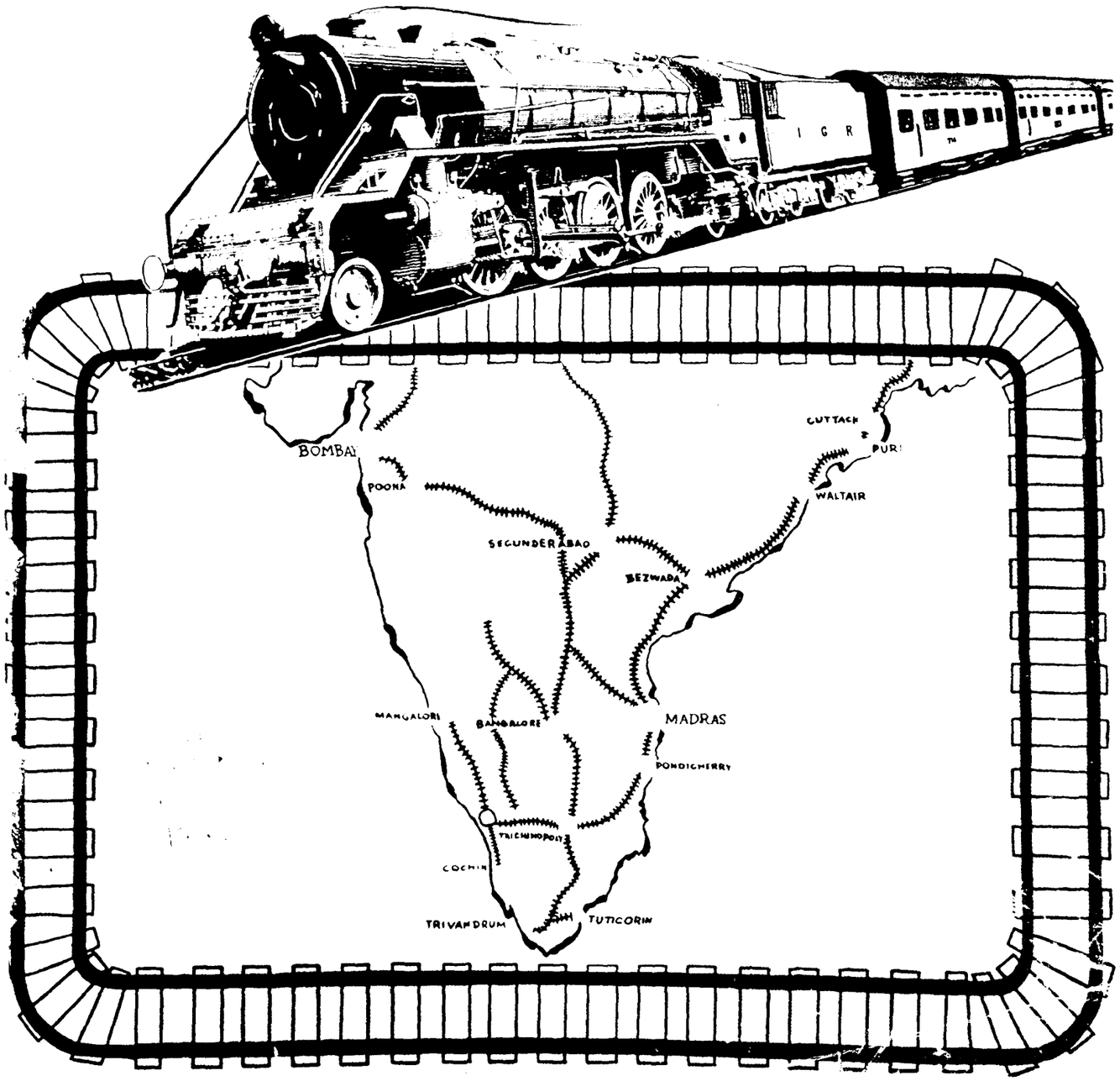
SOUTHERN RAILWAYS *Magazine*



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SOUTHERN RAILWAY

JULY - 1952

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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 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).

enquiries made into these accidents must have disclosed what exactly went wrong, and the authorities concerned are no doubt tackling the situation realistically.

It is comforting to note that as a result of the enquiries into these accidents the Railway Ministry is understood to have asked General Managers of all Railways to 'renew their drive against disregard of rules governing train running and slackness on the part of the staff.' This renewal of effort is timely, as three years ago, after a series of major rail disasters involving the loss of human lives the Railway Board had launched a special drive to eliminate as far as possible all factors which could lead to accidents. When railways function for a period of years without mishaps of a grave nature occurring, the credit should be given to the authorities and the railwaymen for their efficiency, but because of a good 'accident-free' record, a state of complacency might creep in amongst officers and staff, which may ultimately result an increase of slackness on the part of the staff.

Because the recent accidents have occurred within the short period of less than a month, it would not be quite fair on the part of the public to think that slackness amongst railway personnel engaged in the operation of trains has reached a dangerous stage; however, the very nature of the recent accidents should be taken as a timely warning for railway administrations not only to launch another drive to improved efficiency and a stricter observance of the prescribed rules, but to impress on Operating Officers, supervisors and staff the necessity of constant alertness and vigilance in the factors governing the safe operation of trains.

SOUTHERN RAILWAYS MAGAZINE

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"Focus on Accidents"

THE spotlight is once again on rail disasters. In less than four weeks from the middle of June this year there have been four serial rail disasters. On June 14 there was a head-on collision about 193 miles from Madras on the Dharmavaram—Pakala section of the metre-gauge line of the Southern Railway involving a mixed train and a goods train. In this accident 50 were killed and 70 injured. Again on June 16 there was another head-on collision between No. 422 parcels mixed train and a goods train which occurred between Semapol and Katihar on the North-Eastern Railway. The casualties were 5 killed and 50 injured. This was closely followed by yet another accident on June 17, when the Madras-Bangalore passenger hit the rear of a stationary goods train at Marubalam on the Southern Railway, as a result of which six passengers were injured. On July 9 another accident was reported. An engine, a water tank, a second class and three third class bogies of the Somnath mail jumped the rails near Vadaj, about five miles from Ahmedabad on the metre-gauge section of the Western Railway. No loss of life was reported, but up to the time of writing the number of injured if any is not known.

Apart from the accident that occurred on July 9 on the Western Railway, the railway authorities have attributed the two accidents on the Southern and one on the North-Eastern Railway to 'failure of the human element'. The fourth accident according to the few details reported is stated to have been caused by the removal of fishplates from the rails between Sabarmati and Ellis Bridge station on the Dhandhuka-Ahmedabad metre-gauge line.

The term 'failure of the human element' is rather mild and vague. The railway authorities claim that the rules framed for the safe working of trains are 'foolproof'. Even in an emergency when normal communications are interrupted by the failure of block instruments, telegraph wires, and other related apparatus, the possibility of a collision between two trains is very, very remote if the prescribed rules are strictly observed.

Conceding the infallibility of the prescribed rules and systems of train working, the obvious and reasonable inference is that accidents like head-on and rear collisions must perforce be the result of the railway staff concerned taking risks, disregarding the prescribed rules through negligence, carelessness or ignorance, and perhaps losing their heads in a crisis.

Except for the accident on the Western Railway, the other three occurring within a week both in the South and the North-Eastern zones, leads one to think that the errors of ommission and commission on the part of railwaymen responsible for the operation of trains may be the result of some serious defect in the abilities of the men. The details of the

Notes and Comments

AIRF RATIFIES AMALGAMATION WITH INRWF

THE convention of the AIRF which met at Mysore on 26-6-'53 was a momentous one in the history of the Railway Staff Unions in India. The decision already taken by the two working committees of the AIRF and INRWF to amalgamate was ratified at the convention which was attended by over 300 delegates from all parts of India representing twentyfive affiliated unions. Once again the convention voted confidence in Shri S. Gurusamy, the General Secretary of the AIRF and the General Secretary of the amalgamated Federation, who has done some valuable service to the cause of railwaymen.

SHRI GURUSAMY'S ADDRESS

"Twentyeight years ago, I was one of those who laid the foundation of this Federation and these years were eventful. Today we are taking a decision which vitally affects that Federation built up in twentyeight years. Three years ago we celebrated the Silver Jubilee of the Federation and we looked forward to celebrate the Golden Jubilee. Things, however, have taken shape in a different direction. In June 1950 we met in Nagpur and a few days later the Korean war broke out. It affected not only price levels and cost of living but also threatened world security. We were on the brink of a third world war. That affected the railwaymen also. By the end of June 1950 the Joint Advisory Committee concluded its labour. We were faced with various and complex problems.

The integration of the former State Railways with the Indian Government Railways and the report of the Equation Committee brought in new problems. The integration of the Railways caused more worries. There was agitation against this integration and there was even a stoppage of work at Calcutta on this account, as the integration was not decided on a sound basis either from the Worker's, Administrative, or public interest, but was influenced by political consideration.

The Bombay General Council of the Federation demanded implementation of the CPC recommendation for grant of Dearness allowance and the favourable recommendations of the Joint Advisory Committee and removal of the anomalies of the pay structure. The railways were indifferent. They spurred our demand. Nonetheless we met them thrice and placed our case. These were of no use and so we gave an ultimatum and asked for the appointment of a tribunal to adjudicate on the points of dispute. Having no response, the General Council at Karagpur called for a strike ballot.

As a reply to this decision, the Government of India promulgated an ordinance, the first of its kind in history, prohibiting strikes on essential services specially the Railways. We appealed to international public opinion against this denial of fundamental Trade Union rights and the matter was taken to the ILO and the International Transport Workers Federation. We believe our demands are just. The railwaymen rallied round the Federation. Just then came a change in the national and international atmosphere. Relationship with Pakistan became strained. Hostilities were apprehended any time. Railwaymen on the frontier had special security duties and responsibilities. Correspondence transpired, in view of the changed situation, between Shri Jayaprakash Narayan and Pandit Nehru. A new negotiating machinery was decided upon. There were meetings between the Railway Board and the Federation. The Government agreed to appoint a tribunal with Justice Sankar Saran presiding.

Other Trade Unions, in the good books of the Government did not cooperate with us. But on the other hand claimed credit for any results obtained. For example, it was I on 25-1-'51 at Calcutta

HOW DO I LOOK?

Railway Staff should endeavour to have a high esteem in the eyes of the public.

demanded complete merger of Dearness allowance with pay. But now others claim to have done it.

The first historic step towards a common form of action, was an approach to the rival hostile federation, to agree to put forward a minimum demand on behalf of the workers.

The Dearness allowance commission is guilty of many omissions and not only that, they did positive injustice to railwaymen. They went out of the way to comment on wages and, as a result of its recommendations, there would be a reduction of emoluments for many employees. Today we are in a new situation. A pioneer plan, prepared by the Government of India, the Five Year Plan envisages a wage freeze. Wage increase was possible only as a result of increased production or retrenchment or to remove an anamoly during the plan period which is really a twenty year plan.

In 1951, the Industrial Relations Bill was introduced and as a result of hue and cry from the Labour ranks this bill was withdrawn. That was victory number one. Now a new labour policy has been declared by the present Labour Minister Shri V. V. Giri, a former General Secretary of the AIRF. We must be cognisant of one unhappy development. Instead of the Government being a model employer, the Government Industrial departments want to be autonomous and autocratic employers. They do not want the Labour Minister to interfere in their labour problems. The Railway Minister resents it, the Defence Minister detests it and the Postal and Telegraph Communication Minister protests against it. They want the Labour Minister to go about preaching to private employers and lecturing on labour platforms.

For the satisfaction of some of our demands a tribunal will be appointed in about two weeks. One of the heart burning problems was the weightage for service. It was only the AIRF that has been successively fighting for justice to these men. Together with the INRWF, we have placed our demands which may be classified into three categories viz. (1) Fundamental issues requiring revision of pay structure to which no response is forthcoming from the Government. (2) Merger of Dearness Allowance with pay which is partially met by the Government (3) Weightage for service although partially met is disheartening. Although the Government tried to give some relief, by the time the pittance of relief reaches the man affected, he is either retired or dead. On the question of weightage I am in a position to state there may be further investigation of this problem.

