stage the Eastern Railway is running approximately 350 trains daily on the Howrah and Sealdah Divisions and the Khargpur district to move the enormous suburban passenger traffic offering, and yet these suburban trains are running overcrowded.

Apart from the increasing suburban passenger traffic, which steam traction cannot absorb adequately, there are other vital factors involved. The Five-Year Plan has opened up new potential increases in traffic which should follow the growth of industrial and agricultural activity in Bihar and West Bengal, such as the Government's decision to step up the output of the existing iron and steel plants at Jamshedpur and Burnpur, the developments in industrial production which are expected as a result of the completion of the Damodar and Hirakud schemes. With these increased traffic potentials in view the Ministry of Railways has realised

that the Railways must plan well ahead so that when such traffic materialises the Railways will be able not only to move it expeditiously, but be able to accept all the increased traffic offering. Because of the limitations of steam traction in the areas concerned in Bihar and West Bengal, the Ministry of Railways has felt that a major scheme of electrification in this part of the country will provide the solution.

The Ministry of Railways has now gone a step further. At the close of the year 1954, Mr. F. C. Badhwar the Chairman and Mr. P. C. Bhattacharjee, Financial Commissioner of the Railway Board conferred with Dr. B. C. Roy, Chief Minister, West Bengal and representatives of the Damodar Valley Corporation and Calcutta Electric Supply Corporation to consider the capacity of the State Government, the D. V. C. and the Calcutta Electric Supply Corporation to supply power for the electrified rail services to be provided. As a result of this conference it appears that the team of officers who have been undertaking the electrification survey since September 1953, have been directed by the Ministry of Railways to concentrate first on the Calcutta suburban section of the Eastern Railway. This scheme will also take in the proposed circular railway round the city of Calcutta, which is aimed at relieving the present congested condition of the city's internal transport and traffic systems, especially in the business and commercial areas. It is also learnt that the first phase of electrification to be tackled will be the Howrah-Burdwan suburban rail services.

Unfortunately the representatives of the Railway Ministry were not able to give any definite indication as to when the actual work of the electrification scheme would be taken in hand, Mr. Badhwar the Chairman, Railway Board, stating that this aspect of the matter depended on the availability of funds as the total cost of the scheme had not yet been computed.

With the various electrification schemes being mooted and reaching a stage of investigation, and then being shelved on financial grounds on several occasions in the past, an element of doubt may naturally be expected as to whether the present scheme will go beyond the stage of investigation and survey. However, the recent activity in the shape of the appointment of a team of officers, followed up shortly after by top-level talks between representatives of the Railway Ministry and the West Bengal Government are hopeful indications that the schemes of electrification now under investigation will be pursued vigorously until completion, even though it may take three to five years before the first electric train rolls out of Howrah station.

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NOTES AND COMMENTS

SOUTHERN RAILWAY ADMINISTRATION PREPARES INTEGRATED SENIORITY LIST FOR RAILWAYMEN

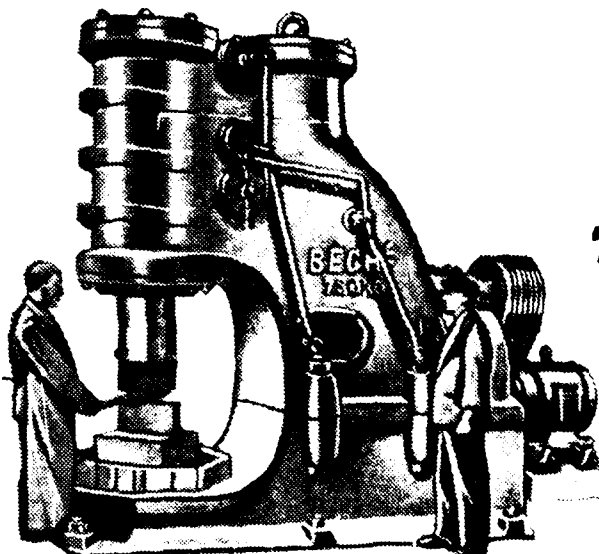
IN pursuance of the Railway Board's orders to General Managers regarding the preparation of integrated seniority list for staff a special Seniority List Office has been opened on the New Year's Day in the newly constructed building of the General Offices. It is in the fitness of things that two of the ablest Personnel Officers Mr. K. Subramoniam and R. Jagannath have been selected for the job which itself is highly complicated and requires hard and sustained work. Those of the staff who knew personally Mr. K. Subramanyam will testify to his utter impartiality coupled with a sympathetic outlook for their welfare. Even though the nature of work in fixing the seniority of nearly one and a quarter lakhs of Railwaymen is no easy job especially when one knows that of the three integrated Railways two major ones were company managed while the other though small had peculiar problems. Mr. Subramoniam has a novel way of tackling the job of fixing the

seniority. He has divided the staff working under him into various squads and fixed them to collect service sheet datas from the original sources. Thereafter they will post these datas into the specially printed cards assigned for each Railway for example green, white or red as the case may be. These postings will then be carried into another set of cards in terms of grades and finally both the officers will sit together and fix the seniority. It is expected that this job will be finished in about three to six months as on this work depends the morale of railwaymen. The following in brief are the Railway Board's original orders regarding the seniority of Railwaymen :—

(1) In grades in which a combined seniority has to be drawn up, the seniority in each grade will be in accordance with the length of service in the grade, both officiating and permanent as on the date of integration.

Note : Fortuitous or short officiating service of less than three months duration will be omitted.

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2. Grade in (1) above denotes the CPC grade and its corresponding grades in the integrating units before the application of the CPC.

3. Seniority will be determined separately for the substantive and officiating grades held on the date of integration.

4. The inter seniority in the several integrating units will not be disturbed.

Note : An exception will have to be made in the case of Railways in which the basic seniority has been determined on a fundamentally different basis like, for instance, the date of confirmation.

Every one realises the magnitude of the problems involved especially clerical staff of the general offices where



Mr. H. C. Towers.

