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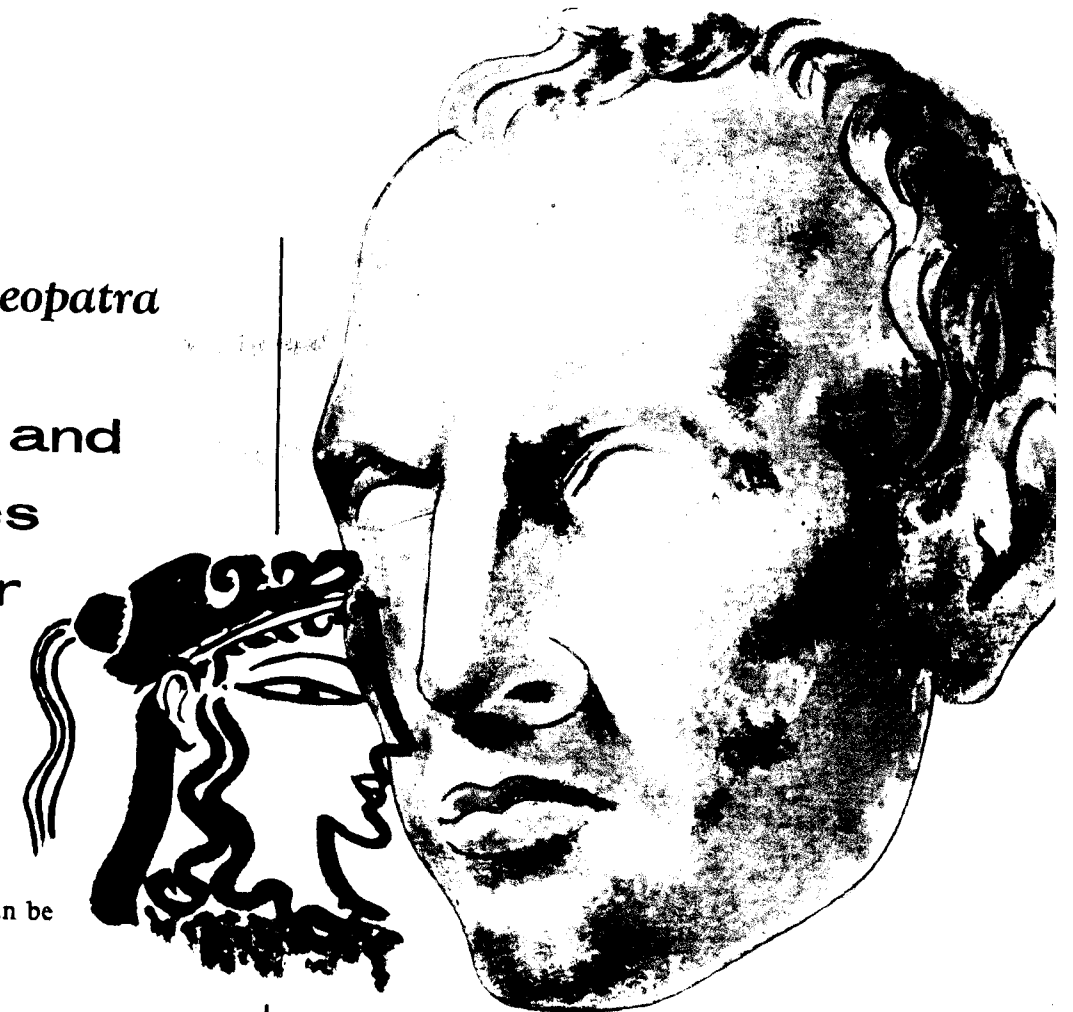
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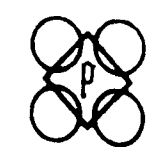
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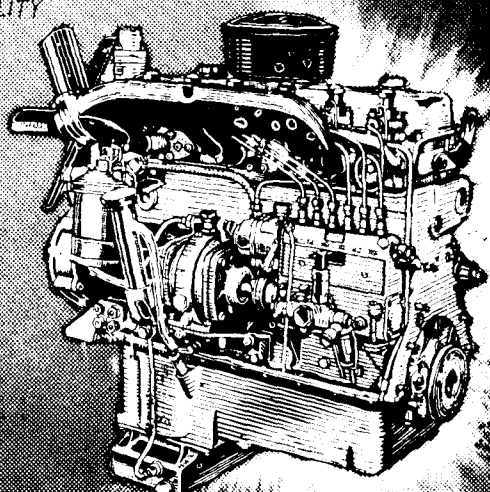
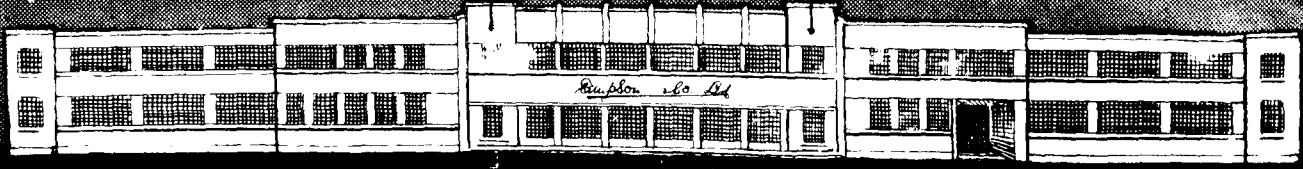
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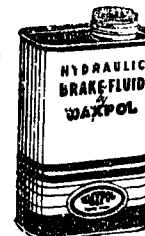
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May 1957

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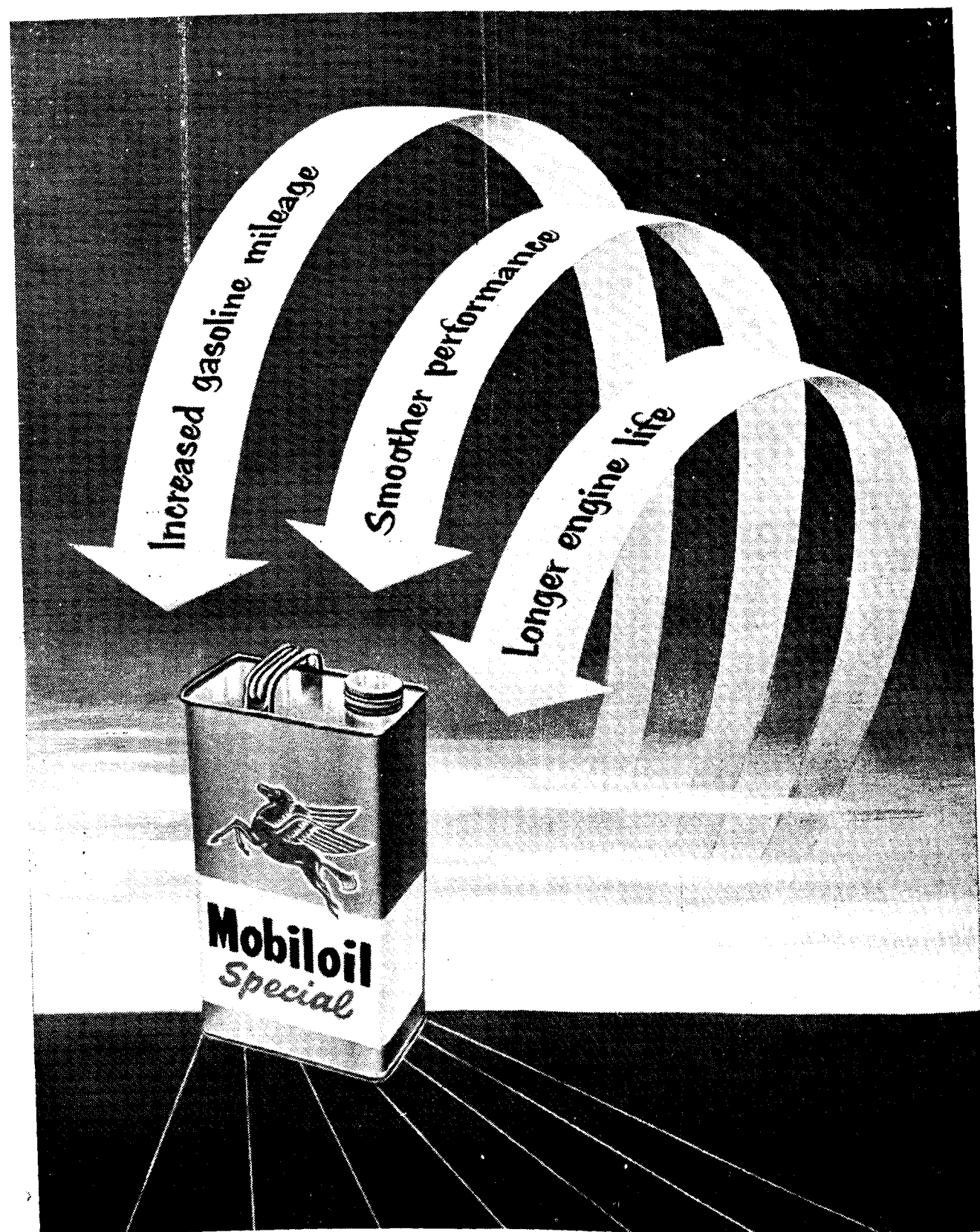
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EDITOR