As regards Seniority and Promotion, Draft rules are under preparation and these will be discussed with the AIRF. The most important phase before the tribunal is the question of distribution of posts in the various grades and the running staff pay and allowances. In terms of their policy with regard to Five-year plan the Government is averse to a general revision of pay scales, and any immediate relief should, therefore, be sought through a larger percentage of posts on higher grades.

Announcement

We have pleasure in announcing 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 1954. For the first time in the history of Indian Railways such a splendid Supplement is being published by us.

EDITOR.

As regards the amalgamation with INRWF, let me tell you that there is no question of loss of prestige. There is no humiliation when we want to unite. Agreement always means give and take. Let us not forget our glorious traditions and let us approach the problem in a realistic manner. Let me remind you unity is essentially the workers' strength. It is the workers that have to take a decision and implement that decision. As workers representatives from all parts of the country, you have to give your decision and we have a special responsibility. In this context I have received a message from the President of the Burma Railway Board communicating their blessings for the success of our agreement. Remember, the Railway Board Burma is not a bureaucratic Board of our Indian type. A workers' elected representative is at the Board and he knows his job. The goodwill of such a Board is worth more than words can convey".

One of the features of this convention was that it wanted all the three office bearers to be railwaymen in active service. When the convention met on 27-6-53, it was pointed out to Shri Gurusamy by certain sections, that his continuance as General Secretary was repugnant to the spirit of the resolution which wanted to elect all three office bearers from amongst railwaymen. When the convention reassembled at 10 A. M. on 27-6-53, Shri Gurusamy tendered his resignation. The convention refused to accept this but on the other hand passed a resolution expressing fullest confidence in Shri Gurusamy amidst cries of "AIRF ZINDABAD", "GURUSAMY ZINDABAD".

Once again it reveals that railwaymen are patriotic and will unite for a cause nobler in itself. The AIRF has a glorious tradition of 28 years. It has withstood the onslaughts of the mighty imperialism and done yeomen service to Indian railwaymen. The set back in the conditions of service for railwaymen and the neglect of the Railway Board was attributed to the presence of two rival Federations. The harmful potentials of a rival Federation were clearly understood and a genuine desire for unity urged the two sections of leadership to get together. Their statesmanship and wisdom in recognising the current of thought are good indeed and shows clearly that the future of railwaymen is very bright indeed.

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CROSS CHANNEL LAYING PROJECT—
SEA TRIALS

British Insulated Callender's Cables Limited have been awarded the contract for the sea trials in the Cross Channel Cable Project announced by the British Electricity Authority.

BICC are working in the closet collaboration with W. T. Glover & Co. Ltd., whose design of 132 kV gas-filled cable has been chosen for this important contract.

The associated cable accessories have been designed by BICC and the whole of the installation work will be carried out by British Insulated Callender's Construction Company Ltd.

As already announced by B. E. A., the submarine cable laying trials will be undertaken in the near future off the Dover coast, when two half-mile lengths of cable will be laid from the Post Office Cable Laying Ship "ALERT". After certain electrical tests have been carried out on the cable and joints, they will be recovered from the sea bed and returned to Works for further testing. It is expected that the final tests will be completed by the end of this year.

The investigation of many interesting electrical and engineering problems occurring during these sea trials will prepare the way for the proposed cross channel interchange of electricity.

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PERAMBUR COACH FACTORY

An agreement, has been concluded and signed between the Government of India and representatives of Messrs. Schlieren, a Swiss firm, for the establishment of an integral coach-building factory in Perambur near Madras.

The agreement, though more or less on the same lines as was drafted four years ago, is generally considered to be an improvement in serveral directions. The Swiss firm will provide the technical knowledge and personnel to establish the factory, while the Government of India will provide the necessary capital. An earlier proposal to get a group of Swiss firms to provide a portion of the capital has now been dropped. The factory is expected to be in full production manufacturing all the parts in the country within eight years, which is the total period of the contract with the Swiss firm.

Our London Letter

By A Correspondent

BRITISH Railways have been authorised by the British Transport Commission to proceed with three major improvement schemes at a cost of nearly £4,000,000. These schemes will speed up passenger and freight services on several important routes. The main line between New Barnet and Potters Bar is to be widened, Crewe North motive power department is to be modernised and also the provision of a large new motive power depot at Thornaby (Near Middlesborough) mainly for handling the rapidly growing industrial traffic in the north east. The widening of the east coast main line is a £1,750,000 scheme for providing two additional tracks between Greenwood signal box (north of New Barnet station) and Potters Bar station. This proposal will entail tunnels at Hadley South, Hadley North and Potters Bar. About 1,830 yards of new tunnel will be required and 380,000 cubic yards of excavation. There are four or more tracks from King's Cross to Welwyn Viaduct except for the two and a half mile stretch from Greenwood Box to Potters Bar and this bottleneck in the suburban area only ten miles from King's Cross has restricted movement over the whole line for many years. The improvements will provide a continuous four track route. It is expected that work will be started in the spring of 1954 and will take about five years.

The new Transport Bill will effect a number of alterations in Britain's nationalised transport. Plans are being prepared for cheaper fares and freight rates and also for selling the various lorries back to their previous owners. A disposal board is to be formed for this work and it is expected that the names of its members will be announced shortly. The railways are also to be de-centralised with the restoration of the names of the old regional companies and this will come later in the year.

The Chicago and North Western Railroad of America has installed an intermittent inductive automatic train stop system between Chicago (Clybourn) and Wyeville, 235 miles on its 406 mile main line between Chicago and St. Paul—Minneapolis via Milwaukee. High speed expresses operated over this route include the streamline "Twin Cities 400". The installation begins at Clybourn Junction, 2½ miles from Chicago; the line is quadruple for half a mile to Deering, three track thence to Wilmette (10½ miles) double thence to Clyman Junction (122 miles) and single from Clyman Junction to Wyeville (102 miles). The lineside apparatus consists of a inductor unit at each automatic and interlocking main track signal mounted to the right of the track in the direction of travel on lengthened sleepers. The receiver is mounted on a journal box on the locomotive. The equipment has been fitted on 89 steam and 190 diesel locomotives and two railcars. The total cost was $ 1,775,000. Annual maintenance is estimated at $ 107,500. The project was planned and installed by the railway and the train stop equipment and relays were supplied by the General Railway Signal Company.

Far reaching possibilities of inductive control were visualised by Col. S. H. Bingham, Chairman of the City of New York Board of Transportation. The basis of such control is the equipping of a railway vehicle with a closed electrical circuit tuned to a certain frequency and the installation of lineside apparatus which will respond to the proximity of such a circuit when both are in tune. The principle can be compared with the use of an absorbtion wavemeter and its effect on an oscillator tuned to the same frequency. In effect the method not only detects the passage of a train at a particular lineside point but identifies it by its characteristic frequency and so enables different trains to cause different effects. Colonel Bingham suggests the use of such apparatus for trains announcing themselves by working illuminated signs. He also touched on the possibility of a fully automatic railway moving freight in small train units without drivers. Such a railway already exists in London and moves mail bags from one district sorting office to another in deep, underground tunnels. The trains work automatically and have no drivers. A full description of this system was given in the March 1951 issue.

Shortly after the close of the last war the Signal Department of London Transport began to use VHF radio for testing and other purposes. The scheme developed and a regular communications service is now operated which enables its engineers to keep in touch with their headquarters while travelling to the scene of a breakdown. The service used operates through a transmitter station at the Executives Headquarters at 55, Broadway and four receivers at Hounslow, Northwood, South Woodford and near New Cross. Through these installations communi-

STRIKING NEW DIESEL LOCOMOTIVE

A revolutionary type of diesel locomotive has been introduced by the Hunslet Engine Co. Ltd. specially for underground service. It is only 39 inches high, but is able to start and pull well over 600 tons along the level at 5½ m. p. h. It has a four-speed gearbox giving track speeds of 5½, 7, 9½ and 14 m. p. h., and is powered by a 170 h. p. horizontal oil engine. Maximum tractive effort is about 11,000 lb. and the

Largest and smallest mines diesel locomotives in the world. The biggest of these two Hunslet locomotives is only 39 inches high, but can haul 600 ton trains. It is of 170 h. p., whereas the smallest model is of only 15 h. p.

weight 37,000 lb. The 24-inch wheels are spread over a base of 7 ft. and overall length is 18 ft. Full flame-proofing and exhaust conditioning are included. The height is believed to be the lowest ever achieved with a locomotive carrying its own source of power.

Though Hunslet has built several hundred flameproof mines diesel locomotives for five continents, this particular model is the most powerful mines diesel locomotive in the world.

cation is provided between Earls Court and the breakdown lorries which are equipped with transmitter receivers. Walkie talkie radio equipment is used for local communication at the scene of work. Messages coming in on the radio link can be connected to the London Transport telephone system by the report centre operator after dialling the number required. Two 100 W transmitters with crystal control and amplitude modulation are installed at 55, Broadway and are remote controlled from the Earls Court report centre. Their range is 15 miles and satisfactory working has been carried out at 25 miles but screening by topographical features may interfere at much smaller ranges. This can usually be overcome by moving the mobile station. Two breakdown lorries of the Chief Mechanical Engineer's Department and one belonging to the Signal Engineer are equipped with 15 W transmitter receivers operated from 12 V accumulators. The receivers are switched on as soon as a lorry is ordered on to the road so that instructions can be given while it is on the way. It is interesting to note that radio was also made use of by London Transport in connection with energy consumption tests on the new light weight aluminium trains. Two 15 W mobile VHF radio telephones, one inside the power sub-station, with a temporary aerial on the roof and the other on the train with an outside aerial at one end of the train. Continuous contact would thus be maintained between the two groups of observers enabling the tests to be made with the minimum delay.

A novel system has been developed by London Transport for reclaiming used bolts, nuts, studs, etc., from its 10,000 road vehicles. About 65,000 items are being reclaimed each week with the present layout which can be extended when necessary. The system gives a saving of about half the cost of new components and continuity of supply is assured particularly in cases where parts are scarce or subject to long delivery. The operators are elderly or disabled persons.

An exhibition is being held on Victoria Embankment Gardens, London, of some 80 new designs of outdoor seats such as are used in gardens, parks or on station platforms. These designs have been contributed by various manufacturers and include benches, back to back seats, circular seats, seats combined with lamposts and seats for churchyards, cafes and stations. Station seat design was developed quite early by railways and it varies greatly with the different companies both in design and degree of comfort (or discomfort). The Midland Railway of England adopted a rustic pattern which blended with the Gothic architecture of their stations. The Brighton Railway favoured a massive school bench while the Great Eastern merely had shelf protruding from the wall.

In the course of progress it happens that a section of railway becomes disused and sometimes railway tunnels as well. At one time the ex-South Eastern and Chatham Railway had a station on the beach at Ramsgate which was approached by a tunnel through the cliffs. When the Railway was realigned the station was pulled down but the tunnel is still in use today as an amusement arcade. Often tunnels are put to other purposes but it is not often that one collapses. This event is not unlikely, however, since with disuse comes cessation of maintenance. On April 28 an accident occurred at Swinton, Lanca-shire, when some house collapsed into a disused tunnel some sixty feet below. The tunnel named Clifton Hall, and 1730 yards long is situated on the line between Patricroft and Clifton Junction. The tunnel has been closed for some time except for occasional goods trains. Five persons were killed and two injured.

Fishermen are renowned for their stories and it may be that this is the reason why they are extra thirsty. A party of 120 fishermen recently spent £132 on refreshments on the train between De Aar and Wolves Bay. The length of the journey and the semi arid nature of the country, a railway catering officer stated, had nothing to do with the quantity of refreshment consumed. Fishermen, he added, were marvellous customers. They got so thirsty.

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Mr. John Alcock, Chairman and Managing Director of the Hunslet Engine Co. Ltd., Leeds, has been elected President of the Locomotive Manufacturers Association, the official organisation of the ten principal locomotive builders and 17 diesel locomotive builders in the United Kingdom. Mr. Alcock has taken a prominent part over the last 25 years in the introduction and development of diesel locomotives for surface and underground duties. Under his direction Hunslet has made a speciality of steam and diesel locomotives to new designs where only one or two units are required by the customer and the company has now built steam and diesel locomotives for 76 countries.