Suburban Section. During his tenure of office he effected several improvements in the signalling system by his original research work in this branch. Two years later he was posted to Ajmer on the metre gauge system as Signal Engineer and in January 1947 he was promoted to the rank of a Deputy. On the formation of Western Railway in November 1951, he was promoted as the Chief Signal & Telecommunication Engineer of the Western Railway with Headquarters at Bombay.

In the course of his twenty-eight-year service with the Indian Railways Mr. Towers was connected with several technical improvements and innovations in the signalling and communication branches of the Railways and these were possible wholly through his indefatigable efforts and research activities. He took keen interest in the development of colour light signals and continuous track circuits between Parel and Mahim and at stations between Borivli and Virar on the Bombay Suburban section while he was in charge of the Installation Work. While at Ajmer as Signal Engineer he introduced a new method of keeping up the life of porous pots of batteries as these could not be obtained during World War II and thus kept up vital communication circuits in operation during the critical years.

He was also responsible for the introduction of a system of last Vehicle detectors for Goods trains to augment the capacity of Block sections on the metre gauge main line where there were several restrictions owing to gradients.

Mr. Towers was entirely responsible for, and credit goes to him for his original ideas in this respect, the installation of the first power-operated Lifting Barrier Gates for Level Crossings at Santa Cruz, a very busy Crossing leading to the International Air Port and this enabled movement of rail and vehicular traffic uninterruptedly.

Fifty-two-year old, handsome, tall Towers is a man of genial temperament and has so much endeared himself to one and all with whom he came into contact. He is a Freemason holding senior rank in the District Grand Lodge and District Grand Chapter of Bombay.

As early as 1942 Mr. Towers founded the Metre Gauge Signal Sports Club at Ajmer for the benefit of the Staff with whom he mixed freely. In 1947 he founded a similar club for the Broad Gauge.

The credit for the existence of the Bombay Railway & Signal Telecommunication Society also goes to him and of which he was the Chairman from 1950. Mr. Towers was also Chairman of the Western India Section of the Institution of Railway Signal Engineers and a member of several committees not connected with his profession.

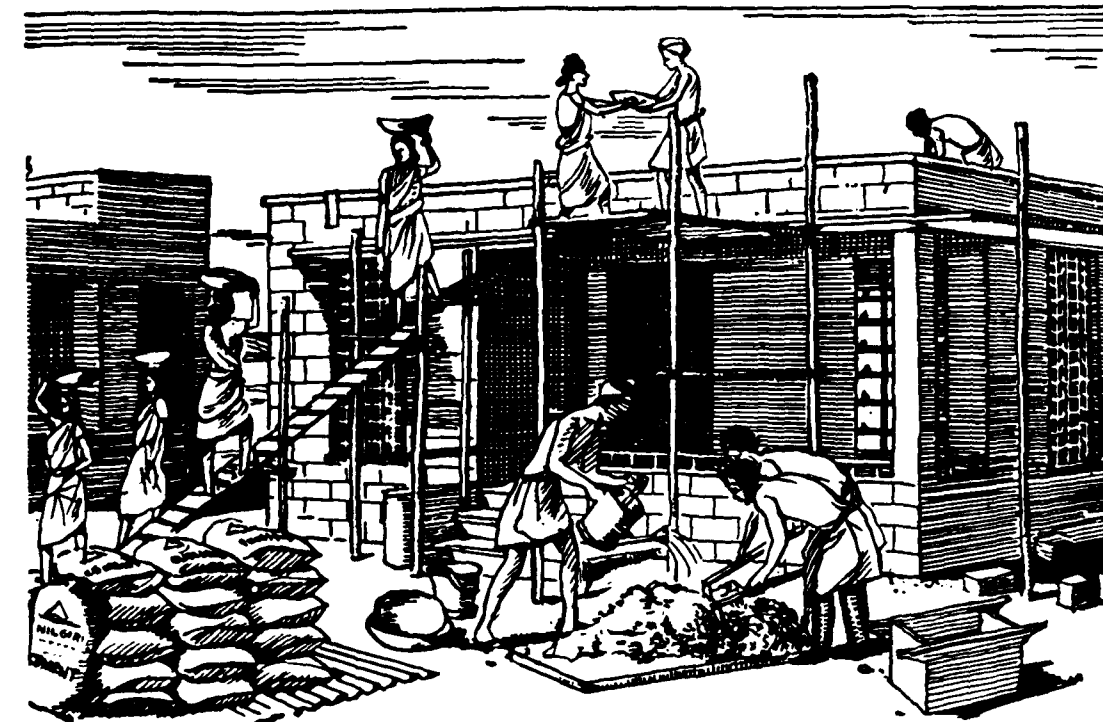
As a technical journalist of repute, Mr. Towers had made remarkable contributions to Indian technical journalism. On his retirement the Western Railway has lost an eminent Engineer.

Mr. and Mrs. Towers sailed home by s. s. "STRATHMORE" early this month, and were seen off by a large circle of friends. We take this opportunity of wishing them a bon voyage and all happiness and prosperity in their retired life.

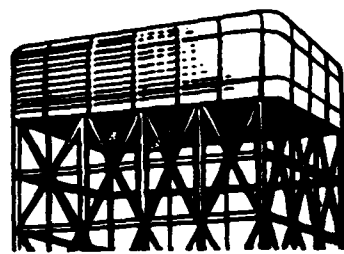
RAILWAYMEN CELEBRATE NEW YEAR'S DAY IN LORD MURUGA'S TEMPLE AT VADAPALANI

On the first of January 1954, hundreds of Railwaymen of all ranks from the General Offices of the Southern Railway assembled in the precincts of the famous Palani Andavar temple at Vadapalani to celebrate the New Year's day and pay their humble homage to the Lord. The temple is situated in ideal village surroundings at Vadapalani which can be reached by five to ten minutes travel by the city bus service from the Kodambakkam railway station on the Madras Electric Suburban

(Continued on page 51)