MOTORINDIA

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editorial

DEVELOP ROAD TRANSPORT

In the context of the latest "Economic Survey," which includes States of Europe and their transport problems, particularly in Western Europe, an article (special to Motorindia) in this issue deals with the comparative costs of rail and road transport and the proper place of various forms of transport and regional developments in road. The article in question should be an eye-opener for those interested in the successful progress of our country as laid down in the Five Year plans, the second of which is now in full swing. It can be seen that intense industrialisation of European countries, after the second war has resulted in a very large increase in the volume of road transport in those countries. India has an even larger area compared to some of these West European countries, and our plan is for the development of various regions throughout the country by the spreading of industries over the entire length and breadth of the nation. We have, therefore, to learn a lesson from this development in transport in Europe. In fact, in Europe, the relatively small share of the railways in transport in recent years reflects the fact that the extension of railways as long coming to an end, except in the less accessible regions. While the possibilities of extension and development of railways in India cannot be said to have come to such a stand-still and though there are schemes for the extension and improvement of the railways in India, the fact remains that the emphasis on regional distribution of varied industries raises a problem and incidentally a transport gap. It has been acknowledged by all those in the know of things whether in the railways or in other spheres of transport that India, if the Second Plan is to be successfully implemented, will require an increase of nearly a 3rd of the country's transport facilities. This traffic has to be accommodated and the capital outlay in the extension of railway services and the time that would be necessary for the extension of such facilities are such that to cope up with the demands of the Second Plan, the country will have to turn to other forms of transport, mainly road transport. In Europe, road services are widely used for the transport of lighter products and of food, but they also offer special advantages for supplying building materials which can be delivered direct to the site. In fact, supplying of materials, food and agricultural products together account in most countries for, from half the two thirds of all transport by road. This is an important aspect which has to be kept in mind when we think of road transport in the economy of our nation. Building projects in India during the Second Plan are perhaps the highest on record for the construction of industry either to house Government offices or to provide for new factories, or for residences for workers of various grades. And these projects have to spring up very quickly so that the housing of the industrial population and the factories can be satisfactorily attended to. As regards food and agricultural products, being predominantly an agricultural country, the case for the transport of food and agricultural products has always got the foremost attention of our planners. These points taken from the progress in Europe go to show that a very extensive development of road transport services in India, by taking advantage of the recent amended legislation which gives certain facilities for the road transport operator, is absolutely essential if the Second Plan is to survive. But what we feel while on this subject is that the cost of road transport operation has to go down and this requires the earnest attention of authorities. One sure way of achieving this will be to help increased production and manufacture of motor vehicles and parts within the country at a greater speed giving proper encouragement and financial assistance to Industries engaged in such manufacture. We do hope that before long the new Governments of the various States in conjunction with the Union authorities will draw up plans for the adequate manufacture and early supply of transport vehicles to the operators at a fairly reasonable cost, for there can be no doubt at all, in any quarter, that the successful implementation of the Second Plan will depend on the extent to which we are able to tackle the problem of increasing facilities for road transport.

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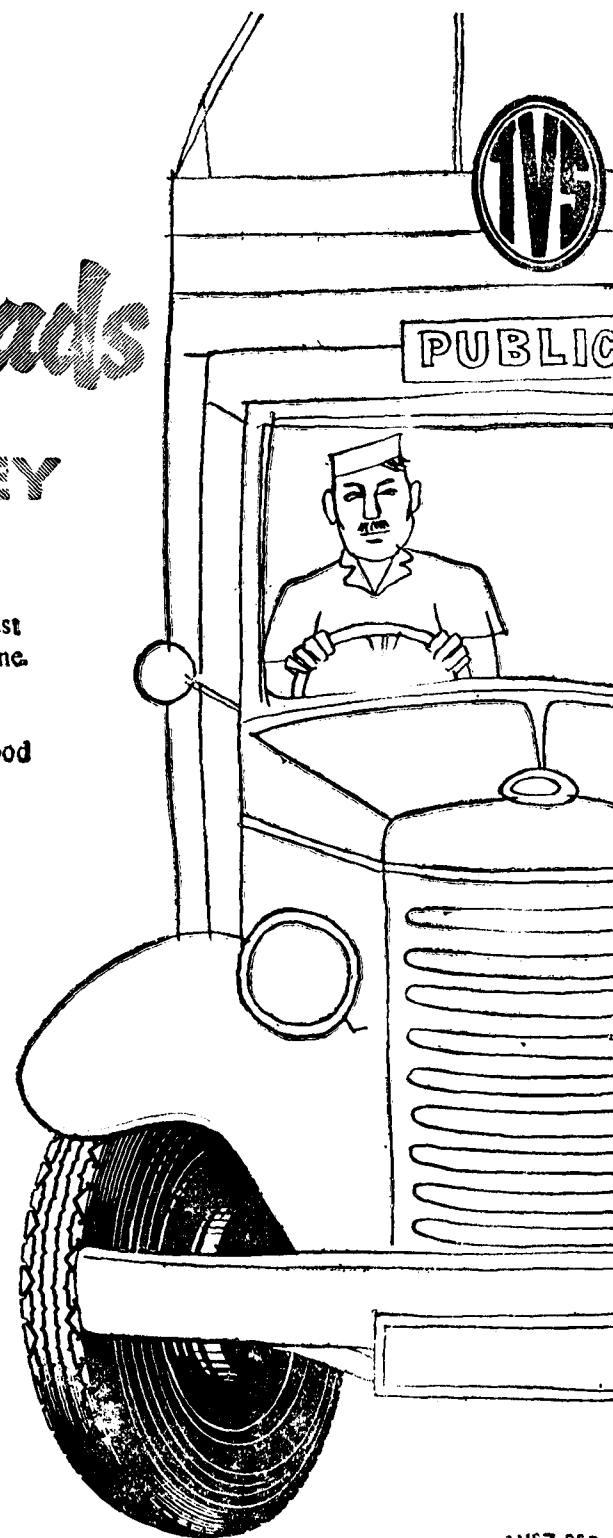
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ROAD RAIL TRANSPORT IN EUROPE

(Motorindia Special)

77

Various aspects of transport policy are examined in the latest "Economic Survey" published by the E.C.E. Based on this study, this article deals with the comparative costs of rail and road transport, the possible impact of various forms of transport on regional developments, the need for more road investment to accompany the continued expansion of road transport in industrialized Western Europe and other related aspects of the subject. The situation in Western Europe offers a striking contrast to that in Eastern Europe, where railways are intensively used and dependence on road transport is still relatively small. In view of the urgent need to meet transport requirements in India today, this article may be of immense interest to readers.

In the industrialized countries of Europe, transport policy faces more complex issues than in almost any other part of the world. Owing to their early industrialization and population density, most European countries have a highly developed railway network and are often served by inland waterways and coastal shipping as well. These factors are largely responsible for the concentration of the population and of economic activity in a relatively few large centres. The development of road and air transport may help to decentralise industry, as it has already begun to do in the U.S.A., though some Governments still seek to protect the state-owned railways against competition from the roads. The United Nations' Economic Commission for Europe (E.C.E.) has now examined various aspects of transport policy* which, in its view, has important implications for the future life and culture of the whole population.

The volume of transport

In Western Europe, the former predominance of the railways has long been broken. Over the past quarter of a century, the total volume of goods traffic has risen by about 80 per cent, to reach 373,000 million ton-kms. in 1954, while passenger transport has more than doubled. Road traffic accounted for about two-thirds of the increase in goods traffic, and for an even larger share of the increase in passenger traffic. As a result, cars and buses now carry a much larger volume of passenger traffic than the railways. So far as goods traffic is concerned, road vehicles accounted for 35 per cent in 1954, the railways for 51 per cent and waterways for the remaining 14 per cent; and the proportion carried by road was actually as high as two-thirds in Italy and Denmark, and nearly two-fifths in the U.K. However, apart from river and canal barges in some countries, the railways continue to be the cheapest carriers of bulky products. The high share carried by road transport in Italy and Denmark reflects the relatively small output of coal, ores and metals in these countries. In some of the more important countries, the overall increase in goods transport over the past 25 years was substantially smaller than the growth of industrial production, largely because of the

shift to highly manufactured goods which have a high value in relation to their weight.

Motor vehicles are, of course, particularly suitable for local and short-distance transport. But in France and W. Germany more than half the goods traffic by road (measured in ton-kms.) is over distances of 50 kms. or more, while in Italy the average haul is as high as 88 kms. Road services are widely used for the transport of lighter products and of food, but they also offer special advantages for building materials, which can thus be delivered direct to the site. Building materials, food and agricultural products together account in most countries for from half to two-thirds of all transport by road. Usually, about half the volume of goods traffic by road is carried by haulage contractors, while the other half is transported by the producers or distributors in their own vehicles.

The E. C. E. expects present trends to continue in Western Europe. Because there will presumably be a continued urge for more car ownership in these countries, prospects for rail passenger transport are not very bright, except possibly on modernized suburban lines. No less important, the output of high-value manufactured products, which are especially suitable for road transport, will continue to grow at a faster rate than that of coal, ores, metals and other bulky products. Fuel, mainly coal, accounts for nearly half the tonnage of goods transported by rail in the U. K. and Western Germany, and for about a quarter in France (though only for 10 per cent or less in the Scandinavian countries); but coal production is expected to increase relatively slowly, while a large part of the rising oil supplies will be moved by pipeline. Moreover, an increasing share of the coal will be consumed in the form of electricity or gas and will involve little rail transport because power stations and gas works are often located near the coalfields. Hydro-electricity, nuclear power and natural gas will also make an increasingly important contribution.

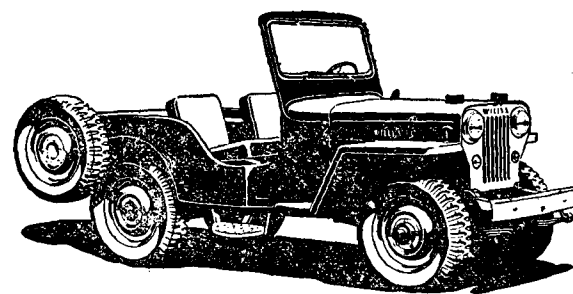
Investment and cost problems

Most of the countries of Western Europe have in recent years devoted between 4 and 6 per cent of their gross national income to gross investments (including renewals, but excluding repair and maintenance) in transport and communications—which are generally

*See "Economic Survey of Europe in 1956," including "Studies of European Transport Problems and Income Distribution in Western Europe." Geneva, 1957.