Signalling and Interlocking

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

Chapter 7. Train Working (Double Lines)

FOR the purpose of controlling the traffic over a railway it is necessary to divide the line into short sections varying in length in proportion to the traffic, the point of division being indicated by a signal box having fixed outdoor signals. The number of signals to be provided will depend whether the signal box is an intermediate post for dividing up a long section or if it is at a station. This will be explained later.

Prior to the invention of the telegraph, the running of trains was regulated by a time interval. Later, a system of electric bells was introduced to indicate when a train might be allowed to enter a section and when it has passed through that section. In 1840 an arrangement for the electric signalling of trains was first used on the opening of the Blackwall line between Minories and Blackwall; at about the same time a needle block was used on the Midland Railway through Clay Cross tunnel. In 1844 a slightly different arrangement was made use of on the Great Eastern Railway between Norwich and Yarmouth. In 1853 a more efficient system of needle block and bell was introduced by Mr. Edwin Clark on the London and North Western Railway.

The term "electric block signalling" is generally applied to a combination of electrical apparatus, which, by means of an acoustic and visual signal, gives such indications to the signalman as enables him, by a proper manipulation of his outdoor signals, to prevent two or more trains getting into one block section at the same time. The first working telegraph of any length was Cooke and Wheatstone's installation between Paddington and West Drayton on the Great Western Railway opened in 1858 and soon afterwards extended to Slough. Mr. Edwin Clark subsequently modified Mr. Cooke's method and introduced on the London and North Western Railway that mode of signalling known as the Block system. Cooke's system was applied on the Norfolk Railway (England) in 1844 and on the Great Western Railway in 1850. In 1851 Mr. Edward Tyer designed instruments known by the name of "Tyer Train Signalling Telegraphs" using only one line wire. These instruments have been improved from time to time to meet modern conditions and are now in almost universal use. As far back as 1870 block working was firmly established on the main routes of the English Railways and was made obligatory on passenger lines by the Regulations of Railways Act of 1889.

Fig. 20 shows a common type of block telegraph needle instrument which was designed for block working. Two instruments are required for each block section, one at each end. Each signal box would therefore have two instruments, one for the leaving end of the block section and the other for the dispatching end both block sections joining at the signal post. The instrument at the leaving end of the section has a handle while the instrument at the entering end has no handle. The instruments in two adjoining signal boxes are connected together

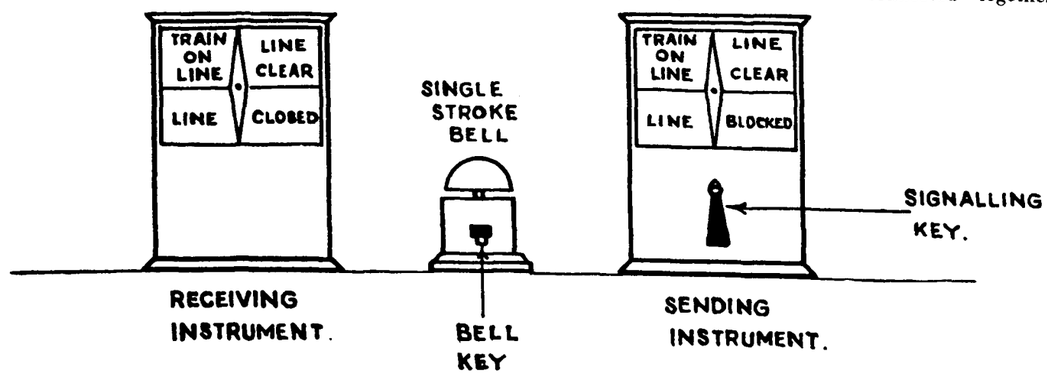


Fig. 20

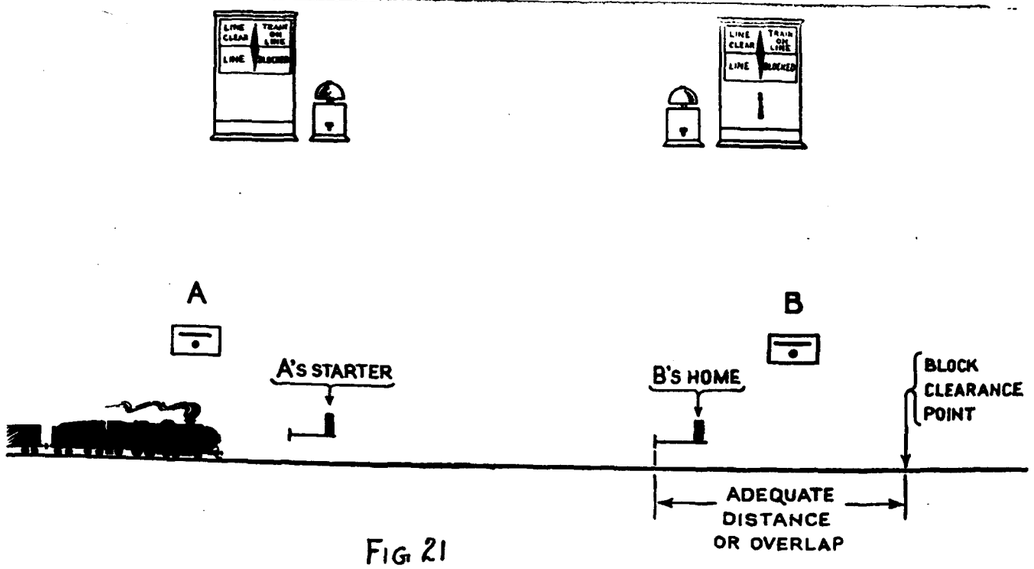
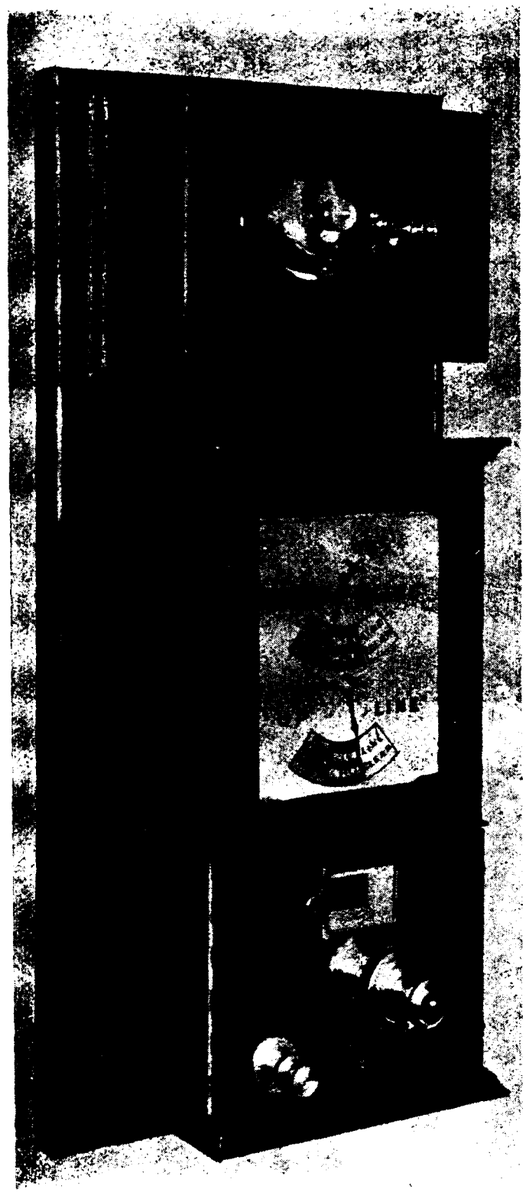


FIG 21

electrically so that a movement of the operating handle deflects the needle of both instruments simultaneously, each giving the same indications. The instrument with the handle is for the purpose of accepting trains from the box in the rear, the one without the handle is to tell the signalman when a train has been accepted from the box ahead. When the section is unoccupied and permission has not been given for a train to enter a section, the needles balance vertically which indicates LINE BLOCKED. When permission is given to forward a train, the needle is deflected to the side of the dial lettered LINE CLEAR. When a train is in the section the position of the needles is altered to TRAIN ON LINE. A single stroke bell is provided for each section in both boxes. The offering and acceptance of trains is done on these bells as well as their description by a code of bell beats which has to be memorised by all signalmen.

Fig. 21 shows a simple block section with two signal boxes, A and B. The block section commences at A's Starter and ends at the position marked block clearance point beyond B's Home. This is known as the adequate distance or overlap and is that distance which would ordinarily be required by a train of average weight and speed in which to stop in the event of accidentally passing B's Home at danger. In all block rules this distance is generally one quarter of a mile except with automatic signalling on suburban and city lines. The diagram shows a train waiting at A's Starter. The signalman at A calls up B on his single stroke bell by giving what is known as the *call attention signal*. When B answers A asks for *line clear* and gives the code for the type of train being offered, i. e. Mail, Express, Passenger, Goods, Ballast etc. B then turns his operating handle in his accepting instrument and causes the needles in A's instrument and his own to show LINE CLEAR. A lowers his starting signal and when the train passes it he gives *train entering section* on his single stroke bell. B acknowledges this and turns his operating handle to cause both needles to show TRAIN ON LINE. He then calls up the signal box on the other side which can be termed C and asks for LINE CLEAR in the same manner as A did of him. When line clear is received he lowers his Home and his Starter (the latter signal is not shown on the diagram) When the train has arrived at his box and passed the block clearance point *complete* he gives *train out of section* to A turning his handle to set the needle to LINE CLOSED. He also sends *train entering section signal* on the single stroke bell to C. Information to the signalman that the train has passed his box complete is given to him by the tail board by day and the tail lamp by night. The tail board is usually a red disc hung on the last vehicle of the train, this some vehicle having a red light by night. He has to watch for these before giving train out of section.

The relation of the adequate distance with respect to the signals is governed by the type of station and the speeds on the section. Generally there are



Tyers three position one wire block instrument with single stroke bell.

two types, one where the adequate distance extends up to the Starting signal and the other where it terminates at the Home where an Outer signal is used. Where the adequate distance terminates at the Home it is less restrictive since Line Clear can be given while a train is standing in the platform or shunting is being performed. With the other type an Outer Signal is not required.

Among other designs of improved block telegraph instruments may be mentioned the Tyers one wire instrument with miniature semaphore arms and a window in which indications appear. The indications given are "Line Clear", "Train on Line" and "Train out of section". When the receiving end of a block section accepts a train the commutator is turned in a clockwise direction. This causes the line clear indication to appear and lowers the semaphore arm at the receiving end and the upper semaphore arm at the sending end of the section. When a train enters the section the commutator is again turned which causes the train on line indication to appear and returns the miniature semaphore arm to danger. In this position the commutator becomes locked. When the train arrives, a small plunger at the side of the instrument is pressed which causes the train out of section indication to appear. This instrument has been generally superseded by the Tyer's one wire three position block which is in general use in many parts of the world. The indications on this instrument are given by needles indicating "LINE BLOCKED", "TRAIN ON LINE" and "LINE CLEAR". The lower needles is operated by the commutator at the receiving end of the section and the upper needle at the sending end. A commutator release button is provided which has to be pressed before the commutator can be turned. The bell plunger is fixed as a separate unit in the centre of the commutator handle.

Among other types of block telegraph instruments, all of which are similar in their essential principles to those already described are the Pryce Ferreira, Winters, Powle and Moores and Siemens. With all these instruments there is nothing to make it compulsory for the signalman to work his outdoor signals in conformity with the position of the block instruments. The correct display of these signals is therefore dependant on the integrity of the signalman. Some railways have introduced interlocking features in conjunction with the Tyer's three position instrument. The Starting Signal lever is fitted with an

SGE Signals type block instrument Type QB 001

a combination of electrical and mechanical apparatus which compels the signalman to work his outdoor signals in accordance with the electrical block signals (both of which are electrically under the control of the signal cabin in advance) and, by means of a rail contact, track circuit or treadle, to make it impossible for the rear cabin to operate signals for a following train until the whole of the preceding train has passed out of the section. In Great Britain there are several systems of Lock and Block in operation which include Sykes, Spagnoletti, Hodgson's Langdon's, Tyer's, Evans, Blakey and O'Donnells and Pryce and Ferreira's.