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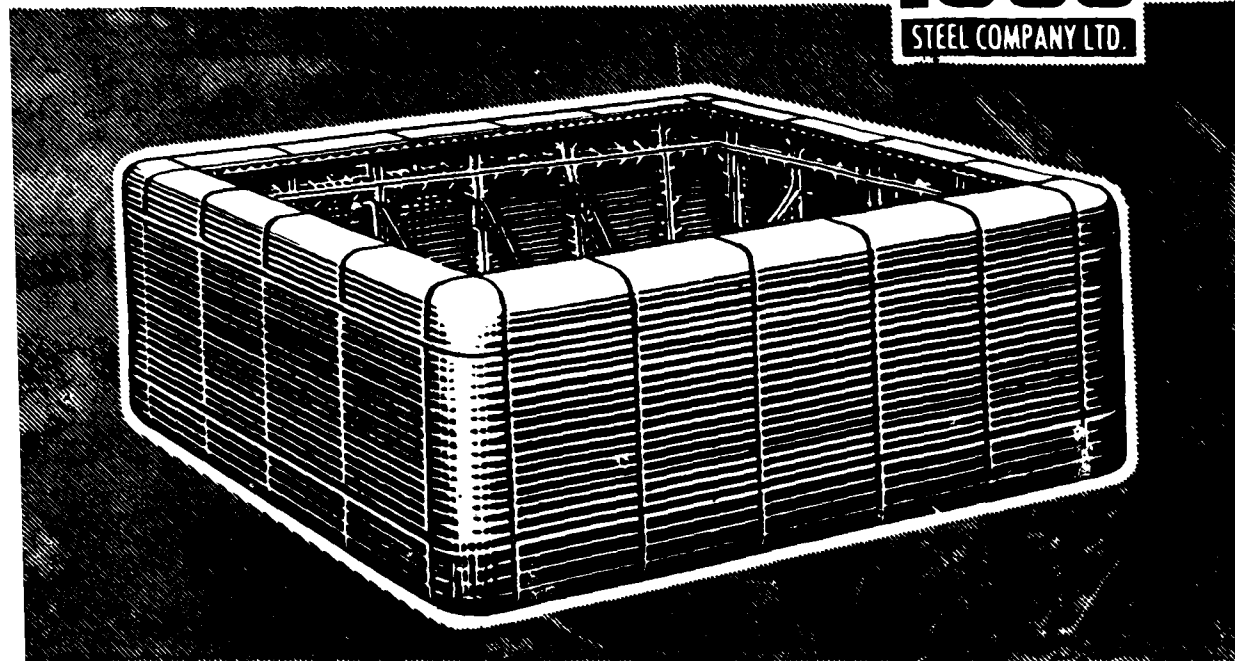
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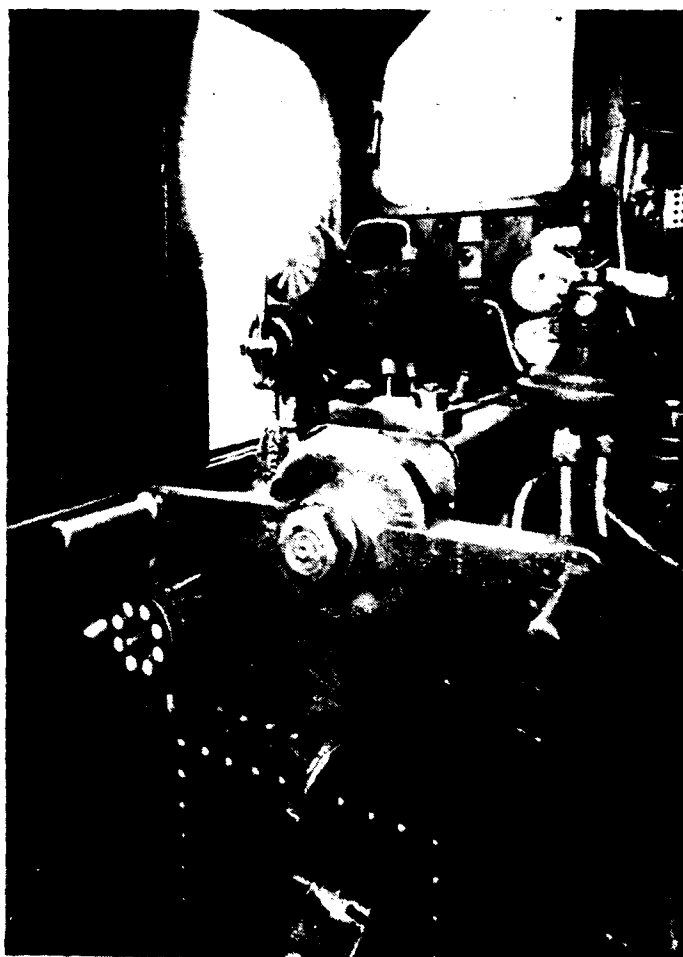


ON October 8, 1952, one of the worst accidents in the history of British Railways occurred at Harrow when a triple train collision caused a very heavy death toll. Ever since the war the British Railways have given considerable attention to the proposal for an all round extension of automatic train control and its installation on the main line routes of the railways of the U. K. The term 'automatic train control' is sometimes not properly understood and a brief description of what it actually means is necessary.

Automatic train control is a system of appliances working in conjunction with fixed signals located alongside the railway line so that in the event of a driver failing to observe a danger or caution signal, a warning is given in the engine cab and the brakes are applied. The science of railway signalling has now advanced to such a stage that the possibility of a false "clear" indication or a signal giving an imperfect indication has been reduced to a minimum. Nevertheless, many serious accidents have occurred through drivers missing danger signals because of distraction, fog, snow, or some other cause. The boiler contributes towards the driver's difficulties particularly in modern steam engines by reasons of its large size, which narrows his view of the line ahead. With an electric train or locomotive there is no such drawback, a perfect view of the track being afforded in most cases.