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lumped together for this purpose. The proportion was substantially higher in Scandinavia, notably in Norway, where shipbuilding alone took 5 per cent of the national income, and it was well below 4 per cent in some Mediterranean countries. Investment in road transport accounted in most countries for more than half the total investments in transport and communications, being usually several times higher than the corresponding figure for railway investment. As shown in the accompanying table, annual gross road transport investment has recently been equivalent to nearly \$50 per head of the population in Sweden, and to between \$20 and \$30 in most of the other highly industrialized countries of Western Europe. It amounted to only \$12 in Italy, and to much less in Greece, Portugal and Turkey.

An unsatisfactory feature of investment policy in a number of countries is the low expenditure on road building and improvement as compared with the expenditure on new vehicles, notably cars. Moreover, except in Scandinavia, expenditure on the roads is generally lower than the total revenue received from road users. In the U. K., road expenditure has until recently been exceptionally low, amounting to about \$83 per vehicle annually, and absorbing less than one-third of the total revenue from the taxation of road users. The U. K., followed by Western Germany, has now the worst traffic problem in Europe, while the road network in France and Sweden is considered adequate for the existing traffic. The U. K. Western Germany, France, Sweden and Italy have all recently announced plans for the construction of motor-ways.

The relatively small share of the railways in transport investment in Western Europe in recent years reflects the fact that the extension of railways has long come to an end, except in the less accessible regions of Norway, Finland and some Mediterranean countries. Apart from this, goods traffic on the railways has tended to decline over the past 25 years and railway networks have frequently been curtailed by abandoning lines where the traffic density was too low to justify maintenance costs. Many other lines are being kept open for freight traffic only. There is, however, a case for the modernization of railways to improve their efficiency. Until recently, only countries with a large hydro-electricity production, such as Switzerland, Italy, Austria, Sweden and Norway, had a large proportion of electrified lines, but the Netherlands' programme of railway electrification is now nearing completion, and other countries are following suit. In the U. K., as in the U. S. S. R., diesel traction is to be introduced on lines which are not to be electrified—at least not for the time being—and both countries have therefore stopped building steam locomotives for use at home. In sharp contrast with road transport, the state-owned railway undertakings in Europe do not usually provide net surpluses of revenue; new investment must therefore be financed wholly or partly by state subsidies. Sweden, Switzerland and the Benelux countries are the only West European countries where the railways seem to have a comfortable margin of revenue over operating costs.

Precise comparisons of costs by road and rail are extremely difficult. As a rough guide, however, the E. C. E. indicates that average railway operating costs in Western Europe were in 1954 equivalent to 1½ U. S. cents per ton-km., to which perhaps 20 per cent should be added for capital charges. Against this, the average costs of long-distance road transport by heavy lorries were in the region of 2 to 3 cents per ton-km. in recent years; and it would have made little difference if the capital charges on the roads themselves had been included and the element of taxation excluded. However, European railways usually carry bulky goods at lower-than-average cost; if these goods are excluded, the average costs of rail transport for all other products are probably not significantly different from costs of transport by road, even over long distances. (This comparison naturally takes no account of differences in the quality of the services.) Road transport is generally in a strong competitive position *vis-a-vis* the railways where traffic is sparse, because such a high proportion of railway costs are independent of the volume of traffic. The countries where railway running costs are well below the European average are generally those where steam traction has been largely eliminated, or where railway equipment is utilized to a relatively high degree.

Future policy

Twenty-five years hence, according to the E.C.E., traffic will probably have ceased, or will be much smaller than to-day, over large parts of the present railway networks in the industrial countries of Western Europe. On the other hand, road traffic, both of passengers and of goods, will be several times the present level. In their investment policy, the industrially developed countries should therefore give high priority to the construction of roads, the readjustment of cities to dense motor traffic and the building of new industrial centres away from the overcrowded old towns. In countries such as the U. K., Western Germany and the Benelux countries, where population density is 10 to 15 times as high, on average, as in the U.S.A., it will be necessary in course of time to disperse both work places and dwellings more evenly, so as to limit daily movement of population from suburbs to town centres, and weekly movements between the towns and the countryside. In the opinion of the E.C.E., railway investments should in general be tested by the same criterion as other productive investments and should be undertaken only if there is a reasonable chance of amortizing the capital before they become obsolete. Investments in the modernization of main railway lines are likely to pay, but this will usually not be true of secondary lines.

Most of the transport investment in the industrialized Western countries will have to be allocated to the congested regions or to transport links between such centres; this may be undesirable from the standpoint of regional development. To counteract the tendency towards further crowding, the E.C.E. suggests that there may be a case for taxing lorries and cars operating in and between congested regions at

May 1957

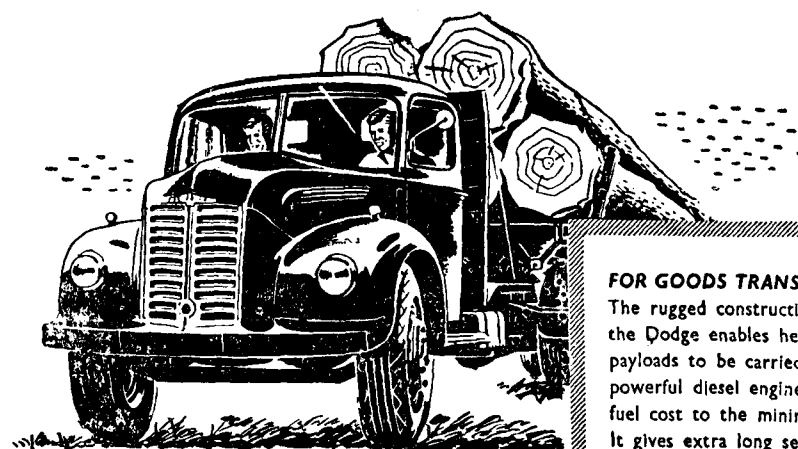
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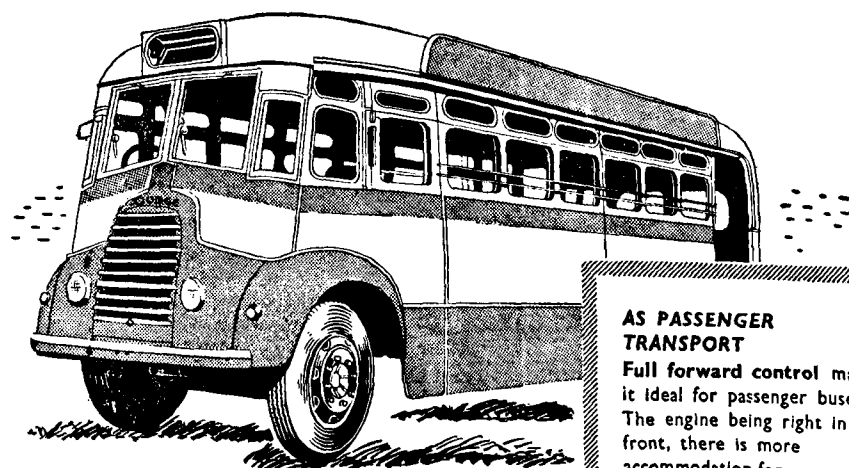
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SELECTED EUROPEAN COUNTRIES : RECENT INVESTMENT IN TRANSPORT AND COMMUNICATIONS (a)

		Gross Fixed Investments as % of Gross National Product						Total Transport and Com- munications	Gross Road Transport Investment (\$ per Inhabitant)	Road Taxes (c) (\$ per vehicle)	Road Expen- diture (b) F.a.
		Road Transport		Railways	Seagoing ships	Other					
		(b) Vehicle	Road	Total							
U.K.	...	2.4	0.1	2.5	0.4	0.4	0.6	3.9	25	260	83
France	...	2.1	0.7	2.8	1.1	0.4	0.6	4.9	28	160	140
W. Germany	...	2.0	0.8	2.8	0.7	...	...	...	20	240	220
Italy	...	2.1	0.7	2.8	0.4	0.5	1.7	4.4	12	310	246
Netherlands	...	2.3	1.0	3.3	0.7	1.2	1.1	6.3	23	250	...
Belgium	...	2.3	0.6	2.9	0.9	0.2	1.0	5.0	30	260	143-153
Sweden	...	3.2	1.1	4.3	0.7	1.0	1.0	7.0	49	240	239
Denmark	...	2.6	0.8	3.4	0.3	1.0	0.7	5.4	31	250	187
Norway	...	1.9	0.7	2.6	0.9	4.9	0.9	9.3	24	200	244
Finland	...	1.9	1.7	3.6	1.0	0.6	0.6	5.8	31	290	788
Greece	...	0.5	0.4	0.9	0.1	0.8	0.2	2.0	2	...	...
Yugoslavia	...	...	...	1.0	3.2	0.9	0.5	5.6	2	...	...
U.S.S.R.	...	...	...	...	1.2-1.5(d)	...	...	2.0-2.5(d)	...	...	...

(a) For most countries annual average of three year period 1953-1955, except last two columns which cover annual average over the four year period 1952-54.

(b) Excluding motor cycles.

(c) Partly estimated, including annual taxes on vehicles, purchase tax, transport taxes, customs duties on vehicles and parts, taxes on fuels.

(d) As per cent of net national income.

Source : E.C.E.

much higher rates than in other parts ; but it is difficult to see how this can be done in practice.

The general situation is different in large parts of Southern Europe, where the roads around or between cities are usually adequate for the time being, but where over a large part of the territories roads are often so bad as to hamper industrialization. Turkey has adopted the policy of concentrating on road rather than railway construction in the less developed part of the country, except where there are large mineral or forestry resources which are likely to require large-scale facilities for transport in bulk. The E. C. E. suggests that a similar priority for road building would be appropriate for other countries of Southern and Eastern Europe.