In the latter part of the nineteenth century there appears to have been a great deal of argument as to who actually invented "Lock and Block". It is stated that Mr. Sykes is not the orignal inventor but was the first to use the term "Lock and Block". If it is assumed that absolute block working is the only real block working and that electric interlocking is not absolute without a rail contact, then Mr. Edward Tyer appears to have an earlier claim. In 1852 he designed a rail contact which automatically indicated the passing of vehicles. In 1869 he patented a complete system of electrical interlocking which interlocked the block with the outdoor signals. In 1870 Mr. Preece (and probably also Mr. Langdon) introduced an electric lock to be worked in conjunction with his electric block. In 1872 Mr. W. R. Sykes introduced an electric rail contact to manipulate railway signals and in 1875 he completed a system of electric interlocking making it necessary to have the concurrence of three stations "A", "B" and "C" for train working. Simplicity, efficiency and reliability are the keynotes of the present day lock and block systems and whatever may have been the arguments nearly a century ago regarding priority of invention, railway signalling is certainly indebted to the friendly rivalry of those gentlemen whose ideas gave it what it has today.

electric lock so that it cannot be lowered unless line clear has heen correctly received from the box ahead. The commutator is also electrically interlocked so that Line Clear cannot be given to the next box for a train to approach unless the previous train has already arrived.

The term "electric interlocking" or "Lock and Block" (interlocking the outdoor signals with the block apparatus in the cabin) is generally applied to

For any system of lock and block to be complete it is essential that the signal lever working the signal giving entrance to a block section must remain electrically locked until LINE CLEAR from the signal box at the other end of the section is received. Once that lever is pulled and put back it must remain locked until a fresh LINE CLEAR is obtained. When a train passes the signal to enter the block section it must automatically replace that signal to danger behind it independant of any action on the

(Continued on next page bottom)

AIR-CONDITIONED COACH SERVICES

With effect from May 20, 1953, the Air-conditioned coach service has been introduced on 11 Down and 12 Up Madras Express Trains between Bombay and Madras. Air-conditioned coaches will leave Bombay, V. T. and Madras every Wednesday and Saturday.

With effect from June 15, 1953, the weekly Air-conditioned coach service on 15 Down and 16 Up Grand Trunk Fxpress trains between Madras and Delhi has been converted into a **bi-weekly** one leaving Madras every Thursday and Saturday and leaving Delhi every Monday and Saturday.

*** *** ***

No fewer than 78 Sulzer-engined 600 b. h. p. mixed-traffic diesel-electric locomotives are now being delivered to the French National Railways for general freight and passenger operation, and for service in hump yards up to the limit of their 36,000 lb. startingtr active effort. Power is provided by a six-cylinder oil engine running at 900 r. p. m., built upon a welded mild steel and cast steel frame with special adjustable tied-in bearings. General dimensions and particulars are: Wheel arrangement Bo-Bo; weight 68 tons; top speed 50 m. p. h.; continuous rated tractive effort 19,000 lb.; 41½ in. wheels; 8 ft. 6 in. bogie wheelbase; bogie centre pitch 24 ft. 6 in.; length over buffers 48 ft. 3 in. The first units are operating over the Montargis-Melun-Malesherbes lines to the south of Paris.

part of the signalman. At the other end of the section, once a LINE CLEAR has been given for a train to approach it must be absolutely impossible to send another LINE CLEAR until the train has arrived. So long as these principles are satisfied, the design and type of instrument is immaterial so long as it is robust and electrically and mechanically sound. The indications may be by needles, miniature semaphore arms or illuminated visuals while the replacement of starting signals and locking of releasing plungers for sending line clear may be by electric treadle or track circuit.

These features prevent the signalman from making errors that would lead to a serious accident. The lock and block system still depends, however, on the human element for one important point, the observance of the tail board or lamp. On no account must LINE CLEAR be sent for a following train unless the preceding one has arrived complete. Failure to do this would admit a train into a section already occupied by vehicles left behind by the previous train. Only complete track circuiting would prevent this and if provided, the lock and block apparatus described would not be required. The circumstances under which this system would be used will be dealt with later.

(To be continued)

American Railways—Practice and Performances

Vis—A—Vis British Railways

By Saroj B. Biswas

THE United States of America can rightly claim to pride herself on the achievements of her Railways which are purely Company-owned and Company-managed. Her Railways which yield to none in efficiency and performances, are an object of study and guidance to the sister Railways of other countries. Of the total Railway mileage of 781,000 of the world, the U. S. A. absorbs 29% though she holds 6% of the world's population and 5% of the land area. Her 225,000 miles of Railways are owned and operated by 690 Companies of which 131 are first class concerns accounting for atleast 95% of the revenues of all classes of Railway of that country.

The immense volume of traffic handled by the American Railways can be measured by this fact alone that a 5% increase in the train-load in 1950 over that of 1949 represented roughly 1/3rd of the total train-load of the British Railways.

A staggering sum of 23 billion dollars (after depreciation) has been sunk on her Railways employing approximately 1¼ million workers against 925,319 workers on the Indian Govt. Railways and 610,090 of the British Railways, thus shewing the great strides rationalization and mechanisation have made on the American Railways, the average annual earning of a Railway employee of the U. S. A. is 4342 dollars more than thrice higher than the average annual income of a British Railway Worker.

The Association of the American Rail-Roads is the Central Co-ordinating Agency of the Railways, dealing with matters of common concern in the whole field of Railway operation. On the other hand, the Federal Govt., through the Inter-State Commerce Commission controls the various Railways in matters of safety (including speed), motive power, equipment, signals and hours of work of the staff. So this influence is almost identical to the power exercised by our Railway Board over Indian Railways prior to their coming under the State Management. Divisional system obtains on American Railways. Usually the General Superintendent co-ordinates the work of various Divisions. Divisional Superintendents are responsible for almost all matters in their Divisions. Sometimes the Divisional Engineer and Master Mechanic reports to them. Motive power and engine sheds come under the Divisional Superintendent except for strictly technical subjects.

Due to course of events to be discussed here-in-after the passenger traffic, though offering the utmost comfort, plays a secondary role to the freight one.

Her Railways provide altogether three classes of passenger accommodation; 1) Coach corresponding to the 3rd class of the British Railways; 2) Commutation or season tickets holders; 3) parlour and sleeping car—almost all of which are air-conditioned, or first class.

Of the total 486 million passenger journeys in 1951, the coach class passenger travelled 186 million journeys or approximately 37% of the entire passenger journeys. A coach class passenger travelled on the average 94 miles against 30 and 31.3 miles on the British and the Indian Govt. Railways respectively.

The parlour and sleeping car passenger accounted for 23 million passenger journeys or 4.6% of the total, doing on the average 411 miles per journey and the severe competition from the air has got much to do with the modest percentages of these two classes of travel.

The Commutation or season ticket holders made 277 million passenger journeys or more than half of the total passenger journeys of the Railways. The commutation class passenger travelling 18 miles on the average against 13 miles of the corresponding class on the British Railways.

It is also significant that 70% of the passenger travels originates in the populous Eastern Districts where one third of the total motive power is stabled—a region akin to the "heavy districts" of England.

The U. S. A. is a land of quick transition. During a period of 50 years viz from 1900 to 1950, her population has mounted by 50% to 15 crores but her people travel less by train now-a-days than in 1950, though at present the train journey is not only safer, swifter and much more pleasant and comfortable than it was in 1900 but cheaper in relation to the cost of living and the purchasing power of the dollar. The passenger traffic from 1900 onwards continued to rise till 1920, when it reached double the figure of 1900 but after 1920 the passenger traffic had been running down-hill till 1949, as is supported by the table below and that descent was arrested in 1950 due, of course, to the Korean War which gave an added impetus to

the passenger traffic, specially on account of Govt. service.

TABLE No. I.

Year.	Passenger (millions)	Passenger miles (millions)	Passenger Revenue (millions-Dollars)
1921	1035	37,302	1,163
1929	780	31,074	872
1939	450	22,650	406
1949	554	35,095	880

These figures show that during 1921—1949 the number of passenger recorded a fall of 46%, passenger miles 6% and passenger revenue 26% but this heavy loss has been compensated by the tremendous increase in freight revenue, the Revenue ton miles having increased by 57% from 410,306 millions to 646,606 millions. The situation has grown so catastrophic that since 1938 passenger services had to be withdrawn from 32,500 miles which is nearly one and three fourth times the route mileage of the British Railways and almost equal to that of the Indian Govt. Railways. In 1951 alone on account of passenger service a loss of 681 million dollars accrued to the Railways, which to meet that loss, cut down passenger services to the tune of 7800 miles. Paradoxically in spite of the growing prosperity of the country, the severel competition from the road and air goes on making a serious inroad on the Railway Coffers.

(To be Continued)

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Fast Main-Line Electric Locomotives for Victorian Railways

THE first two of the 25 main-line electric locomotives built for the Victorian Railways, Australia, reached Melbourne from England at the end of January. The remainder are being shipped at the rate of one a month for the first three months and two a month thereafter. The locomotives, English Electric Company products, have been designed for use on the Gippsland line when electrification is complete between Dandenong and Traralgon, a distance of 79 miles.

Each locomotive is 59 feet long over coupler centres and has a wheel-base of 46 feet 4 inches. It weighs 96 tons in running order. Minimum and maximum operating heights of the pantograph from rail are 14 feet 4 inches and 21 feet, respectively. Axle bearings are Timken inclined roller type.

Like the diesel-electric locomotive now in service on the Victorian Railways, the electric locomotive has a driving compartment at each end. Each has a master controller, a brake valve and driving instruments, and has three doors, one swing access from outside, and the others opening into the central equipment and the front and rear end compartments, respectively. The compartment at each end contains a compressor and a traction motor blower which supplies air for the forced ventilation system of the three traction motors at that end. A door gives access to the compartment from outside. This is in addition to the door leading to the driver's compartment.

The central equipment compartment houses the various electrical frames, the air ventilation system, the motor generator set, and the air equipment valves. The power circuits are supplied direct from the 1500-volt contact wire by either of the two pantographs mounted on the roof just behind the driver's compartments. Eight notches of rheostatic braking are available, and the air braking and rheostatic braking are interlocked to provide various braking alternatives.

The master controller consists of a control wheel, reverse lever, and brake lever. There are 36 notches on the control wheel: 1 to 18 are for the six motors in series; 19 to 27 provide two paths of three motors in series; and 28 to 36 give three paths of two motors in series. In each of these three combinations, four field strengths are available to make a total of 12 running positions; The locomotives are fitted with two six-wheel bogies, each weighing 25.85 tons in running order, and each having a wheel base of 14 feet 4 inches. The wheels are 40 inches in diameter. Each of the six traction motors has a weak field rating of 402 horsepower. The motors are axle hung and nose suspended from the bogie frames. They drive the axles through resillent spur gears mounted on the axles. At each end ventilating air is carried by ducts which connect the blower with its three motors.

Designed for both passenger and goods working, the locomotives, which will have blue and gold livery similar to that of the Victorian Railways diesel-electric locomotives, have a one-hour rating of 2,400 horsepower. The maximum tractive effort is 47,000 lb., and in passenger service they are capable of speeds up to 75 miles an hour. In goods service they can haul 1,100 trailing tons up a 1 in 110 grade at 30 miles an hour.

The Gippsland line, on which these locomotives will be used, links Melbourne, the capital of Victoria, with Yallourn, where there are vast deposits of good quality brown coal, large tonnages of which are brought to Melbourne for industry. The line will be the first in the world to use 1,500-volt direct current supplied exclusively through pumpless steel tank mercury are rectifiers, and as such, its progress will doubtless be watched with great interest by experts.

From each of four main supply points, transmission lines will run to supply traction sub-stations with alternating current at a pressure of 22 kilovolts, 3 phase, 50 cycles. There will be 16 traction sub-stations (6 double unit and 10 single unit) where the alternating current at 22 kilovolts will be converted to direct current at 1,500 volts, and fed to the overhead contact wire system via high-speed circuit breakers. One of the 1,500 kilowatt units that will be used on the Gippsland line will occupy a space of about 30 square feet and will weigh about 30 cwt. A rotary converter of 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. There will be 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 sufficient high speed to clear the overhead circuit they feed, in the event of fault, before appreciable damage is done.