Laity have suggested that if a faultless system of automatic train control could be devised fixed signals could be dispensed with. There are several objections, however, to such a proposal. For example, it is essential that drivers should always be on the alert and if signals were scrapped their vigilance would tend to be diminished. Again, some indication is necessary to mark entrances to block sections while signals are also required for shunt movements and to provide the necessary interlocking for points and crossovers. The ideal system combines fixed signals with a warning on the engine and perhaps an automatic brake application.

The idea of giving a warning to drivers on passing adverse signals is not a new one. As long ago as 1840, there were patents for apparatus claimed to be able to stop trains if they passed signals. One of that year, by Pettit Robert, provided an arrangement whereby a pointsman working a lever caused an arm to strike a moving member



View on locomotive showing upper left indicator and cancelling lever. Hudd inductive system.

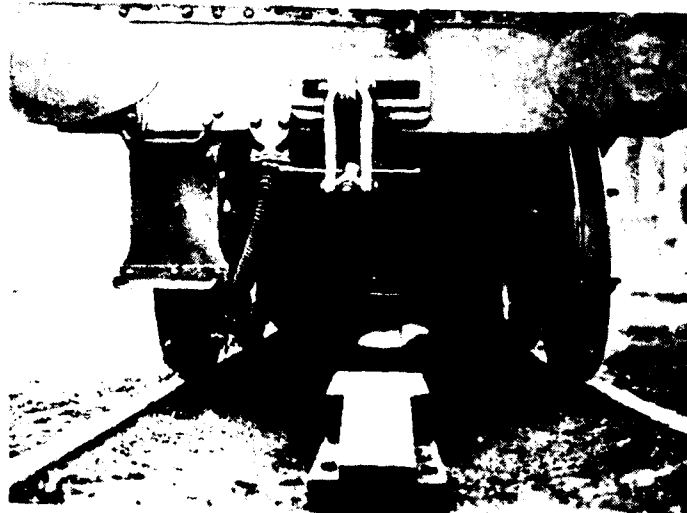
collected current and operated the electro-magnet. This system was introduced on the French Nord in 1872.

The chief disadvantage of all these systems, even up to the present time, is the number of moving parts involved. Delicate apparatus has also often been suggested which would be unsuitable for use under the strenuous conditions of the foot-plate. For this reason automatic train control is not used to any great extent, but there is a noteworthy installation on the Great Western Railway (now Western Region, British Railways). This system, devised by Jacobs, Insell and Bowden, all officials of the G. W. R., has been in use since 1906. To understand it some reference must first be made to the meaning of the distant signal. This signal is the first encountered when approaching a station. It has a fish-tailed arm and when at "caution" tells the driver that the next stop signal ahead, or perhaps the one after it, is at danger and that he must reduce speed and be prepared to stop. The usual distance between a distant signal and the first stop signal is about 880 yards,

though in these days of high speed running in many instances the interval has been increased to 1,000 yards.

The great Western system uses a metal ramp of from 40 ft. to 60 ft. in length fixed in the middle of the track. This ramp is electrically connected to the distant signal lever in the signal cabin and is energised when the signal is "off". On the engine is a contact shoe which controls normally made contacts, while a local circuit governs a relay working the steam whistle and vacuum brake. If the engine passes over a ramp which is not energised (distant signal at "caution") the contact shoe, through coming in contact with the ramp, is raised, thereby breaking its contacts and dropping the controlling relay. The whistle is sounded and brakes applied. If however, the ramp is energised, on the shoe making contact the circuit goes through a polarised relay which rings an electric bell on the engine and also prevents the controlling relay from dropping, though the contact shoe has been raised. An installation was brought into use on January 1st, 1906, on the Henley branch (double line) and the Fairford Branch (single line). In 1908 the experiment was extended to all four tracks between Slough and Reading and as far as Paddington in 1912. In this year full brake action was added only audible warning being in use in the previous experiments. Today many thousands of miles of Western Region main line are equipped with this system.

The Hudd system (though now considerably modified from Hudd's original ideas) now installed on sections of the London, Midland and Scottish Railway (principally on the London-Southend section) (now called the Eastern Region, British Railways) does not use any moving apparatus on the locomotive but operates on the inductive principle. Two inductors are placed between



View showing locomotive receiver close to track inductor.

the running rails, about 20 yards apart and about 200 yards outside the distant signal

SIGNALLING AND INTERLOCKING

By H. C. Towers, M. I. E. E., M. I. R. S. E., M. Inst. T.

Chapter 13. Level Crossings

WHENEVER a railway and a road bisect each other this has to be done by means of an overbridge, an under-bridge, or a level crossing. The first two methods being the most expensive this is only resorted to where there is exceptionally heavy road and rail traffic. Level crossing gates are signalled and interlocked if the density of road and rail traffic warrants it or the rail approach to the level crossing is on a curve or in a cutting which would prevent an adequate view of both rail and road traffic with respect to each other.

The method of interlocking level crossings which lie in station limits varies according to position. If the crossing is quite close to the cabin it is possible to operate the gates from the cabin. In Great Britain, a winch is used to work the gates and an interlock lever in the lever frame to interlock then with the signals. The winch usually takes the form of a handle which turns a worm and screw which moves a lever connected to rodding to work the gate wings through cranks. When the gates are closed, a lever in the frame is pulled, or put back normal and this bolts the gates shut. Levers working signals reading over the level crossing are then free to be pulled. On the Continent of Europe and many other countries, gates of the lifting barrier type are in use. These are often worked from a winch in the signal box by the double wire method. They are also worked by electric motors termed gate machines. In Great Britain gates are used almost exclusively except for one lifting barrier installation which has only recently been installed. This barrier is worked manually from the signal box. Great Britain has only two examples of power operated gates and these are worked by oil pump motors electrically controlled working in conjunction with colour light signals for street traffic.