Trends in Eastern Europe

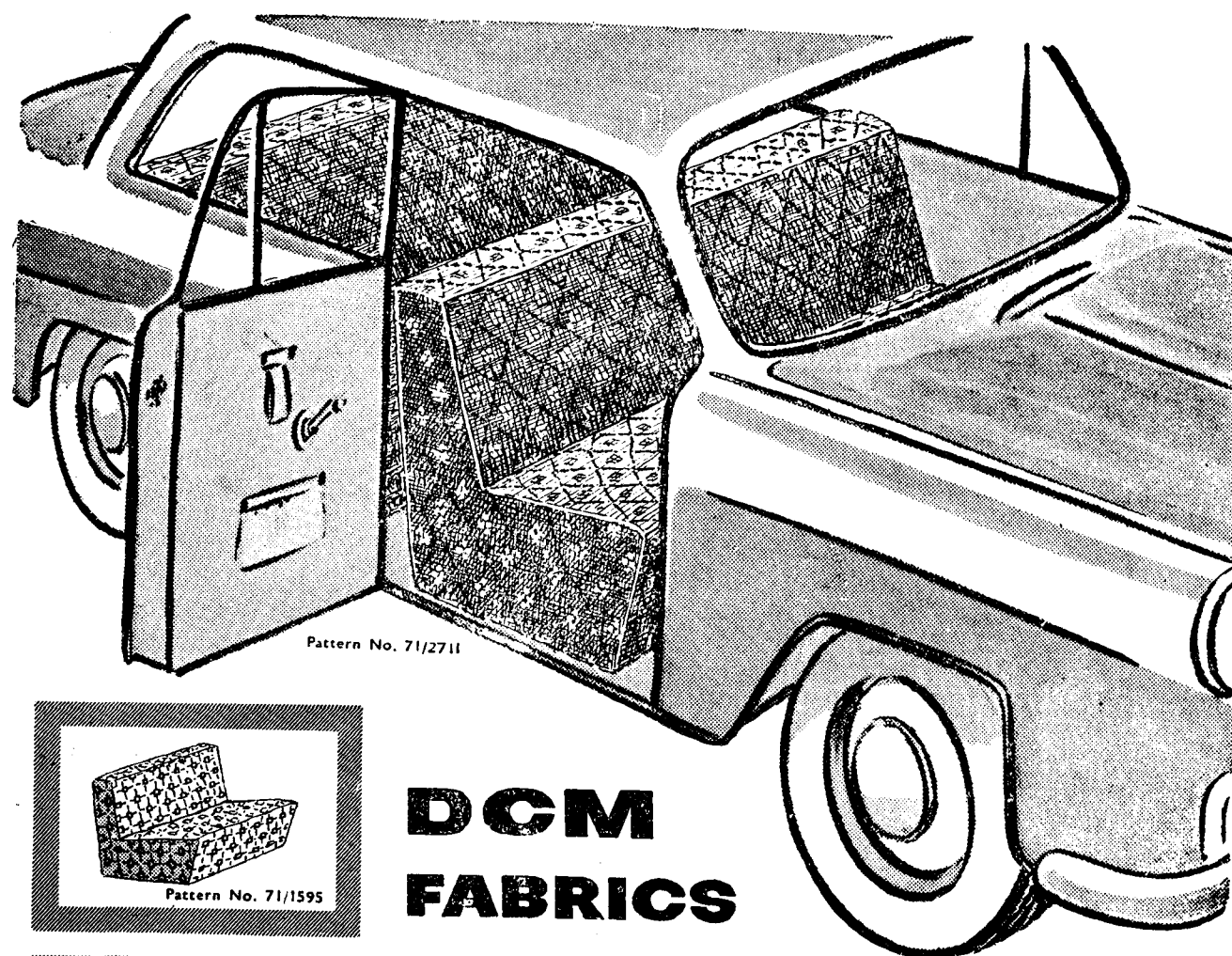
In Communist Eastern Europe, the old pattern of transport, with the railways as the predominant carriers, has so far been maintained. It is estimated that in 1954 road vehicles, mainly buses, accounted for only about 15 per cent of the passenger transport in this area, and for barely 5 per cent of the goods transport. In the U.S.S.R., the total volume of goods traffic increased as much as six-fold in the 25 years to 1954, reaching 957,000 million ton-kms. in that year ; well over 90 per cent of this enormous increase was borne by the railways. The over-all growth reflects both the increase in production, notably of heavy goods, during this period, and such factors as the spread of economic activities to the vast eastern regions. A 40 per cent increase in railway mileage was accompanied by a trebling in the density of goods traffic per kilometre of line, which is now six times as high as in the chief

industrialized West European countries. By the intensive utilization of its railways, the U.S.S.R. has thus been able to handle a tremendous load of freight traffic without devoting more than about 1.2-7.5 per cent of its net national income to railway investment.

In Eastern Germany, Poland and Czechoslovakia, the densities of goods traffic are also higher than in Western Europe, though much lower than in the U.S.S.R. Passenger rail traffic is generally fairly heavy in these countries both because the development of road transport facilities has been held back by centrally controlled investment and because the rates for rail passenger travel are frequently low in comparison with the prices of other goods and services.

Except in Yugoslavia and perhaps in Czechoslovakia (the statistics are not very precise), the proportion of the national product used for investment in transport and communications has recently been well below the West European average of some 5 per cent, and the provisions of the 1956-60 plans indicate that they continue to be lower than in the West. At least half the recent investments for transport and communications were in respect of railways, while investment in road transport was almost insignificant. Most East European railways are now under severe strain, while road vehicles, in addition to being less numerous, are considerably less intensively used than in the remainder of Europe. The use of lorries is usually not allowed without special permission over distances exceeding 50 kms., and in Eastern Germany they account for only 2.3 per cent of the total transport over such distances. It now seems to be the general intention to make more use of road transport, and in the opinion of the E.C.E. there would therefore be a good case for concentrating

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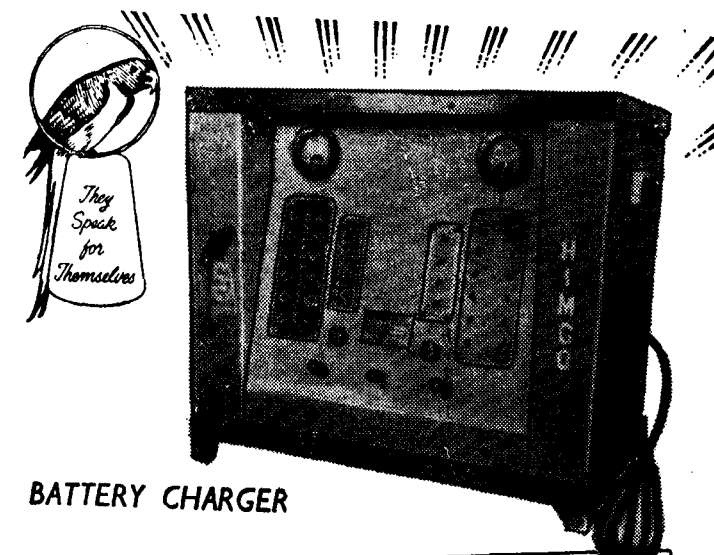
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on the provision of long-distance roads rather than railways. But to make a real-change, it would be necessary to make a larger investment in transport development than is provided for in the current economic plans.

As was underlined by Mr. Khrushchev's new policy directives last month, it is now considered an urgent task in the U. S. S. R., and also in other East European countries, to recognize the internal economy so as to reduce the need for long-distance transport. As in Western Europe, coal at present accounts for well over a third of total East European railway traffic ; but the U. S. S. R. intends to locate new industries near the coal-fields, so as to reduce the transport requirement. And the strain on the railways will be further relieved because an increasing proportion of Russian energy requirements will be satisfied by oil and gas, supplied through new pipelines, and by electricity.

The E.C.E. study thus brings out a number of interesting contrasts between Eastern and Western Europe. In the East, where investment policy has tended to concentrate on heavy industry, dependence on motor transport is still relatively small and the capacity of the railways is very fully utilized. The general tendency will be for highway development to be concentrated on roads needed for goods transport, and private motoring will continue to be of only limited importance. In the West, road traffic has gone ahead by leaps and bounds in recent years, though highway development has not generally kept pace with the growth in the number of vehicles. For the future, the E.C.E. envisages a continued rapid growth in the number of motor vehicles in Western Europe owing to the general rise in business activity, the extension of private motoring, and the shift towards light industry. This points clearly to the need for much more investment in road works.