Railway Education in India (I)

ONE of the special features of educational history and evolution in the western countries through the past half a century has been the increased attention given to specialised branches of study with the object of providing a direct route not only to the older professions such as Law, Medicine, Theology and Pedagogics, but also to those newer arts and industries, to which the economic and social development of modern times has given birth. Technical studies and technological courses have become the order of the day in the west. Most other studies in general education in the earlier stages of life are calculated to lead to the study of some course in the newer arts and industries.

So far as our Indian Universities are concerned this utilitarian aspect and aim of education is still confined only to the study for the traditional professions—Law, Medicine, Engineering, and Pedagogics—the so called learned professions *par excellence*. The daily activities of mankind in India too have long since become too important and too connected with the newer arts and industries for us to neglect the utilitarian aspect of education in them also. There is every reason to assert that the trend of modern higher education in India also should fit in with the needs and the spirit of the times and with the logic of the events. National prosperity, it is admitted on all hands, depends largely not only on faith and values of life, but also on arts and industries. Arts and industries in their turn depend on the type of education that is imparted to our nationals from very early stages of life. Education must go on adapting itself to the needs and spirit of the times, or we will left far behind, often in the lurch. Lots of experiments are being made in our primary and secondary and even collegiate general education, and much of the experimentation is uncalled for and unnecessary; the only change required there is to bend it towards promoting specialisation in certain specific branches of studies in the future stages of the individual. Definitely it is high time that the higher studies are bent to specific branches of technical and technological education, that will help the individual to serve the nation in an effectively practical manner, as they do in England, America and Canada. And these technical courses of our Universities must include the various branches of the Transport Industry.

The five years devoted to the professional preparation for medicine and engineering, the two or three years for law, and the one or two years for pedagogics are infact designed for mentally stimulating and invigorating and to equip the students for efficiently undertaking in life the professions pertaining to those studies. Equally beneficial will be the mental preparation for the other practical pursuits of life. The chief essential of the educational problem is that the various studies shall be handled in a broad and scientific way, compelling the students to make analytical and synthetic thinking in the field in which he proposes to specialise. The existing Indian Universities provide only for the traditional professional courses, but not for the more modern professions such as Architecture, Journalism, Commerce, Railway Operation, nor for the specialised engineering required for transport by rail, road, sea or air. Higher education should adapt itself to the needs of life, to all the needs of life, not only a few; and the needs of life at the present day are not, merely Law, Medicine, Teaching and General Engineering.

The colleges for law, medicine and general engineering have been functioning for a long time past; and there is not yet one high class up-to-date well-equipped college affiliated to a University for the training of staff for the railways of India, which form the premier industry of this sub-continent with 40,000 miles of railway, with... ...millions of passengers transported over them from year's end, to years end, with..... millions of tons of good carried across the peninsula, though it was nearly a century ago that the railway transport came into being. The number of persons engaged in law, medicine, pedagogics or general engineering is so small in comparison with the number at work in the transportation industry, often called the industry of industries, so essentially needed in a country during both peace and war, an industry so intertwined with the prosperity and wealth of the country, and the safety of millions in travel. And yet there has been but little conscious and tangible effort to provide high class technical training for this transportation industry. As a major result of this the railways of India are increasingly finding themselves today in lack of a sufficient number of qualified personnel to occupy with dignity and success the positions of responsibility—men who know how to do, men who are competent to do the right thing at the right time, men who show initiative and originality when thrown back upon their own resources, men who possess that mental discretion and wisdom arising from a trained mind. Careful professional training to picked Indians will be of considerable benefit, as it has been in other countries

to their own nationals, not only to those destined to attain to the seats of power in the transportation industry, but also to the state and its people through them eventually.

The conduct of modern transportation is becoming constantly more and more complex. We can no longer go on with the haphazard, happy-go-lucky, rule of thumb method of railway training. The present crude method of attaching raw recruits to stations, offices or workshops, directly they are selected and appointed to imbibe what little they can from the slender knowledge and equipment of the poor station master, permanent way inspector, head clerk, or foreman, or his still less equipped assistants, who are themselves busy throughout the day with their own day-to-day work, which leaves them little leisure, patience or inclination to instruct, inform or correct the ignorant or erring trainee, is to be tabooed forthwith, as it has been declared on all hands as utterly inefficient and as leading only to multiplication of inefficiency all round. Time became ripe long ago for establishing pucca Transportation Training Schools and Colleges, and they should be fullblown ones today, second to none in the world. We should have on hand by this time carefully selected men turned into first class operatives by the able guidance and teaching of experts. We should have taken advantage of the presence of English experts in this country. A net work of such schools should now be teeming like busy bee-hives all over the country. The railways have been regrouped—and each unit has become thrice larger than before—and each railway empire has its territories far flung from the headquarters. The need for efficiency is all the greater now than before, for the zonal system necessarily involves gove nance across a longer distance.

It is never too late to mend. No use wailing over lost opportunities. Let us resolve now and make rapid headway and make amends for all our past omissions. The planning and construction of such schools in chosen zones, their equipments, staff and the various courses of training to be offerred, all require considerable skill and thought and must be given very early consideration. We cannot afford to neglect this aspect any longer. For, there is no industry at the present day, which demands keener intellect, more acute vision, sharper wit-or trained comprehension; no industry in which the absence of these qualities would be more disastrous to the general interests of the country. The need for men with an adequate supply of these qualities is daily increasing. The railways of this country have to pay more attention then they have ever done before to the improvement of the quality of the men they take into their employment. We must stimulate a steady flow of brightened the more by a good system of training, into the service so that there may be a wide choice for selection to fill up the lieutenancies, captainships, and generalships.

Three kinds of work need to be carried on in these technical institutions for affording professional training. (i) The first and most important one is the *initial training* on recruitment. No hand shall be engaged in a working post and made to shoulder responsibility unless he has been fully trained and found fit to handle the job. (ii) The second is the case of the individual already in service, who desires to acquire more knowlege or make his knowledge more accurate, and thus to improve his lot. Further, whenever a member of the staff is due to be promoted to a job of higher responsibility or job requiring higher technical knowledge or skill, he shall be put through a suitable course of training that will fit him or discover his fitness for the new job. This may be called the *promotion course*. (iii) The third and equally important one is the case of staff, who have in the past somehow entered service and have been carrying on somehow or have become rusty any weedy through habitual slackness or continued usage of conventional methods, or by having been too long attached to the same post, job or category. These have to be brought into the school or college periodically for a thorough brush up and polishing and have to be made up-to-date in their knowledge and methods of working; or else they would continue to disseminate wrong knowledge and wrong methods to the new entrants consciously or unconsciously. It is good both in their own interests and in the interests of the new entrants and ultimately in the interests of the administration. This kind of training may be called the *refresher courses*.

(To be Continued)

Pre-Natal Influences–A Myth

By Dolly Shahani

SINCE time immemorial, in all countries, among all people, there are countless beliefs regarding pre-natal influences. Primitive man must have come to have these beliefs due to his ignorance about what we call to-day, "The facts of life." In fact, he was very much bewildered by it all and there was a time when he did not realize that the process of mating had anything to do with the birth of a child! Alas! we have become much wiser.

Since then, biology and medicine have progressed considerably. The study of the science of genetics, dealing with the fundamental laws of heredity, has produced several treatises on human genetics. This progress takes place day to day. Every now and then you hear of some new feat—keeping the embryo alive outside the mother's womb. Tests which will reveal the sex of the unborn child. Boy or Girl? That age old question.

In spite of all this progress, superstitions regarding pre-natal influences continue to persist. Of course, it is more prevalent among the uneducated and primitive classes but the human mind being what it is, these beliefs persist even among many modern mothers to-day. Most women being guided more by emotion than logic, these beliefs continue to be handed down from one generation to another. In spite of what we can reason out, the psychological effect of what we hear about anything, in which our emotions are deeply involved, it is difficult to remain unaffected. In such cases, suggestion or fear has great power. It becomes firmly fixed in the mind and no amount of reasoning and dislodge it.

One of the commonest of these beliefs is that during pregnancy women develop a craving for certain foods at any odd time and that this intense desire must be satisfied—Can you imagine a prospective father being unduly shaken out of his well earned sleep to go out and procure strawberries or cocoanut water at 3 a. m. ! ! ! No wonder the number of bachelors is on the increase ! !

Added to this is the belief that mother's unsatisfied desire has an influence on the unborn child—Thank heavens! It is not anything grave. They say the baby will dribble an unusual amount. May be, you would have to use two or three bibs at a time! So, it's a case where you have to choose between bibs and sleep.

Among Hindus there is a very strong belief that a pregnant woman has to be very careful on the eclipse of the moon. On no condition should she venture out. If possible she should lie straight on a bed. Any unusual posture taken by her and the child will be born with limbs fixed that way, e. g., deformed or mongoloid childern are said to be the result. Nor should she indulge in any occupation such as sewing, cutting or writing. In the former case, the use of the knife or scissor would cause the lip or any part of the child's body to be cut off. In the latter, he may be born with a birth-mark as dark as ink!

Another common belief is that the unborn child will bear a strong likeness to any person or picture, the mother may see constantly during her pregnancy. Perhaps this belief came to be, because generally the person the wife sees most is the husband or any ancestors, and according to the laws of heredity a child generally looks like its parents. Hereby hangs a tale—don't tell me, I don't tell you it was a tale. A couple expecting a baby were living in a boarding house. Somehow the landlady hung the portrait of a negro on the wall, just opposite the wife's bed. Needless to say, her eyes fell on it several times during the day and in the mornings when she awoke, the first thing she saw was the portrait of the negro! When the baby was born, lo and behold, it was a negro baby! Of course, the wife protested her ignorance but the husband suspected foul play!

Still another popular belief is that the unborn child may be impressed by religious feelings or artistic accomplishments indulged in by the mother during pregnancy. This idea is held by many intelligent and educated people. Sometime back, I met a young married couple who were expecting a baby. Both were college graduates and brought up in a progressive atmosphere. Besides this, the wife was a singer, having fairly exceptional talent. One evening when I visited them, I found the wife practising her singing with great fervour. The husband informend me that this was a daily routine because they believed and desired to influence the unborn child through the medium of singing! It was hard to convince them that they were wrong!

There are countless other beliefs. Heartburn or indigestion is caused by the excessive hair on the unborn baby's head. Science of course attributes it to the changes which take place during pregnancy.

A pregnant woman should avoid keeping her feet on the ground or using a foot machine, as both these hurt the child causing it to be strangulated. In the days of Scarlet O'Hara, the negroes believed that a knife kept under the bed of a woman in labour cuts the pain. Among certain communities, in India, there is a belief that any metal object e. g. iron, such as a bunch of keys, etc. should be kept under the pillow of a woman who has been confined, as this wards off evil spirits and prevents the woman from feeling afraid.

There is still another superstition, that a woman expecting a child should not look upon a dead body. That is, she should not attend funerals. It is not difficult to see how this belief came to be. The psychological aspect is taken into consideration. Death, and all that is connected with it, has a depressing effect on the mind, so, as far as possible it should be avoided.

Sometimes babies are born with the umbilical cord around their necks. There is a belief that these childern had been saints or yogis in their previous life.

There are countless other beliefs. Among the most prevalent beliefs are those concerning sex determination and conception. It is the conviction of a great many people (especially in the villages) that by drinking a certain potion, pregnant woman can influence her child to be born a boy or girl. Also by invoking the blessings of some holy personage, sterility can be nullified. In fact, countless Indian legends and fascinating stories are based on this. How the great king of bygone days could not have a male heir—therein are the beginnings of several stories which will hold you spellbound. To quote from ancient memory!

Once upon a time there lived a king. He had seven wives. But to his great sorrow there were no childern. He was a very good and kind man and the absence of children made him very sad. One day, a Sadhu came to the court of the king. The king was very good to the Sadhu, gave him food and shelter till he was ready to proceed on his way. The Sadhu was very much pleased with the king's kindness and before going on his way, we gave the king seven mangoes and said to him: "You have been very good to me and I wish in some way to return your great kindness. Give these seven mangoes to your seven queens, and you shall get what you desire most."

Saying this, the old man went on his way. The king gave the seven mangoes to his queens. The six queens ate the mangoes but the youngest queen who who was very playful and childish, left her mango on the window sill. A squirrel from the garden ate up a portion of it. When the young queen discovered this, she was very much frightened and quickly ate up the remaining mango and never breathed a word of it to anyone. True enough, the seven queens had sons but the seventh had a child who was half human and half squirrel! Of course, he didn't look as nice as the other princes, but he had an advantage over his brothers. Possessing all the agility of a squirrel and the intelligence of a human being, with the result he would always excel them in physical feats. He could run as fast as lightning and would take great leaps in the air. The story goes on to tell the exploits of the seven brothers and how the youngest was most successful.