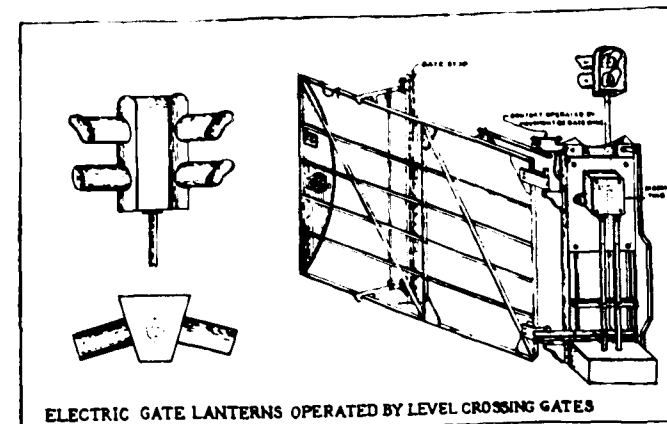
In many overseas countries gates quite close to signal boxes are closed by gatemen. The gate wings are fitted with Annetts locks, one key being secured to the gate post of adjacent wing. When the gates are closed, the shackled key is inserted and turned in the Annetts lock on the gate. This releases the key at the other side. One key from each pair of wings goes into another lock fixed on a post alongside. This lock has a slide going through it operated by a vertical crank attached to a rod going to the signal box. When the keys are inserted

and turned in the lock the slide is released and the signalman can then operate the lever working the rod. This replaced normal (it is reversed to release the gates) releases the signal levers working signals reading over the level crossing. If the crossing is quite close to the cabin the signalman can usually tell the gateman when to close the gates by calling out to him or ringing the cabin bell. If, however, the distance is too great communication is usually effected by electric bell or telephone.

If an interlocked level crossing is positioned between the Home and Outer Signals, although the method of locking the gates remains the same there are several ways in which it can be interlocked with the signal cabin. One method is for the gate interlocking lever in the signal cabin to have an Annetts lock fitted to it the key of which comes out in the reversed position. This is



Two aspect electric gate lamps worked by contacts on gates.



repeated in the gate hut. This requires the attendant to have a knowledge of the bell code. The system may be suitable for double lines since the gates have got to be closed for a train irrespective of from which direction it is approaching. On single lines the single stroke bell does not give any indication from which direction trains are coming and something more modern is necessary.

The most positive method for warning level crossings is by track circuit and these need only be a few rail lengths in extent. When the track becomes occupied it operates a device known as a stick relay located at the gate hut. This relay remains energised after the track circuit ceases to be occupied by a stick circuit which passes over contacts on the normal position of the gate signal levers. When the relay is energised it starts an electric bell ringing and this continues to ring until the gates are shut and locked and the appropriate gate signals pulled off. The same effect can also be produced by electric treadles but a track circuit is a simpler proposition. On single lines the same circuits are used and short track circuits are located each side of the level crossing usually about one mile from it depending on circumstance. It is necessary to ensure that the bell will only operate for trains approaching the

level crossing and not by trains which have passed the crossing and are occupying the track circuit on the furthestmost side. This is accomplished by interlocked track circuits so that the bell operates by trains approaching the level crossing but not by trains going away from it. Electrical indicators in the gate hut inform the attendant from which direction the train is approaching.

It has already been stated that in Great Britain the gates close across the railway and the road. The gate lamps indicate red to rail traffic when closed across the tracks and white to road traffic and vice versa when closed to road traffic. In India and some other countries the gates close across the road and open away from the line and parallel with the road. Present regulations do not permit any light to be shown to rail traffic, the red and white lights being displayed to the road exclusively. This means that special cowlings arrangements have to be made to screen the lamps and this is by no means easy when the road crosses the railway at an acute angle or the approaches are at different angles to each other with respect to the track.

To overcome this difficulty and also to provide a better indication, the author designed for his railway a

special electric gate lantern. This was for a level crossing where the road approaches at an angle of 60° to the permanent way on one side and approximately 45° on the other. The double faced gate lanterns are constructed of 1/8" sheet iron. The red and white lenses are standard signal items 5" in diameter secured to the lamp case with M. S. rings and gaskets. The angle of the lens, with respect to each other, was calculated at site with signal sighting tube and protractor. The electric bulbs are 12 Volt 24 Watt double filament of the same type used in light signals.

The aspects are controlled by special contacts secured to the gate post. This contact is fitted with a slotted arm and pin fixed to the edge of the gate and work in the same manner as a signal arm commutator. The red aspect is controlled by a long contact and the white aspect by a short contact. *All gate wings have to be correctly opened and secured in their stops before a white aspect can be displayed. If only one wing is incorrectly opened and just touching the gate stop, but not secured, both red lights will be exhibited.*

A 220 volt AC supply is obtained from a Cantonment lighting post near the level crossing. The service box houses a 220 Volt 12 Volt step down transformer and the fuses. Armoured signalling cable takes the supply from the box to the four gate contacts. A switch is provided near the gate lodge to cut the lamps out during the hours of daylight. The oil lamps and mechanical cowlings arrangements have been retained in order to cover a temporary supply failure or a blown fuse, the lamps being stored in the gate lodge until they are required.

In countries where the population has a greater road sense gates are usually dispensed with. On the Continent of Europe, in certain Commonwealth

Residential Accommodation for Railway Community

By W. White

THE urge to Railwaymen for harder work, maintenance of discipline, courtesy towards the travelling public and a call on officers by the Prime Minister of India early in November last in New Delhi for a change of outlook in the methods of work adopted by them, particularly in dealing with the public and the staff in order to satisfy the needs of a progressive Democracy and to develop the *esprit de corps* between officers and other ranks are very welcome and *sine qua non* for the efficient working of the Railways. There is no doubt that every one in the Railway Services—Officers, Supervisory staff, clerical staff and particularly those members of the Railway Community connected with the transportation working of Railways are the chief agents to contribute largely towards the progress and prosperity of the Nation by tackling the difficult spots of congestion and bottlenecks. In the words of our Prime Minister—

“India could not hope to progress unless she kept pace with scientific development elsewhere in the world and learnt quickly to use that knowledge in the manufacture of plant, machinery and tools within the country. Self sufficiency would solve India's internal economic problems, eradicate unemployment and give the country strength. Dependence in these matters on outsiders was a sign of weakness. India's efforts should be directed towards the manufacture of all important Railway equipment, particularly locomotives, coaches and wagons within the country itself”.