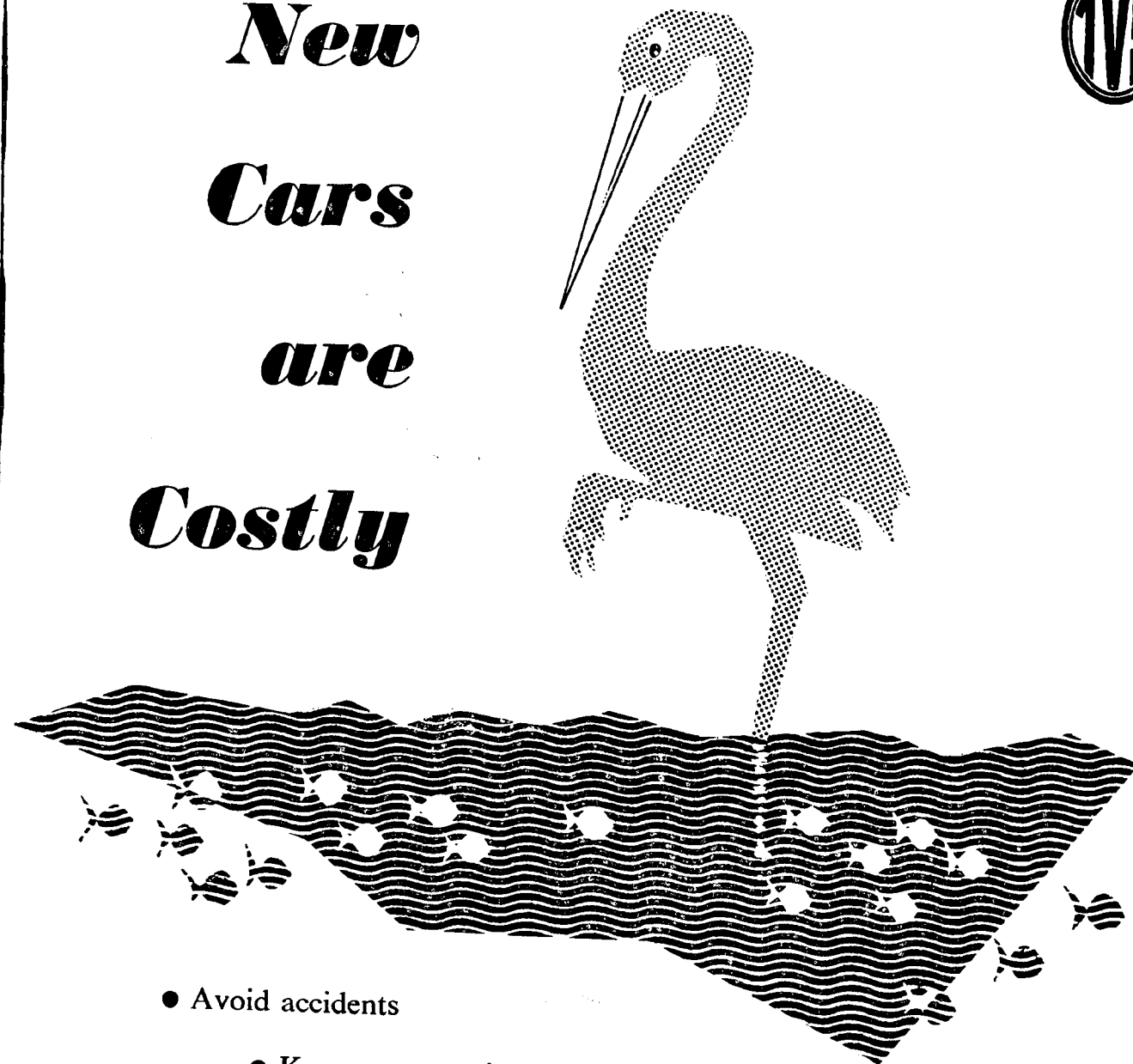
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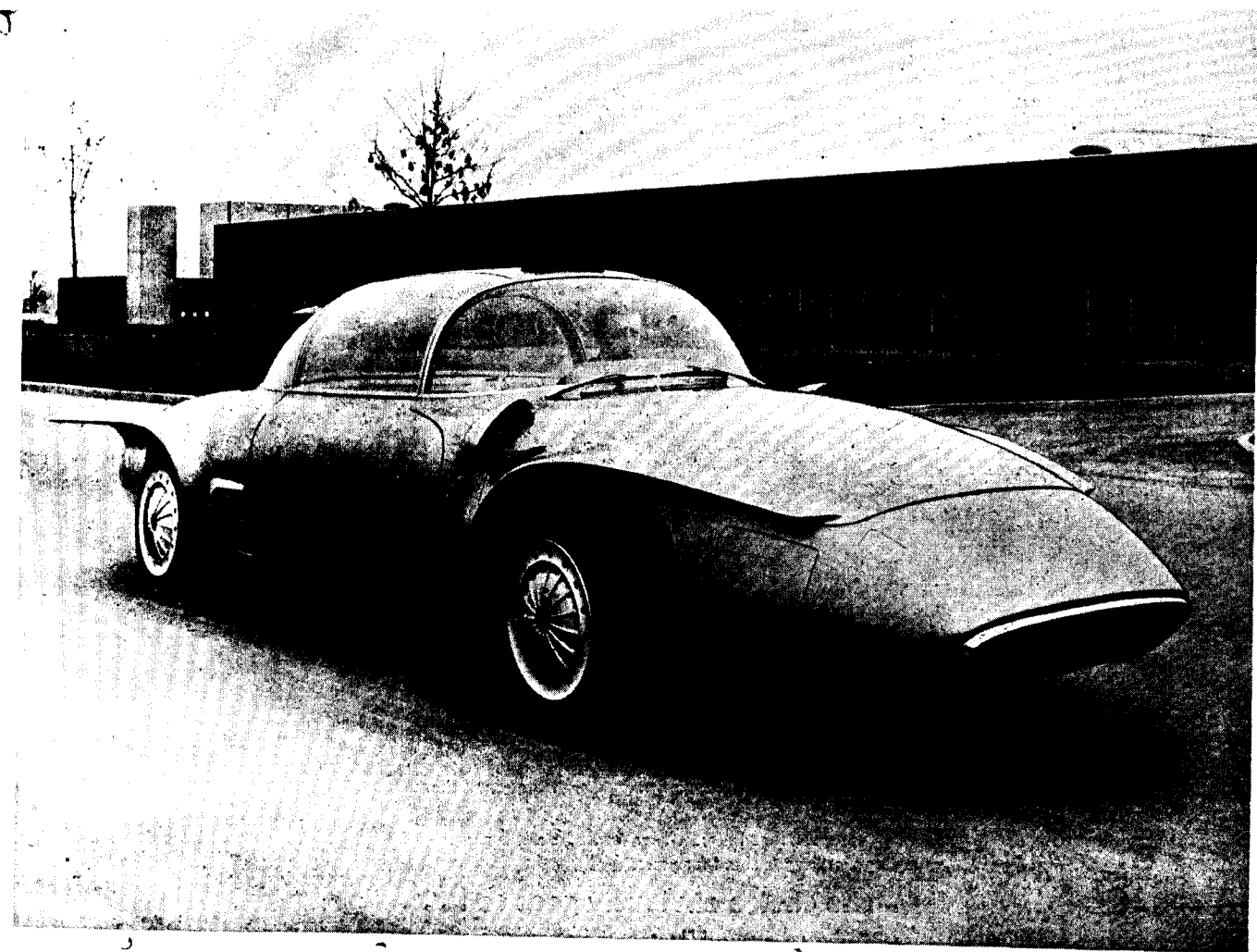
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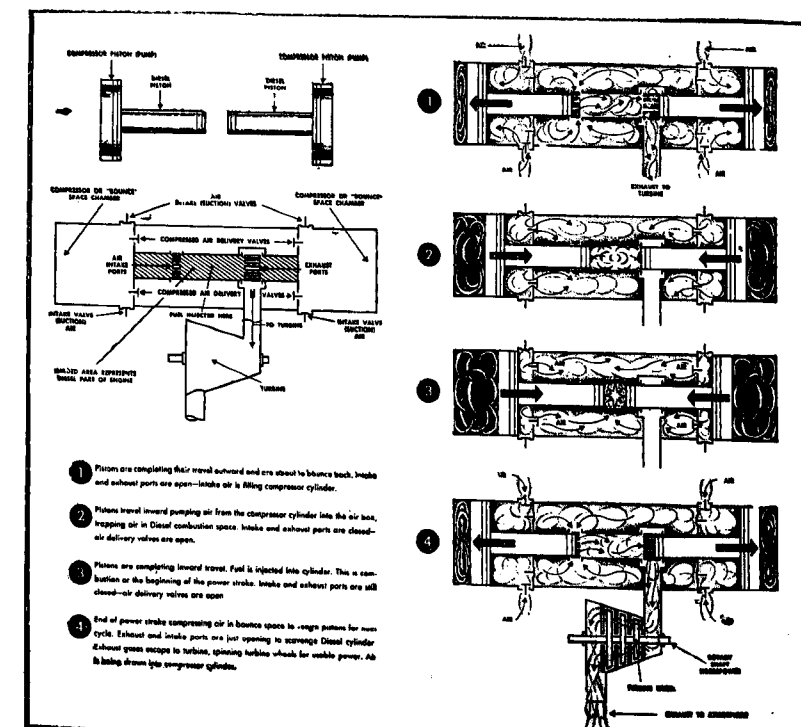


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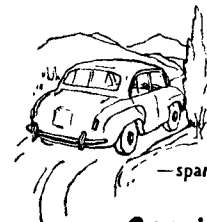
in Cars

FIRST OF ITS KIND in the world is this General Motors XP-500, powered by a free piston engine, announced by GM President Harlow H. Curtice. The new engine, which burns animal, vegetable or mineral oils, "pumps" hot gases through a pipe to a turbine which drives the rear wheels of the vehicle. It is making trial runs at General Motors Technical Center and was unveiled at the Technical Center dedication May 15-16.



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the considerations are

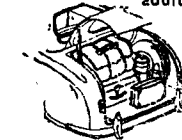


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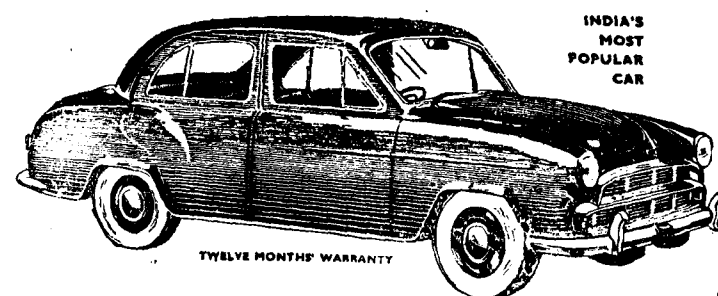