There is another story on a similar theme. Once upon a time there was a king. He had several daughters but no son. Both he and his queen very much desired a male heir. So that when they grew old and died, he could inherit the kingdom and perform the death ceremonies according to the Hindu rites.

To this end both the king and queen constantly invoked the blessings of God by performing sacrifices and giving alms to the poor.

At last God, pleased by their penances, decided to grant them their boon. One day the king, in search of game, was riding in a deep forest, when he came across a deer caught in a snare. As he drew near, the deer, cried out; "Save me, O ! King! I bring you glad tidings." The king was very much surprised to hear the deer say these words but taking pity on him he set him loose. Thereupon the deer was transformed into a Sadhu and said to him:

"Great king, you have suffered enough. Ask for whatever you wish and it will be granted."

"I have all the riches but no heir. I desire a son," said the king.

"Your wish shall be granted," and saying that the Sadhu vanished, leaving the king both amazed and happy. The king hurried home overjoyed and related the incident to his queen, who was very pleased.

"God has at last heard our prayers. We will surely achieve our great desire." After some time the queen gave birth to a son. There was great rejoicing in the land.

The story goes, in the last life this king had also been a king and the sadhu had been a sadhu. The king had twelve sons whom he loved more than all the world. One day, while he was teaching his twelve sons the use of the bow and arrow, a Sadhu passed that way and begged the king for alms. The king being engrossed in the sons and amidst all the confusion created by the young princes, he did not hear the Sadhu. Thereupon, the Sadhu was very annoyed and went on his way, but silently cursed the king, that in his next life he would have no son. But the power of prayer is ever great and removed the curse.

However, sientific evidence is against such colourful make-beliefs. It has definitely been established that the sex of the child is the result of specific combinations of chromosomes carried by the male or female reproductive cells that unite to form the embryo. The combination of these cells is mere chance and no matter what you eat or drink or do or say will have no affect on it.

The Nazis during thier regime developed a concept known as Telegomy—the supposed influence of a sire of an inferior quality, on the offspring of a pure-bred dame after she had been mated later of a pure-bred sire. This was to bolster up their idea of aryan supremacy and to invoke hatred towards Slavs, Czechs, Poles and especially Jews. Reason as well as scientific experiment has showed the lack of proof of telegomy.

Thus, so far, biology cannot prove and of these beliefs regarding prenatal influences. However, the developing child may be affected by some internal or external factors, such as nutritional, glandular and nervous which may leave their mark on the characteristics of the developing foetus. That is why doctors recommend that the condition of a pregnant mother should be as normal as possible and her diet should have a high nutritional content.

The embryo has a distinct entity from the very moment of its conception. It has a full set of genes, repersenting the parents who are responsible for its conception.

The nine months of pregnancy are extremely critical for the developing child. If toxins or other

(Continued on next page bottom)

Promotion of Internal Tourist Traffic

THE Government of India have for some time been taking special steps to encourage tourist traffic. In addition to the special measures adopted to promote tourist traffic from abroad, steps have also been taken to encourage internal tourist traffic.

ATTRACTING VISITORS TO HILLS

To attract visitors to hill stations in particular, the Ministry of Railways have provided for the issue of concessional return tickets at one-and-a-half single journey fares in first, second and inter classes to the popular hill stations such as Simla, Pathankot (for Kashmir), Dehra Dun (for Mussoorie), Kathgodam (for Naini Tal), Ootacamund, Darjeeling, Shillong etc.

Recently, to celebrate the Railway centenary, "travel as you like" *shatabdi* tickets costing Rs. 30 each for a fortnight's travel by third class over the whole of each zonal railway were also issued during the first 16 days of April and May, 1953. These were on the whole well received by the public.

The Ministry of Railways have further authorised the zonal railways to issue concessional return tickets between specific pairs of stations, particularly in connection with important *melas* and fairs.

TOURIST PROMOTION BODIES

The Ministry of Transport have also encouraged the setting up of tourist bureaux and advisory committees, both private and official, in all important hill stations to give information to visitors and render other assistance such as preparation of itineraries and arrangement of accomodation.

Simla, Naini Tal, Ranikhet, Kodaikanal, Ootacamund, Kulu, Mahabaleshwar, Matheran, Abu and Darjeeling have already set up such bureaux and advisory committees.

Some of these bodies have arranged special festivals, which are attracting a large number of visitors. The Ministry of Transport are giving their support to these festivals by publicising them all over the country and by exhibition and distribution of varied tourist publicity literature produced in the last three years.

The Jammu and Kashmir Government have an official Visitors' Bureau of their own. In view of the importance of Kashmir as a focal point of tourist interest, the Ministry of Transport have also recently opened a Tourist Information Office at Srinagar. This office is one of the chain of six regional tourist offices which the Government of India have already opened in important cities in India to promote tourism.

AIR-CONDITIONED SERVICES

Regarding railway facilities other than concessional fares, air-conditioned services now operate on practically all the principal routes. Daily air-conditioned services are now available for journeys between Delhi and Kalka for Simla, and Delhi and Pathankot for Kashmir.

For those who wish to be independent of hotels, comfortable first class tourist cars can be reserved, which afford the maximum space possible for the comfort of the occupants in addition to the provision of kitchen facilities etc. These tourist cars can be detached at suitable stations as desired by tourists. A limited number of economical third class tourist cars, with kitchen facilities, is also available for tourists.

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harmful materials are present in the blood, they may be carried to the foetus, and permanently injure it. The growing foetus is dependent on its subsistence, protection and survival on the welfare of its mother. Therefore the unborn child is subject to many influences provided these influences can find their way through the placenta and enter the umbilical cord. Nature has taken care to limit these transmissions. (It is important to note that musical talent cannot be transmitted through the blood of the mother to the child, nor the influence of the eclipse of the moon.)

Certainly, the genes and environment will have an effect on the musical ability of the child!

Biologists have proved that an individual is what he is because of two factors—genes which determine his character and secondly the environment, in which these develop. Though both heredity and environment are of tremendous importance to the child, fears, cravings, desires and wishful thinking or curses play little (and that due to coincidence) or no part in the final result.

The United Nations-Transport and Communications (II)

By N. Muthukrishna Iyer, B. A. B. L.,

Association for United Nations, Tanjore, Madras State

(Continued from May issue)

LACK of transport facilities retard agricultural development and transport of foods especially perishable foods to the consuming centres and to the ports for export will be hindered by inadequate transport and communications thereby reducing economic development and affecting the production as well the distribution of goods. Countries dependant on foreign ships for export generally are victims of discriminating freight tariffs. Sharing of dish during the lean years of food crisis and in areas where has been hunger has been made possible when the I.E.F.C. and the M. C. O. made for transport facilities by promoting international cooperation in occean navigation and sought for removal of Governmental restrictions and discriminations. Equitable distribution of food requires speedy and smooth transportation. A man cannot be free or exercise his freedom on an empty stomach.

The purpose of the Inter-Governmental magic time consultative Organisation (I. M. C. O.) is to provide machinery for cooperation among various governments in all matters relating to safety at sea, for the removal of all discriminating restrictions and unfair restrictive practices by shipping concerns, for the unification of maritime tonnage through closer adherance to Oslo Convension, for coordination of activities in fields of aviation, shipping, and telecommunication and meteorology and for alleviating all barriers to international shipping. The pollution of coastal waters by the discharge of waste from oil burning ships has been a matter of intense concern and various attempts are being made to achieve international agreements to protect fish and bird life from the dangerous effects of oil and to prevent fire hazards to ports arising from the same source. The discharge of radio active waste from ships using atomic energy as a source of power is a new danger. In 1951 the United Nations Security Council called upon Egypt to terminate its restrictions on the passage of ships through Suez Canal wherever bound, on a complaint from Isreal. By international agreement danger in Sea travel is removed by having a net-work of 37000 light houses around the globe to flash warnings of danger and guide ships by night; charts of the seas and coastal waters provided by different nations are made available to all; standard shapes and patterns of buoys mark the channels and harbours, entries; wire-less links ships with each other and the shore. Navigators rely on international codes as they steer their ships safely from port to port; today sailing in the high seas is routine-almost prosaic-due not so much to better—ships as to international cooperation for safety at sea. A French lighthouse keeper watches for you along the mediterranean and a Russian guards your passage through the Black sea. International Morsecode is world team work in action. Except for coastal navigation shipping is international in character. The availability of shipping services to world commerce without discrimination is the greatest good and there shall be no restricting the freedom of all flags to participate in the worlds Overseas trade. Today when a ship unloads its cargo you can be reasonably sure it is not unloading disease at the same time and ships in port are no longer a menace to public health thanks to World Health Organisation.

Since the Wright brothers made their successful flight air planes now cross the broad Pacific Ocean and lofty Himalayas or schedule and travellers think it common place to break-fast in Europe and take up business in North America not later than the following morning. Expanding air routes without regulation could have become a hopeless jungle of misunderstandings leading to war. Piloting air plane over Europe is a tricky job; imagine that you are a Scandinavian pilot capturing an American built transport ship and taking off from Paris on a flight to Turkey. You cross over areas whose ground stations speak different languages, and you cross over national boundaries and frontiers of states whose political policies are opposed at intervals starting from a few minutes to not more than 3 hours. The International Civil Aviation Organisation (I. C. A. O.) concerns itself with problems of international civil aviation, the establishment of international standards and regulations, enforcement of use of safety measures, uniform regulations for operation, simpler procedures at international borders, promotion of the use of new technical methods and equipment, simplification of government customs and public health regulations.

International air travel is made both easy and safe (by I. C. A. O.) by a new control plan for Europe's airways; by setting up light information centres in the middle east to be operated upon by international organisation; by elimination of deficiencies in ground installation; by adoption of prescribed standards

Philips and the Indian Railways Centenary Exhibition

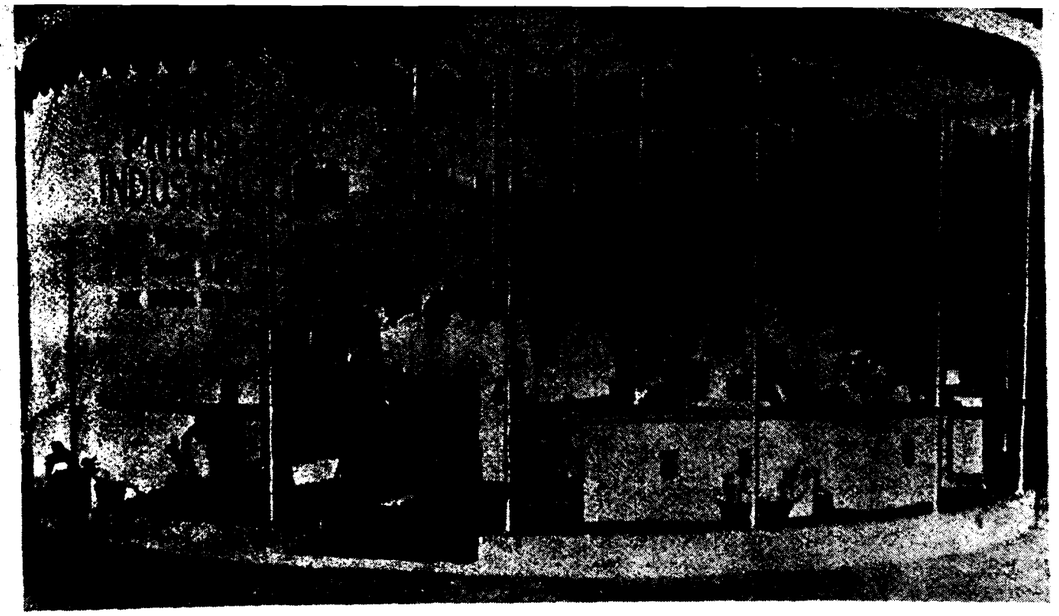
WITH the two and half month old Indian Railways Centenary exhibition in Delhi coming to a close now, the house of Philips can with a certain amount of pride recall their very intimate association with this unique exhibition and their share of contribution towards making this national event a thorough success. No one who has visited the exhibition has left it without the name of Philips imprinted permanently in his or her mind. The magic garden casting its magic spell, the ROBOT speaking several languages (thanks to the Philips tape recorder) and distributing handbills, publicity items etc. and the tape recorder recording and playing back speeches, music and funny odd items performed by the visitors themselves including on one occasion by no less a person than our Central Minister Sri Jagjivan Ram, drew a constant flow of crowd at the Philips stall standing almost at the main entrance of the exhibition.