All these are sayings of the wise men and we, the Railway Community, are bound to rise to the occasion, have done so since the Partition or Independence of the Country and are determined to do more as required of us.

Something is also required to be said about the housing problems of Railwaymen. A Conference of the General Managers of Indian Railways held in the Railway Board's Office early in November 1953 also discussed in some detail the general question of quarters for Railway staff, their type designs, etc. The Railways in India are the largest employers of labour in the country. About 9½ lakhs of employees are estimated to be on the pay rolls of the Railways in 1952. Railway Construction in India was started by the rulers of India with strategic outlook but the Companies incorporated in England who were encouraged by the authority in power to provide funds for the Construction of Railways

in the early stages invested money with commercial background and were averse to block large sums of money for such unremunerative items of Railway Construction as quarters for the Railway staff. The early builders of the railways in India had only one idea in this respect; that was to build quarters to the bare minimum, and that too to the cheapest design for different categories of very “essential” staff. Although climatic conditions were also considerations for evolving the type designs of Railway Staff Quarters yet the “ADEQUATE RETURN” on capital invested was their main object. And therefore the India have different kinds of dwellings. At large junction stations, as well as on the wayside stations where private accommodation is not procurable to any appreciable extent it is very necessary that housing should be provided by the Railway for its employees.

In 1944 the Railways could provide quarters to their staff only to about 40 per cent of their permanent servants. During the recent years the conditions in the country have completely changed due to the partition of the Country and the colossal increase in the prices of building materials. During the World War II and thereafter the cost of living rose to three or four times of what it was pre war. Houses at reasonable rent are no more available to the Railway Community in general and particularly so in big cities and towns—the main centres of employment. The displaced employees from Pakistan areas are forced to keep their families with them at their place of work. The Railway employee in general cannot think of building a house in these days of soaring prices. It is for these reasons that the Railway Employee, permanent or temporary, essential or non-essential, officer or subordinate, looks forward to the employers (the Railways) for residential accommodation at reasonable rent. After food the most important requirement of a man—Railwayman or otherwise—is to have a shelter. Food and housing at reasonable cost solves the most important problems of a Railway employee, or say a human being, and result in efficient work of Human machine and consequently the Railways.

In consideration of the above facts the Railway Board have not lagged behind and are stated to have given full consideration to this matter. As a result of the discussions in early November the Board are understood to have issued instructions to the Railways indicating the general scales of accommodation, ranges of costs

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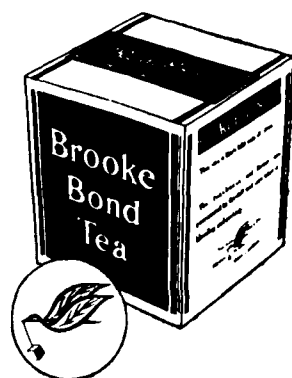


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SOUTHERN RAILWAYS MAGAZINE

25

THE "EPPING AUTO-SHUNTER"

POWERED by a well-known diesel industrial tractor engine giving 42 BHP at 1700 r. p. m., the "Epping Auto-Shunter" is designed to move

loads of up to 150 tons on straight level rail. For this purpose particular attention has been paid to correct weight distribution as well as to the design of the front



(Continued from page 23)

home is 914 Sq. Ft., 1076 Sq. Ft. and 1292 Sq. Ft. respectively.

Dieselization, extension of electrification, use of more powerful steam locomotives and up-to-date scientific methods of operation have enabled the S. N. C. F. to retrench the staff in 1952 by 14,000 hands to 415,800 hands for a railway with a total mileage of 24,000. The incubus of inflation was a dead weight to the improvement of the fiscal position of the S. N. C. F. The year 1952 closed with a deficit of £ 93 million or 17% of the

total expenditure which according to the French transport Experts, is the inevitable consequences of a relative cheap transport in the face of spiral of inflation. But the Govt. subsidy of 12½% of the total operating costs has scaled down the deficit to £30 million or 5.8% of the total expenditure as against a deficit of Fr 98,000,000 million in 1951 and this shows to quote the exact words of the Director General of S. N. C. F. that "apart from the burden of charges—there was efficiency in management within the limits of statutory charges and restricted capital expenditure".

Materials obtained from divers numbers of Railway Gazette 1953.

axle assembly since it is felt that if a machine of this type is to be 100% effective, it must also be capable of crossing over rails and points.

Although it is true to say that shunting by means of pneumatic-tyred tractors is by no means new, the recent march of mechanical handling progress within the factory has tended also to focus attention on the dock or factory siding with the result that the advantages of employing the more effective modern version of the Shunting Tractor are becoming more widely recognised.