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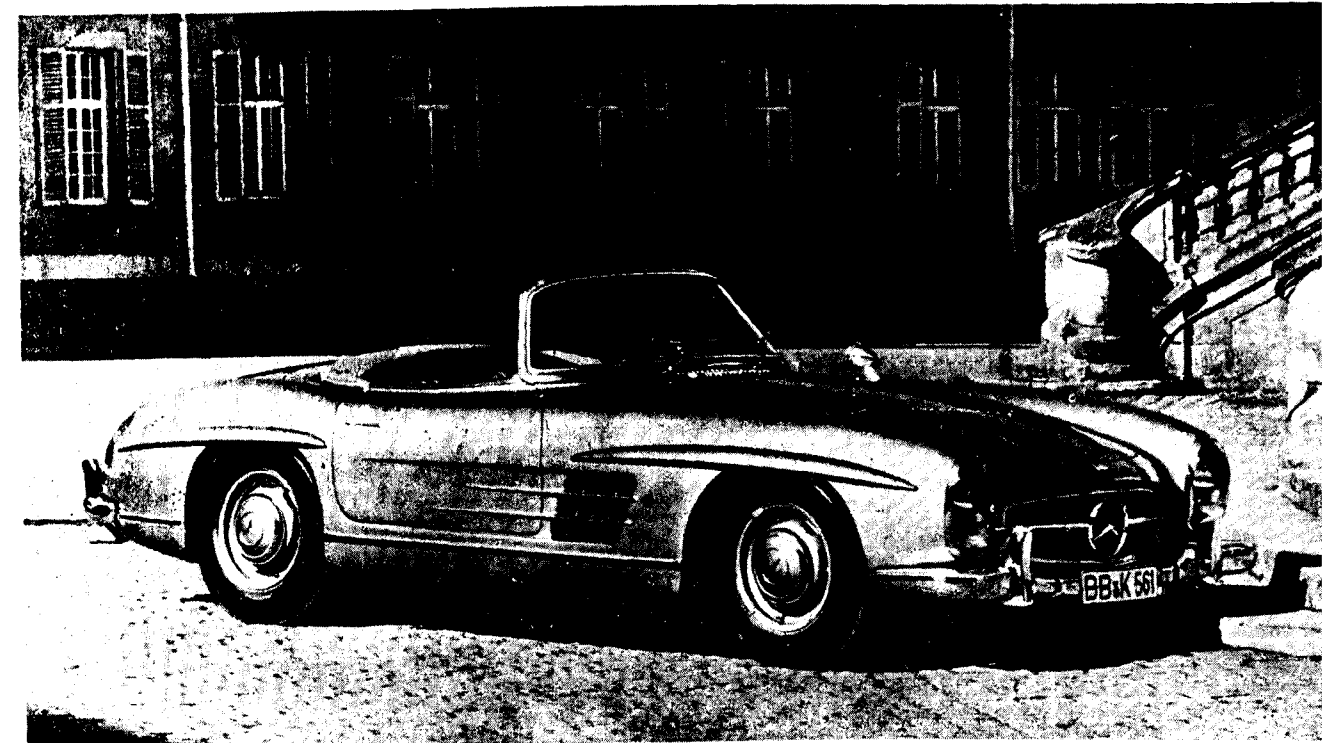
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A throughbred and elegant car



The Mercedes-Benz 300 SL Roadster is a high-class vehicle with a maximum practical value. Its most engaging features are not only its distinguished outlines and driving qualities but above all the immense safety of this fast vehicle which has been obtained by further improving its road holding.

THE MERCEDES-BENZ 300 SL ROADSTER

The Type 300 SL Roadster has been designed by the Daimler-Benz AG in order to meet the numerous demands for a particularly fast, comfortable open sports car which have come from countries all over the world. It incorporates a series of technical improvements which result in an increase in driving safety and general comfort and at the same time enhance the practical value and unique character of this elegant touring sports car.

Among its new features is the single joint swing axle with compensating spring which effects a further

improvement of its road holding qualities, furthermore the roadster body connected with a tubular frame with panoramic windshield, normal doors, rear luggage compartment and a "lighting unit" combining all sources of light.

Presented to the public at the 1957 Geneva Show, this beautiful new version of the 300 SL Coupé which had been equally successful in sporting events as in beauty contests and which is still forming part of the production programme, has, apart from the above mentioned improvements, retained most of the charac-

teristics of the strongest and fastest German production car of which far 1400 units have been built.

6-cylinder engine with gasoline injection

The titled 6-cylinder engine Type 300 SL, a reliable and at same time extremely efficient machine with intermittent gasoline injection—a racing car feature used also in the 300 SL Roadster. The output of the extremely efficient injection engine is 225 HP at r.p.m. (DIN) or 250 HP at r.p.m. (SAE) at a compression

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of 9.5 : 1, using fuels with an octane rating of 100 (ROZ). To countries where only fuels with a lower octane rating are available the 300 SL Roadster can be supplied also with a lower compression ratio.

The transmission with controlled synchromesh in all 4 gears and a short lever has also been taken over from Type 300 SL.

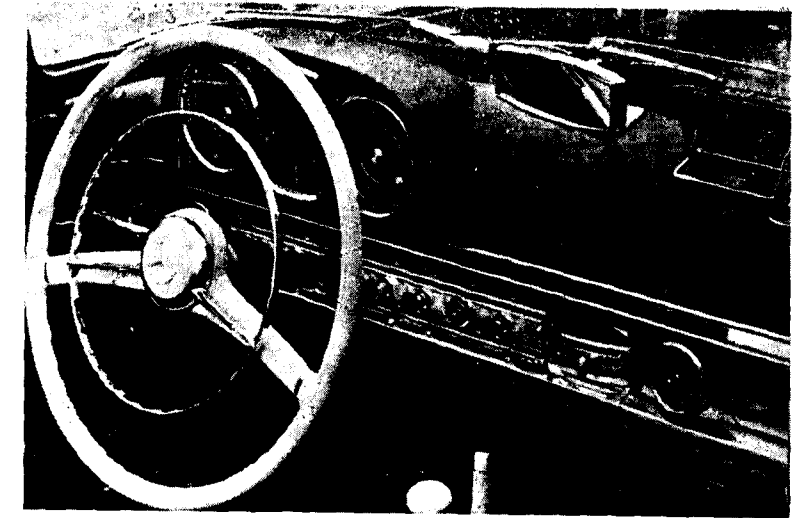
Further improvement of the driving qualities

The single-joint swing axle with low pivot point of the 300 SL Roadster represents another improvement of the already well-known road holding of the 300 SL. In order to obtain the driving comfort and springing qualities which will make this very fast car also pleasant to drive for the average driver, the single-joint swing axle of the 300 SL Roadster has been equipped with a compensating spring. This construction results in a softer reaction if only rear wheel gets a bump in contrast to the full action of the springs if both rear wheels hit simultaneously uneven road spots. Road adhesion is thus considerably improved. With a view to its road holding, the 300 SL Roadster can be compared with the Grand Prix and racing sports cars of 1954/55 ; its driving comfort is, however, considerably higher.

Of course the 300 SL Roadster has been fitted with a reinforced booster brake and overdimensional turbo-brakes which together with the excellent road holding make it possible to take full advantage of the enormous output combined with maximum driving safety of this most powerful German passenger car on the market at present.

Distinguished appearance

The dynamic shape of the elongated, open body with panoramic windshield gives also an outward impression of the power of the 300 SL Roadster. By modifying the tubular frame taken over from Type 300 SL it was made possible to design the roadster body with normal doors, crank-operated windows and rear luggage compartment. Upon request, the 300 SL Roadster



Mercedes-Benz 300 SL Roadster. The padded dashboard with its synoptical "one look" instrument group.

can be equipped also with bumpers, heaters and blowers as well as big door pockets.

The up-to-date styling of this beautiful car is made even more conspicuous by a new element, the "lighting unit" which combines the main headlamps, the foglights, parking lights and blinkers.

In the open car, the completely retractable top lies under a metal hood. When the top is closed, the space under the top cover can be used for additional luggage.

The doors are fastened at the front giving easy access to the car. The seats have longitudinal air grooves and holes.

The spare wheel is housed in a recess under the luggage compartment which is accessible from the outside. The filler plug for the 100-ltr.-fuel-tank is also accessible from the outside and covered by a flap which can be locked.

Safety of the passengers

Special importance has been attached to the interior safety of the 300 SL Roadster. The upper and lower edges of the instrument panel are padded and the control knobs at the driver's side are countersunk

between two horizontal beads. All instruments and signal lamps are arranged between the speedometer and the revolution counter in a column-type combi-instrument and lie well within the driver's angle of vision. Fuel level, oil pressure, oil and water temperatures are indicated by vertical coloured tubes, the signal lamps are combined in a vertical rib in the centre. The lower counter-sunk control knobs are lighted at night by plexiglass rings together with the instruments. Another item to be counted are the soft padded sun vizors.

Ventilation and heating are regulated independently from each other, the controls for the driver lying at the left of the steering wheel and for the co-driver at the left of the locked glove compartment in the middle of the car so that the driver can easily control both sides.

Moreover, the car is equipped with a panoramic windshield made from laminated safety glass, a new pedal-controlled windshield rinsing system connected with the special windshield wiper, an overtaking signal light combined with an acoustic signal, fog lamps, parking lights left and right, reverse drive lamp, locks on both doors, lighted glove compartment, cigar lighter, clock etc.