The illumination of the entrance gate of the exhibition, the central Pylon, the Indian Railways Pavilion, the Railway platforms and the streets crisscrossing the exhibition premises and the floodlighting in general was undertaken by Philips true to their time-honoured tradition in the field of lighting. The announcements made from the Pylon and heard so distinctly in all corners in the exhibition were broadcast through the Philips amplifying equipment and it can be said without any fear of contradiction from any quarter that Philips Public Address equipment can be depended upon on big occasions such as this exhibition.

Outside this exhibition Philips has already been, for 22 years now in India, a household name and an average person while looking for quality and service will invariably look for Philips which has guided the choice of millions in all corners of the globe for more than half a century now. Philips is no longer associated with Lamps and Radios alone but quite a large range of articles not confined exclusively to the field of electricity has come within the purview of Philips production and marketing schedule. Philips X-Ray equipments, Pharmaceuticals, Measuring instruments, Electronic apparatus, Industrial equipments and a quite a good range of various other articles are already well known with the Indian Railways as elsewhere.

Philips Robot Distributing Handbills.

Philips, against the back ground of this relationship firmly established with the Indian Railways are constantly at pains to work out better and more effective ways and means to serve the national cause of Indian Railways and look forward to a closer co-operation with them in the service of the travelling public.



A Constant flow of visitors at the Philips Stall.

It was Philips Amplifying Equipment.

concerning cleaning of snow, gravel and similar-meterials from runaways; by reassignment of radio frequencies for air-craft and increased use of telephoney between air and ground and between ports, by the use of a new language of standard phrases by which airpilot and ground station could be understood; by use of fishi g boats, canal corps, helicopters and alpine teams for search and rescue operations and increasing the number of weather observation stations; by enforcing standards of air worthiness of aircrafts and improvement in the efficacy of air craft accident inquiry and allowing nations other than the one in whose territory the accident occurs to take a larger part in the investigation into its causes, by requiring nations to give the benefit of their knowledge and experience in air transport; by participating in the U. N. Plan of technical assistance for the economic development of underdeveloped areas; by conclusion of technical agreements which directly influence travellers and reduction of formalities in the matter of transport permits and landing; by building international wheatherships and stations which have participated in several dramatic air and sea rescues, weather reporting and navigation services; by international standardisation of worldwide charts and air navigation facilities including blind landing and navigation equipment; by providing better radio and meteorological information etc. To cope with jet propelled planes flying more than 400 miles per hour at over 40000 feet the United Nations experts are recasting the air maps, establishing centres to report information on higher altitudes, advising the use of radar and telephony and considering the problem of high level fuel consumption. The I. C. A. O. is directing its attention to the speeding of travel and cutting "red tape", simplification and standardisation of entrance visas, direct transport of passengers from one country to another, and the procedure established for the entry of equipment, spare parts, stores and ground equipment in order to avoid delays for servicing and repairs at points of call on international flights. The I. C. A. O. has recommended the setting up of 583 weather observation posts including several equipped to observe weather condition up to a height of 55000 feet, 34 main weather forecasting offices and 40 observation posts to report 4 times a day, and flight information services at several points.

The I. C. A. O. working in close collaboration with the International Air Transport Association, Federation Aeronautique Internationale, International Telecommunication Union, International Meteorological Organisation, Universal Postal Union etc., creates standards for international air navigation; acts as a tribunal for settlement of international aviation disputes; draws rules of the air, meteorological codes, dimensional practices, personal licensing, operating procedure for both air and ground crew; enforces observation of international airlaw and of legal conventions on the international recognition of rights of aircraft and all matters relating to the healthy development of international relationship making civil aviation safe, reliable, economical and useful; and helps generally to create and preserve friendship and understanding among nations and peoples of the World.

The I. C. A. O. has given advanced training to aviation officials and specialists from many countries of the world and has provided technical experts on civil aviation, air transport services, radio communication; meteorology etc., to about 25 countries which needed and applied for such help. An aviation college has been established in Indonesia by the I. C. A. O. with the help of the T. A. A.; it has published a series of aviation terms designed to unscramble misunderstanding of about 2500 commonly used terms since accuracy in the use of aeronautical terms is made imperative by tne speed of air line vehicles. It has opened fellowships to enable pilots study commercial flying on road. Technical assistance is given by I. C. A. O. under the expanded programme for (1) organisation of national civil aviation departments; (2) technical surveys to ascertain civil aviation requirements; (3) design, construction and maintenance of airports; (4) installation of air navigation facilities; (5) organisation of air traffic control; (6) aeronautical communications and radio aids to navigation; (7) aeronautical meteorology; (8) flight operations and other ancillary services required by civil aviation; (9) air transport organisation and administration (10) surveys of economic and legeal aspects of air transport; (11) and training in all branches of civil aviation; The greatest ocean air rescue was accomplished on 15—10—47 when Beoing B. 314 was forced down in Mid-Atlantic and made a crash landing into Sea. In the beginning of 1953 India and Pakistan settled an old dispute (which baned Indian air craft flying over Western Pakistan frontier) permitting Indian air planes to fly over Pakistan directly to Kabul and to export aviation gasoline over land through Pakistan to Kabul instead of carrying fuel for the roundtrip on each flight. For land—locked Afghanistan air transport means easy communication with the outside world.

(To be Continued)

TOURIST SERIES—XVII

Of Tourist Interest on Southern Railway

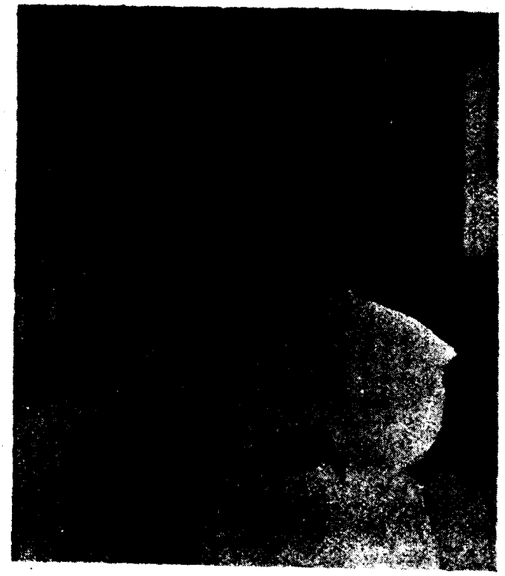
Velanganni

IN this age of over-emphasis on materialism and under emphasis on spiritual values, few places of pilgrimage in this country can claim the distinction of attracting an ever-increasing number of devotees and tourists every year as the shrine of the Blessed Virgin Mary at Velanganni.

Popularly known as Arokyamatha and "Our Lady of Health" because of Her reported miraculous bealing powers, the shrine is situated in a lonely village off Negapatam, a major Municipal town on the Tanjore—Nagore branch of the Metre Gauge section of the Southern Railway.

Although there are short cuts along the sea-coast, the average tourist finds it more convenient to cover the distance of 7 miles along the trunk road leading to Tiruthuraipundi, by the bus or country cart.

Set against a picturesque background of dense cocoanut groves on the golden beach-sands, the shrine with the sleek twin-spires of purely gothic style overlooking the wild sea, presents a striking scene not only to the visiting pilgrims, but to the sea-farers passing by, to whom it is at once a land mark and a source of inspiration.



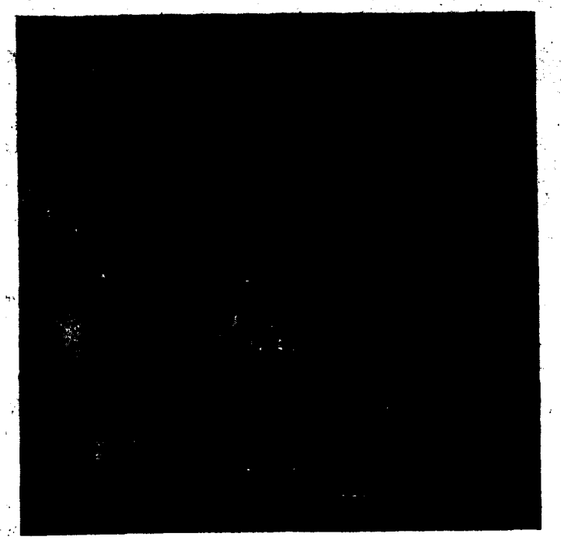
Rev. M. V. Rodrigues—the present Parish Priest and head of the governing body.

A General view of the Church.

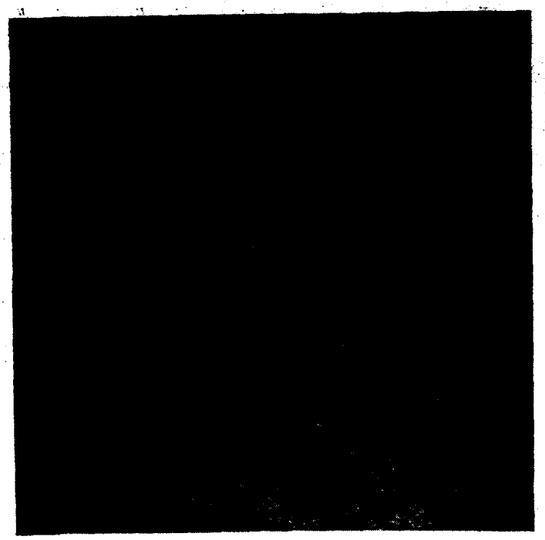
The origin of the early chapel remains obscure with no historical data. Neither the priest nor the pilgrim can today supply an adequate information except a handful of legendary accounts which exist today relating the origin of this 250-year-old shrine.

A popular version is that the original church was built by a Hindu businessman, who after long illness had a miraculous cure by the Grace of Virgin Mary to whom the shrine is dedicated. The Holy Lady who appeared in his dream one night desired that a chapel be erected in Her Honour at the present site and that he would be cured of his disease. And so did the original church rise at the efforts of the fortunate businessman who, it is stated, thereupon embraced the Catholic faith.

The early church with a tiny dimensions of 24'—0" by 12'—0" through a gradual process of development has been growing in size and shape till 1920, when, during the tenure of an energetic Rev. Noronha as Parish Priest, attained the present size and status.



A close-up view of the High Altar.



Main entrance.

A wing of the Church.

A section of the spacious Museum in which are treasured the various gifts offered by devotees every year.

The present church with the towering elegant twin-spires at the facade, and the dome above the High Alter which repeats the contour and lines of the spires at the entrance, is a happy specimen of modern gothic architecture. The lay-out of the church in its present design with the four wings resembles a huge cross with the dome as the centre. Each wing measures 112′ and the dome is 24′—0″ across.

Heights of spires and dome are 82'—6" and 93'—0" respectively.

The Altar at the centre is surrounded by a panel of mosaics in blue depicting various biblical scenes. A pleasant combination of diffused light passing through the various sky lights in the dome reaches the Altar adding to its grandeur.

The Shrine is visited by a steady stream of pilgrims all the year round. The ten-day festival period commencing from 29th August every year sees a concourse of devoted pilgrims which includes many non-christians as well, drawn from almost every corner of India, and even neighbouring countries who gather there carrying with them "Thanks offerings" ranging—from mere candles to articles of silver, gold and other valuable ones, offered in grateful acknowledgment of the favours received by them from the "Matha".

The peak attendance is on the last day of the festival (8th Sept.) when the idol of Virgin Mary and other Saints are carried in procession in tastefully-decorated cars along the four main streets thronged on either side. A conservative estimate records the attendance last year at 50,000.