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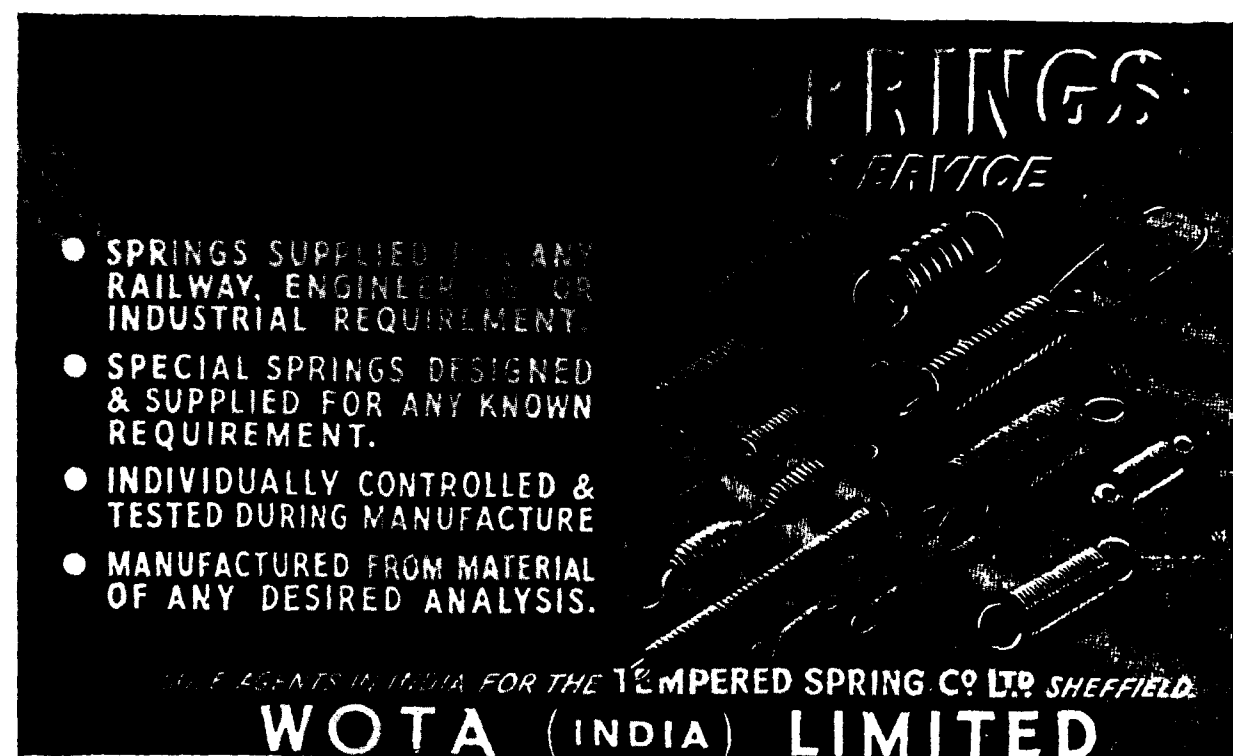
More specifically, these advantages can be summarised as follows:—

Freedom of Movement: Being quite independent of the rail yet at the same time able to cross over the track, the "Epping Auto-Shunter" can be immediately positioned for work whenever and wherever the need arises.

Versatility: In addition to normal shunting or towing operations of rail-borne traffic, this machine can of course be pressed into service as an ordinary industrial tractor the immediate availability of which must always be invaluable on the dockside or in any goods yard.

Economy of Operation and Ownership: After taking Initial and annual Wear and Tear allowances into account the Capital Cost of the machine in the U. K. represents no more than a weekly outgoing of between £2 or £3 depending of course upon the period of depreciation. Whilst on the Operating Cost side approximately five shillings per hour should suffice to cover the cost of fuel and the drivers wage, as well as provide for regular maintenance and ultimate engine and tyre replacement.

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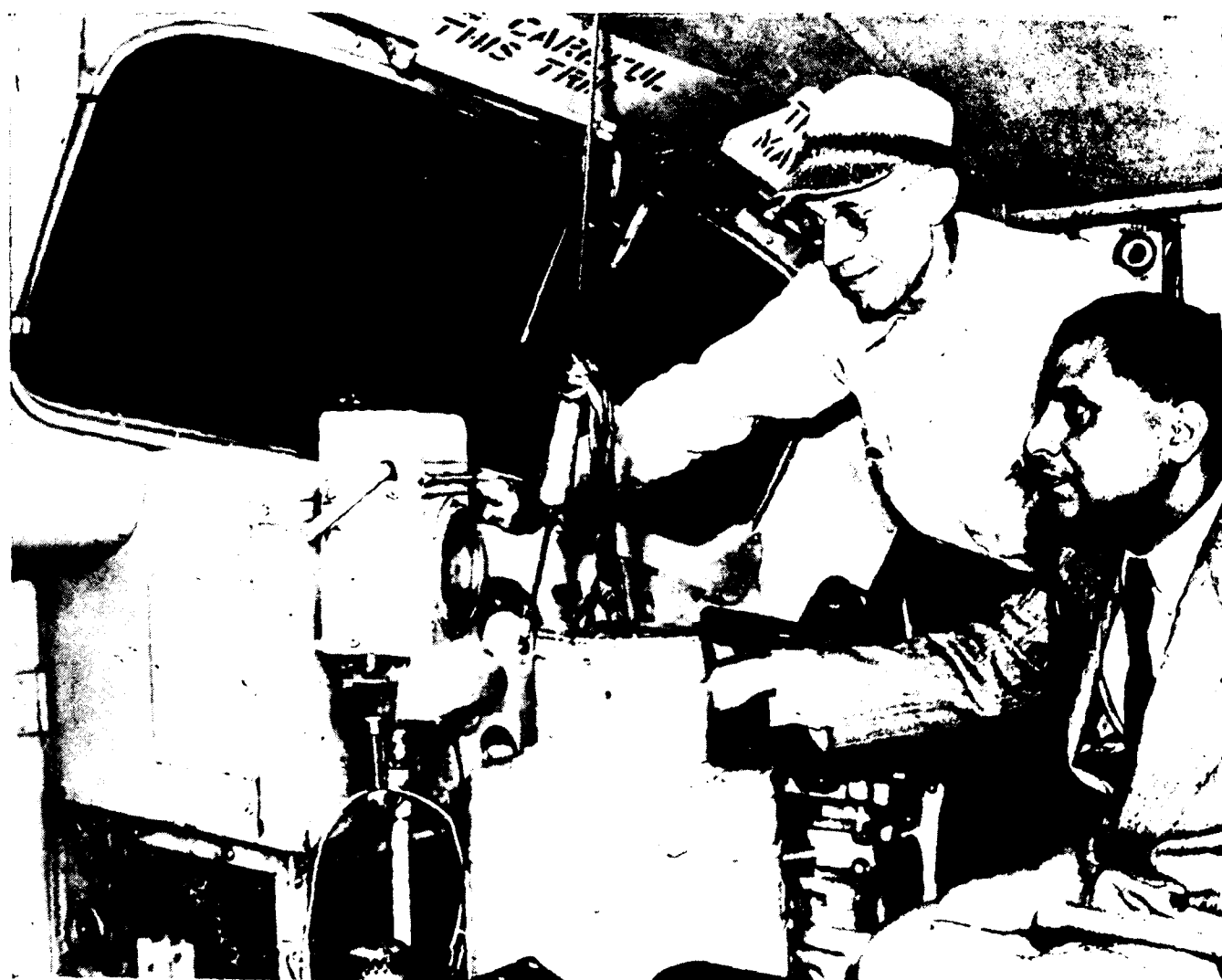
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Several railroad engineers and officials from India have visited the United States in recent years to study American railroad techniques. Here, Krishna Swarup of Lucknow examines the controls of a Diesel locomotive under the direction of William L. Irby, a U.S. railroad engineer.