Technical specification of the Type 300 SL Roadster

Engine		with direct fuel injection		Number of engine revolutions at 100 km/h (62 m.p.h.) in 4th gear r.p.m.		2,820	3,020	2,520	2,650	3,190
Number of cylinders	6									
Valve gear	ohc									
Piston displacement cm. ³ (cu.ins.)	2,996 (182.8)									
Engine output (PS (DIN)/n HP (SAE)/n)	225/5,900 250/6,200									
Max. number of revolutions n	6,400 r.p.m. in the gears 6,000 r.p.m.									
Bore/stroke mm (ins.)	85/88 (3.3/3.4)									
Compress ratio	9.5 : 1 for 100 octane fuel (ROZ). For countries with fuel of lower octane rating the car will be delivered with lower compression ratio.									
Torque max.										
mkg/n (DIN) (ft. lbs./n)	29.5/4,800 (213/4,800)									
mkg/n (SAE) (ft. lbs./n)	31.5/5,000 (228/5,000)									
Injection pump	Bosch									
Injection nozzles	Bosch									
Firing order	1-5-3-6-2-4									
Ignition-timing adjustment	automatically by centrifugal force towards "advanced"									
Crankshaft bearings	7 multi layer bearings									
Connecting rod bearing	multi layer bearings.									
Oil filter	in main flow, plate-type filter with exchangeable filter element.									
Oil cooling	oil-air-heat exchanger									
Oil filling quantities : oil tank and engine (dry sump) max./min.	normal 11/8 ltrs. (2.4/1.75 Imp. gals.) (2.9 /2.1 U.S. gals.) for competition 15/11 ltrs (3.3/2.4 Im. gals. (3.9/2.9 U.S. gals.)									
Cooling system	Water circulation by pump ; thermostat with short circuit line, fan.									
Fuel feed	Mechanical Bosch-plunger-pump and electrical DB-auxiliary pump.									
Electrical system	12 volt.									
Battery capacity	56 Ah.									
Power transfer										
Clutch	Single plate dry clutch, F and S, clutch linings reinforced with steel sheet rings.									
Transmission	DB-4-speed transmission, baulk-synchromesh in all gears, center gear shift.									
Gear ratios	I.	1 : 3.34								
	II.	1 : 1.97								
	III.	1 : 1.39								
	IV.	1 : 1								
	R	1 : 2.73								
Climbing ability	I.	73%	80%	63%	67%	86%				
	II.	35%	38.5%	30%	32%	41.5%				
	III.	21%	23%	17.5%	19%	25%				
	IV.	12%	13.5%	10.5%	11%	15%				
Max. speed in the gears (km./h. (m.p.h.))	I.	64 (40)	59 (36)	71 (44)	68 (42)	56 (35)				
	II.	108 (67)	101 (63)	121 (75)	115 (71)	96 (60)				
	III.	155 (96)	145 (84)	173 (107)	164 (102)	136 (85)				
	IV.	235 (146)	220 (136)	250 (155)	242 (153)	208 (129)				
Rear axle ratio	3.64 : 1 3.89 : 1 3.25 : 1 3.42 : 1 4.11 : 1									

Chassis	
Type of frame	Tubular frame of flexural and torsional rigidity.
Front wheel suspension	Independent wheel suspension with trapezoidal triangular wishbone-arms, coil springs with additional rubber pads and additional horizontal rubber pads, telescopic shock absorbers, anti-roll-bar.
Rear axle	Single joint swing axle with low pivot point and thrust arms, compensating spring, coil springs with additional rubber pads, hydraulic telescopic shock absorbers, hypoid gears.
Braking system	Hydraulic brake with more powerful Ate brake booster : front and rear Alfin brake drums with turbo cooling : brake shoes with automatic readjustment ; front : two trailing brake shoes ; rear : one trailing and one leading brake shoe.
Steering gear	DB-recirculation ball-type steering with automatic readjustment and steering shock absorber.
Size of tires	Normal:6-70-15) make and design according Competition : 6-50-15 to factory statements.
Dimensions	
Wheel base mm (ins.)	2,400 (94 31/64)
Track, front mm (ins.)	1,398 (55 1/32)
rear mm (ins.)	1,448 (57)
Ground clearance mm (ins.)	130 (5 1/8)
Overall length mm (ins.)	4,570 (179 15/16)
Overall width mm (ins.)	1,790 (70 15/32)
Overall height (un loaded) mm (ins.)	approx. 1,300 (51 1/4)
Turning circle m	11.5 (37 ft. 9 ins.)
Fuel tank capacity including reserve	100 ltrs. (22/26 Imp. U.S. gals.) 9 ltrs. (1.9/2.4 Imp. /U.S. gals.) auxiliary pump
Engine oil consumption ltr./100 km (m.p. Imp./U.S. pt.)	0.2 (177/147 m.p. Imp. /U.S. pt.)
Weights	
Dry weight kg (lbs.) (w/o spare wheel and tools)	1,250 (2,740)
Cur.b weight kg (lbs.)	1,360 (2,990)
Payload kg (lbs.)	220 (484)
Permissible total weight kg (lbs.)	1,580 (3,476)
Axle load, front kg (lbs.)	680 (1,500)
rear kg (lbs.)	900 (1,980)
Performance	
Max. speed	approx. 235-250 km/h (146-155 m.p.h.) depending on equipment and rear axle ratio
Power/weight ratio kg/PS (lb/PS) (DIN) kg/HP (lb/HP) (SAE)	5.6 (12.3) 5 (11)
Standard fuel consumption * ltr./100 km (m.p. Imp./U.S.gal.)	

* The PS output as given is actually available at the clutch for driving the car since all other outputs for auxiliary units have been deducted.

*Determined at 2/3 of max. speed (max. 80 km/h = 50 m.p.h.) plus 10%.

Equipment for the Roadster

(A) Standard equipment :

Brake-booster with increased power.
Panoramic windshield of laminated safety glass.
Padded dashboard with glass protection hood over the instruments.
2 padded sun-vizors with elastic frame.
Overtaking signal light combined with horn control.
Windscreen washer combined with additional wiper control.
2 fog lights.
2 backing lights.
4 parking lights.
Lockable fuel-tank lid.
Ventilation system with controls for air distribution to windscreen and floor.
Back of drivers seat adjustable.
Detachable protective head cushions of foam rubber for roof struts.
Door locks on both sides.
Control knobs with lights for night driving.
Synoptical combined column-type instruments.
Rev. counter and speedometer with trip distance recorder.
Clock.
Steering column lock combined with ignition and starter.
Two-speed windscreen wipers.
Ash-tray and cigar lighter.
Glove-locker with lock and interior light.
Anti-dazzle rear-view mirror.
Outside rear view mirror.
Interior light with door contact.

(B) Special equipment :

I. *Without extra cost :*
Bumpers.
Heating unit with heat controls.
Two-speed ventilation and heating blower (defroster).
Arm-rests on both doors.
Extra large door pockets.
II. *Against extra cost :*
Special colours.
Upholstery and interior in leather.
Radio.
Safety-belts (aviation type).
Set of special suitcases.
Special springs.
Rudge-hubs.
Deflector on the hood.

Much the best car

(A Judge's Tribute)

In an unsolicited tribute to his 180D Mercedes-Benz station wagon, Mr. Vivian Bose, former Judge of the Supreme Court, says : "I am very delighted with the car and think that, from an all-over point of view, it is much the best car I have handled in 43 years."

In a letter to Mr. Annaswamy, Sales Manager of Tata-Mercedes-Benz, written from London, Mr. Bose says :

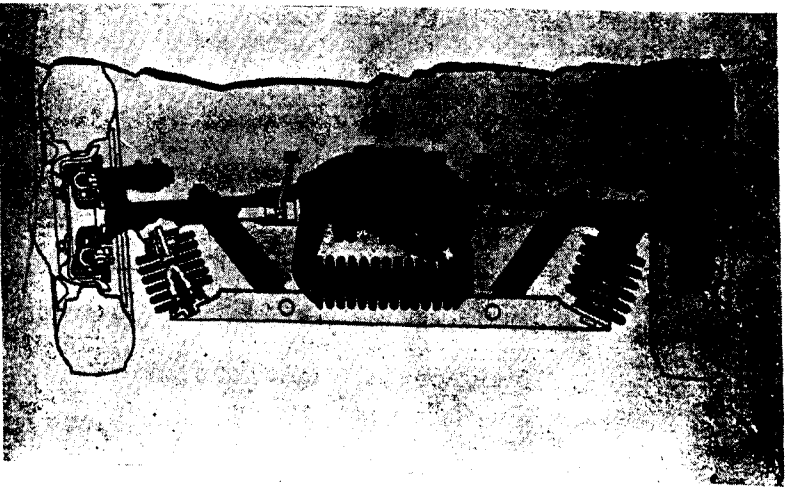
"I did 8312 miles in Europe from the 2nd July to 28th of September when I reached England. I had 6 persons in the car all the time and for a short time I even had to squeeze in 7 ; the 7th sitting very comfortably on cushions behind the rear seats. I think semi-reclining would be a more correct term. Anyway there was strong competition for that seat among my "passengers," so that shows that it was comfortable. The only complaint was that it was a little stuffy when the weather was hot, as in Spain. I had in addition a trailer with our luggage, and, as you can well imagine it was laden to capacity, though I took care to keep within the prescribed maximum load.

The 8312 miles consumed 202.92 gallons of diesel oil, which makes an average 40.92 miles to the gallon. I had to climb very steep hills in Norway, in the Black Forest in Germany, in Switzerland and in

Spain. Also the roads in Norway (the Fjord part of it) and in Spain were not good. The hills were frequently 1 in 4. The engine showed no signs of strain when kept within the speed prescribed on the speedometer for each gear and never heated up. The temperature never rose more than 2 or 3 degrees above the normal running temperature even on indifferent roads (from European standards) and in moderate heat (this time from Indian standards) in Spain. This was within 35 to 40 degrees of the danger point set out in the instruction manual. Bearing all this in mind the average of 40.9 miles to the gallon was amazing. The total running cost in Europe including 3 complete servicings with a complete change of engine oil each time was £35-1-6. That works out to the almost incredible figure of under £6 a head for 6 persons. I drove through the following countries : Germany, France, Belgium, Holland, Germany again, Denmark, Sweden and Norway. Then back through Sweden, Denmark, Germany, Switzerland, France, Spain, France again and England. Diesel oil was easily obtainable everywhere.

In England and Scotland I have not used the trailer but have had 3 and 4 persons in the car nearly all the time and sometimes 5, also their luggage. I have covered 4057 miles to date with an expenditure of 90 gallons of diesel oil. That works

(Continued on page 28)



Mercedes-Benz 300 SL Roadster : single joint swing axle with compensating spring.

ABOUT YOUR



By 'Robot'

Mr. K. K. Syed Abuthagir, Uthamapalayam wants to know (a) how to polish the car and whether it is necessary to wash it frequently and (b) how to keep the battery.

Many people will think that it is too simple a question to ask. If you consider carefully, you will realise that the paint of your car does not wear out in weeks or months; but it may fade rather early if you do not take proper care. Whenever they find any dust on the car, the drivers and owners *wipe it off*. It is the resultant friction that takes the paint off your car. So, whenever you want to remove any dirt or dust, *wash—and do not dust or wipe!* This advice may sound strange, but this will make the paint work of your car last for years.

Usually there is a protective coating over the paint which is invisible to our eye. After you have dusted or wiped your car, if you stand at an angle and view the body of your car, you will find minute scratches on the paint work. When you wipe or dust, the dust particles make these scratches and remove microscopic layers of the protective coating and then the paint itself.