Those in charge of the Church have not ignored the physical and temporal needs of the pilgrims who gather there in tens of thousands annually, such as sanitary, police, medical transport and other arrangements. Towards sanitary arrangements alone, efficiently maintained by the District Board of Tanjore, the Church is paying from out of its fat funds to the tune of Rs. 4000/- annually as half contribution towards the expenses. There is a small Hospital and a Police Station with a resident Inspector. And the question of—conveyance which till the recent past has been a problem to all concerned has been successfully tided over by the present Parish Priest—Rev. Rodrigues who justly feels proud on his accomplishment in enlisting the co-operation of an efficient private-owned bus agency, thus ensuring regular and frequent bus service between Negapatam and Velanganni, particularly during the festival period.

The Shrine at Velanganni, which, in the process of development through the decades has risen in rank equal to, if not surpassing, similar national shrines in the West has been a source of comfort and consolation to many a soul—seeking to be delivered from spiritual and physical illness, that it is described by them as the "Lourdes of the East".

Cogs in the Wheel–I

By N. G. Iyer

I HAVE often heard it said "What do I care, so long as I get my salary on the 1st of every month, it matters little whether I do any work or not, whether the work that is allotted to me is palatable or not, whether I do it with conscious effort or not."

These sentiments are expressed by those who have grown grey in their work, that is, those who have been through the "mill" so to say, and are supposed to be reasonable and responsible elders. They are mostly on the verge of retirement with only a few years left.

Age and experience do not seem so have pulled much weight in their case; not they are not eager to make themselves useful; not they are not prepared to put forth their best even then; not that they are not mindful of the harmful effects on their colleagues of such an attitude; but that they believe that they have reached the stage of stagnation—and hence of frustration—the belief that despite their best efforts, recognition of merit and ability is far remote to come, and that by the time they begin to have a new feeling—if at all they are able to summon it—they would have to say good-bye to their officers and colleagues. They believe that all that is left for them is to vegetate for the remaining few years of their career.

This belief is further strengthened by the consciousness that in a majority of cases many of them are assigned to insignificant routine work, or, are relegated to the limbo of forgetfulness, their best talents having been eaten up.

To begin with, such an attitude is unbecoming of a human being, more so in the case of an employee. It is disastrous in that it kills the germ of enthusiasm and energy: it dwarfs the mind and produces a feeling of desperateness. But is the employee to be blamed? Is he not a victim of circumstances? How often has he been ridiculed in the eyes of his colleagues? Has he not made the best effort during the prime of his youth? And what has been the result? These thoughts enter his mind and he is unable to find a satisfactory answer to them. And so he grinds the wheel unmindful of what happens to him or to his co-workers in a sprit of calm resignation to the inevitable—the inexorable law of fate and fortune.

Whatever be the cause which gives rise to this attitude, it does not behove well of an establishment to give room for such a feeling to develop in the minds of its employees, whatever be their age and experience. For, once this impression gains ground, it spreads like wild fire and consumes in its flames all that is good in man and society turning him into a brute.

Tracing the career of an average government servant, supposing one starts at the lowest rung of the ladder as a routine clerk, he has the advantage of a time scale of pay which reaches him to a certain stage in the course of a few years without any pitfalls. He endeavours to make himself useful, ready to learn and assimilate things and apply his intellect to the work at hand. He helps his co-workers, takes them into his confidence, seeks their help and assistance whenever needed, displays a receptive mind, a spirit of accommodation and of tolerance; pays obeissance to his masters, and realises that in his conduct and good work lies his salvation, i. e., promotion, which he sincerely believes will merit recognition sooner or later.

After the first few years of energetic work he slowly finds, much to his chagrin, that there is not any charm in the work at hand, that he who grinds well grinds the hardest, that most of the work remains eternally routine and unintelligent, that merit and ability do not count for anything, that recognition is slow to come—and perhaps never comes—and that he has to pass through many hurdles before he reaches the stage of 'qualifying' for promotion beyond the the beaten track wherein he has earned his annual *baksheesh*.

Selections, examinations, tests—written and oral—interviews and what not —there is a plethora of these "amenities" which he has to get through. From stage to stage he has to prepare himself afresh for ordeals which he has not faced before. He has to satisfy the different moods of a variety of officers and attune to their idiosyncracies.

It is at this stage that he finds that apart from merit and ability, which do not really matter very much, he has to possess certain exterior qualities to befit him for easier "run up". These are things that do not enter his mind in the earlier stages of his career, and when they do come to have some significance and influence, he finds it is too late for him to change his outlook and adapt himself to the requirements of the new situation. When such things

(Continued on next page bottom)

"The Engineering Department" (IV)

By A. H. Pearson

WHILE going a journey by rail your train will roll over a railway track, pass station buildings and signal cabins, rumble over huge steel or concrete bridges, click over small culverts, and perhaps go through the darkness of a tunnel in a mountain. The construction and maintenance of all the thousands of miles of permanent way, structures, bridges, and many other things are the responsibility of the Engineering department. The executive who controls this department is commonly known as the Chief Engineer.

At headquarters the Chief Engineer is assisted by Deputy Chiefs, a number of Senior and Junior Engineers and a large body of subordinate technical and clerical staff. Throughout each railway system there are also the senior divisional and district engineers, assistant engineers, and a vast number of subordinate personnel from inspectors down to mistries, gangmen and unskilled labourers.

Anybody who may have at some time noticed a railway track with the two steel lines on a bed of wooden or steel sleepers may never realise the amount of organisation and work required to lay down and maintain that track. First, there is the earth-bed or road on which the rails will have to be laid. This has to be specially prepared to take not only the rails, but the enormous weight of the trains to run over them. Then there is the ballasting, the wooden or steeel sleepers, laid at right angles to the rail, on which are fitted other components, like chairs, jaws etc. and finally the rails to be put down. The section of track thus laid down then has to be packed by ballast until it is ready to take the heavy traffic that is to roll over.

When the construction Engineers and staff have done their job the maintenance staff then have to take over. Every train that passes over the track sets up strains, stresses and vibrations, and the track is also exposed to all the vagaries of the changeable weather. If the tracks were left uncared for a number of defects would soon develop, in the way of a gauge-spread, components working loose, alignment going askew, and so on. The Engineers and the permanent way staff are therefore constantly on the job of checking up the section of the track allotted to them for defects, and wherever these are found, prompt action is taken to remove them. If the track men neglect their jobs, well, one day there may be a serious train wreck with perhaps considerable fatalities. Keeping the permanent way in a state of efficiency and safety to carry all the traffic that is moving over each section of a railway, is perhaps the most important function of the Engineering department.

The Engineering department is also responsible for the construction and maintenance of all structures necessary to the working of a railway. These comprise complete station buildings, yards, bridges, culverts, cabins, engine, goods and parcel sheds, steel trestles for locomotive water storage tanks, water supply and pumping installations, and others.

Among these structures, one of the most important is that of bridgework. A railway track has to be laid over all kinds of country,—up and down hills, in tunnels through mountains, over watercourses, from the thin trickle of a stream to a broad mile—wide river. To span these watercourses, bridges must be built and maintained. This job is usually done by engineers and men who usually specialise in bridge-building work. All bridge structures have to be constantly inspected and checked to see that they are always fit and strong enough to take the enormous stresses caused by the fast and heavy trains that pass over day after day. During bad monsoon weather conditions, when heavy rain has caused streams and rivers to keep rising until banks overflow, the flood levels at each bridge must be watched almost hour by hour. If rail tracks over bridges are flooded, special precautions have to be taken to arrange for the safe passage of trains while dangerous conditions exist. Even though the cessation of heavy rains may ease the strain, the bridge staff cannot relax their vigilance, as there are so many factors which may cause a bridge structure to weaken and become dangerous for trains passing over.

The construction job is another important function of this department. Construction work may be of a nature that requires building a new section of the railway, doubling or quadrupling existing tracks and so on. Before the new section of railway can be tackled, a considerable amount of preliminary work has to be done, in the way of a survey of the entire physical features of the land, over which the proposed track is to run. This survey work may take a few months, as those portions over which the track is to be laid should offer the least obstruction in the way of gorges, cuttings, gradients, and perhaps tunnels. When the survey work is completed and the route is decided, the earthwork, consisting of excavating etc. is then undertaken. When this is completed section by section, then only can the job of track laying be tackled, and the other structures, and buildings constructed.

The Engineering department also has a vital role when major rail accidents occur. A serious train disaster caused by the collision of two trains, or a fast train suddenly jumping the track, usually tears up the permanent way, twists rails out of alignment, and if on, or near a bridge structure, will damage that bridge. Once the wreckage is cleared off a damaged portion of track, the engineering men get on to the job of restoring that track to as near normal as possible with speed, so that perhaps within a few hours of the accident, traffic is again moving, even though at restricted speeds.

Stretching from one end of a railway system to another there are thousands of miles of the two blue steel lines that traverse plains and hills, through tunnels and gorges, over streams and rivers, and thousands of buildings and structures, all of which are essential for the efficient functioning of a railway. To construct and keep all this permanent way, bridges, buildings and structures in a fit condition, and with a high degree of safety, the executives, officers and men of the Engineering department are on the job, day and night, come fair weather or foul.

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happen he finds there is hard tussel in his mind as to whether to go in for the hard "boiled egg" or not. In the end he decides that it is better to leave things as they are and not to bother about them—better part of valour.

Another factor which mars the good feeling amongst co-workers is what I might call the tyranny of the supervisor. The routine and red tapism are such that nothing could go off the proper channel, i.e., the routine clerk to the sub-head, then to the in-charge, to the head clerk, to the supervisor, to the office superintendent, to the officer in the junior rank, then to the senior rank personality, and ultimately to the head or chief of the department who is the presiding diety. Seldom do these processes reach a finality and on the return journey also the file of papers has to pass through the same beaten track. The net result of all these ramifications is that the importance of the man at the lowest rung is not realised or assessed. It is he who has to cook and get ready the repast, serving the dishes tastefully and decoratively. His importance is not recognised; all the credit if there be any, is taken by the men at the top, while all the blame, if any, is shoved on the helpless routine clerk. Division of resonsibility is such that it filters through, but very few are really willing to take responsibility for its own sake and own it magnanimously. The practice is to pass the baby on to the next man—and thus *ad infinitum*—until it gets stuck up somewhere to be unearthed only when a hue and cry is raised by some one higher up.

(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 passenger 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.

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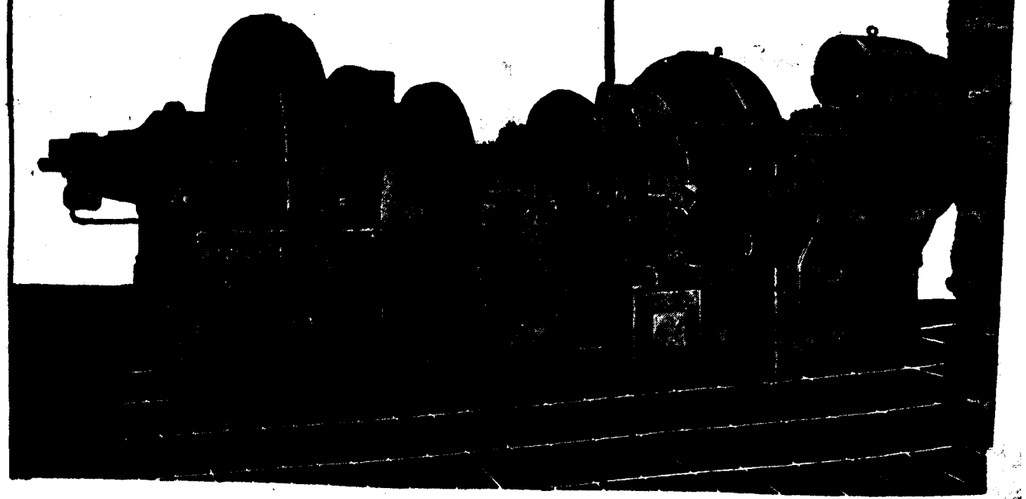

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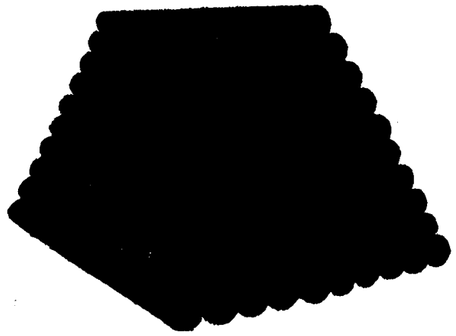

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