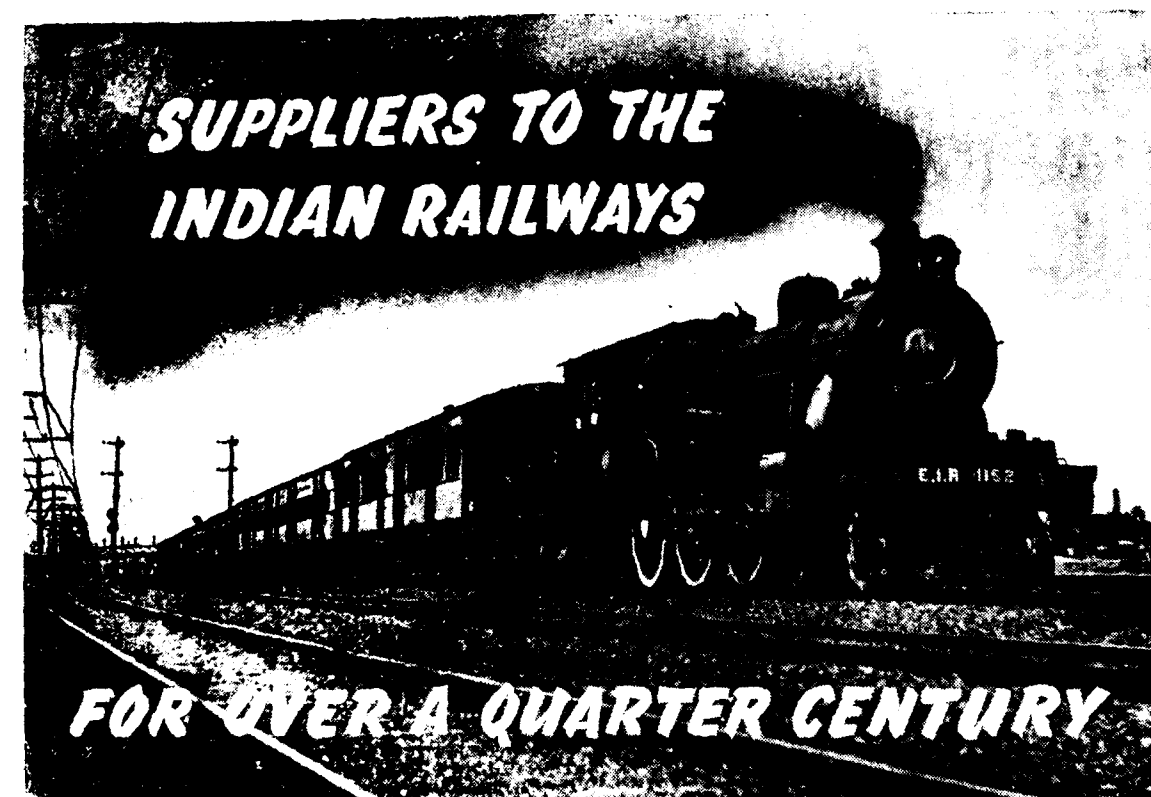
The U. S. railroads are owned and operated by nearly 700 companies, employing more than 1,237,000 workers. The system comprises more than 225,000 miles of track, some 43,000 locomotives of all types, and nearly 2,000,000 passenger and freight cars.

There are four kinds of locomotives in use on the U. S. railways—steam, Diesel, electric and Diesel-electric. The Diesel-electric, widely used in the United States, but not yet introduced in India, is essentially an electric locomotive which supplies its own power instead of drawing it from a central generating station.

There are also several kinds of passenger cars. They include coaches and sleeping, parlour, dining, club,

lounge and observation cars. Equipment in a typical U. S. passenger car includes tight-lock couplers helping to provide smooth starts and stops, rubber insulation to serve as a buffer against transmission of noise and vibration, fluorescent lighting, running water, and telephone service. Some trains are also equipped with radios. A recent innovation is the all-aluminium train. Lighter than other trains its cars are low. Another type of car has a dome which permits passengers to sit up high whence they can see in all directions.

An important aspect of the American railways is the unceasing drive to improve equipment and operating practices. In this, managements, labour unions, equipment manufacturers and research organisations are partners.



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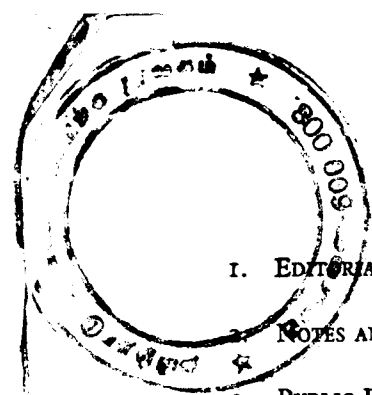


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Editorial Notice

The Editor invites contributions to the Magazine on a variety of topics—short stories, technical features written in simple English understandable to the laymen, Aspects of Railway Working, places of tourist interest, News from home line, activities of Railway Institutes etc. All copy should be brief and typed as far as possible.

Photographs illustrating social functions, sports events, scenic spots etc. are also invited. All contributions should reach the Editor not later than 5th of each month. Rejected Mss. will be returned provided sufficient stamps for postage are enclosed. No responsibility 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 (South India)".



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