Again, when washing do not try to pour any amount of water. Use a hose pipe or a garden watering can which will be ideal for this purpose. The water should not have too much pressure. If you find patches of dirt that would not go by water alone, it is advisable to add a small quantity of detergent—like Lissapol or Teepol marketed by I. C. I. and Burmah-Shell respectively—to the water as this will loosen and remove oily or greasy dirt. This may be done once in a month or once in a fortnight. Do not let water drops to dry by evaporation; this will leave spots on your paint work; but wipe with soft cloth. If you do this properly you need not polish your car so often and yet the paint work will be sparkling.

It is hardly necessary to wash the car every day; this will, however, depend upon the conditions of your

surroundings such as dusty roads, etc.

The use of polish, which polish to use, is a question of your own choice. There are a number of well known brands available in the market, in liquid as well as wax forms. Use these polishes as per the makers' instructions, only bearing in mind that too much pressure should be avoided. Polishing once in a month should be quite normal.

Since glass has become a major part in the modern automobile it is essential to know a few 'Dos' and 'Donts' to properly protect the visual properties of glass.

Don't remove dust and dirt by wiping with a dry cloth-grit particles are harder than glass and may scratch it. Don't operate the windshield wiper on dry glass; this may have the effect of 'sandpapering' the glass. Don't use an oily or greasy rag or cleaning preparation on a windshield. The windshield wiper cannot remove rain water uniformly if a film of oil or wax remains. Don't follow other cars too closely. Tyres of the car ahead will hurl small stones, sand, gravel, etc. with sufficient speed to cause pock marks or even outright breakage. Don't use any metal object to remove any dirt from the windshield or windows; use of a plastic scraper is desirable to avoid any scratches.

Do keep the windshield clean by washing with clean water and wipe with soft dry cloth or sponge. Do inspect the windshield wiper at frequent intervals to be sure that it contacts the glass uniformly through out its entire length. Make sure it does not become hardened by age and exposure. NEVER operate wiper arm without blade. Do clean wiper blades when you wash the windshield. Grit on the blades is as dangerous as on the glass. Do check sliding windows to be sure that there is nothing bearing on the glass that may cause scratches when it is opened or closed. Do wash the windshield generously to remove the 'after rain' dirt that may have been thrown by other cars. Operate the wiper not more than necessary under such conditions.

During the rainy season apply a thin coating of grease or rust-preventive paint (which is specially available for the purpose) on the chromium plated parts of the car. This small expense is worth because

even a small amount of rust on these parts may cost you a lot later on.

Certain simple and important cares are to be taken in respect of the car battery. About once in a fortnight you should open the small plug screws fitted on the top of the battery and examine the liquid, which should be just submerging the plates inside the battery. If the level of the liquid is lower, you should pour a small quantity of distilled water, but not to the brim. If you find it necessary to refill distilled water too much or too often, it indicates that there is something wrong with your battery or that the dynamo is charging at a high rate. It is essential to test the cells of the battery at least once in a month or two, with a special instrument which is available at most of the good service stations. This instrument will indicate if any particular cell is weak and thus you can get proper attention before it is too late.

The car battery acts on the principles of a chemical action and as a result, small quantities of electrolyte settle down on metallic parts. This is commonly called as sulphation or corrosion, which is particularly noticeable on the battery terminals. Such corrosion at the two terminals will result in loose connection which in turn can greatly reduce the efficiency of the electric system. This should be prevented by application of a small quantity of vaseline on these metallic parts. In general, you should see that all the electrical parts are 'Bright and Tight' so that they may function efficiently.

Although the battery's construction is strong enough, no rough handling should be permitted. Whenever you leave the car in your garage for long intervals without any use, it is advisable to hand over the battery to the care of a reliable service station. They will keep it in good condition without any deterioration.

Finally, it should be noted that the liquid inside the battery is not plain water, but diluted sulphuric acid and therefore one should be very careful in handling it. Any drops of this on your clothes will destroy it. Under certain circumstances, a battery produces hydrogen gas, which is inflammable, and even explosive in confined spaces; therefore, a naked light must not be brought near it.



G. C. Pattabiram, B.A., Director, Messrs G. N. Chakrapani Chetty & Sons (Private) Ltd., a leading Automobile concern of Madras State has been elected as the President of the Rotary Club, Tiruchirapalli for the year 1957-58.



31 Years Old - Still Going Along!
This 1926 Studebaker President scored the highest number of points (in all three classes) for maintenance in the AAB Gymkhana and Motor Show organised jointly by the Automobile Association of Bengal and the Calcutta Motor Sports Club.



Mr. M. V. Venkatraman, who has been elected President, Indian Road Transport and Development Association, Madras.

Events &



The Hindustan Landmaster that was used for the Speed test, at the premises of the Southern Automobile Corporation shows the crew of three with Mr. Raju (extreme right) of S. A. C. (see story on page 27)

BELOW—

Mr. W. R. Greig, Sales Manager of the Chrysler Australia Ltd., arrived in India as a member of the Australian Trade Delegation. He was received at Santacruz Air-Port by Shri P. S. Deo, Staff Manager, The Premier Automobiles Ltd., and Mr. J.G.L. Ruppel, Technical Service Representative of Chrysler Corporation, U.S.A.



BELOW—

Representatives of leading Travel agencies of Bombay left on Saturday, April 13, for Switzerland. They will be there for one week and will visit important resorts. Picture taken on the occasion shows L to R: Mr. R. Khandke, Wings (Private) Ltd., Mr. W. Salzborn, District Manager, SWISSAIR, Bombay, Mr. G. Thos Cook & Son (C O) Ltd. Vakeel, Airfreight Private Ltd. Cardozo, Sind Oriental Tourist (D. H. A. Glenville, American Inc., Mr. H. C. Jain, Executive National Advertising Serv

860 MILES IN 22 HOURS

with **REDEX**



REDEX CAR CLUB ORGANIZES 2 WAY SPEED TEST

Madras-April 18
With a view to testing and proving the efficiency of Indian-made motor cars and incidentally the usefulness of Redex as an additive to automobiles, a non-stop Bombay-Madras-Bombay motor speed record run was undertaken by the Redex Car Club of Bombay. A 1956 model Hindustan Landmaster, which had already run 25,000 miles, was tested and the engine oil was replaced by Redex Oil for the run. With no special fittings and with only Redex additives as a lubricant and for the fuel mixture, the car which left Bombay on April 17, arrived in the city this morning, covering the distance of 860 miles non-stop in just under 22 hours. At the Southern Automotive Corporation, agents of Hindustan Landmaster cars in the City, necessary check-ups were made for the return trip and greasing points were attended to, besides topping up of Redex Oil. The driving team headed by Mr. Lally, Secretary of the Club, was met on arrival in the City by Messrs. N. Subramaniam of the Redex Department of

M/s. Parrys, Raju, Assistant General Manager of the Southern Automotive Corporation, and M. Rajagopalan, Editor of Motorindia. The car left the City at 12 noon today on the return trip to Bombay. This is the first time an Indian-made car is being speed tested on a two-way journey.

REDEX-KNOWS NO EQUAL

Add half an ounce of REDEX to each gallon of Petrol, Diesel oil or any other liquid fuel and see the difference. REDEX removes and stops the formation of carbon, keeps the valves and tappets free from sticky deposits; particularly in diesels the injectors are cleaned and freed from fuel dribbling. To reduce friction and frictional wear in engines add one part of REDEX to three parts of the usual engine lubricating oil. Remember! The use of REDEX keeps the rings free, improves compression and fuel consumption.

Agents in South India
PARRY & CO. LTD.,
ENGINEERING DEPARTMENT
DARE HOUSE, MADRAS-1

BOMBAY-MADRAS SPEED RECORD

With a view to testing and proving the efficiency of Indian made motor cars and incidentally the usefulness of Redex as an Additive to automobiles, a non-stop Bombay-Madras-Bombay motor speed record run was undertaken under the auspices of the Redex Car Club of Bombay. The French Motor Car Company of Bombay, who are the Bombay agents for Hindustan Cars jumped at the idea and agreed to provide a Hindustan Landmaster for the run immediately. A 1956 model Hindustan Landmaster which had already run 25,000 miles, which was just available with French Motors was handed over to the motoring enthusiasts of the Redex Car Club headed by Mr. P. F. Lally, Secretary of the Club. The car was tested for long distance running and the engine oil was replaced by neat Redex Oil for the purpose of the run. With no special fittings and with only Redex Additives as a lubricant and for the fuel mixture, the car was taken on the road at noon on Wednesday, 17th instant, at Bombay, and left the premises of the Western India Auto-

mobile Association where the timing was marked at 12 noon for the non-stop run. Driven alternatively by Mr. P. F. Lally, Mr. N. J. Duggan and Mr. R. J. Dada Changie, the car was driven non-stop to enter the city limits of Madras at 9-52 a.m. on 18th covering a distance of 960 miles in just under 21 hours. The car reached the Automobile Association of Southern India at Mount Road at 10-5 a.m., when the Manager of the Association, Mr. T. P. Hawkin noted down the time. The car used for the run, Hindustan Landmaster BML 3142 was immediately driven to the Southern Automotive Corporation, agents of Hindustan Landmaster cars in Madras City where necessary check-ups were made for the return trip and greasing points were attended to, besides topping up of Redex Oil.

The enterprising driving enthusiasts were met on arrival at Madras by many motoring enthusiasts including Mr. Isenberg, Mr. Chellappa, and Messrs. N. Subramaniam on behalf of the Redex Department of Messrs. Parrys, Raju, Assistant Ge-

neral Manager on behalf of Southern Automotive Corporation, and M. Rajagopalan, Editor of Motorindia on behalf of Redex Car Club. As the car was being checked for the return journey, the visiting motorists were entertained. The car left the Automobile Association of Southern India at 12 noon on the return trip to Bombay.

It may be stated in this connexion that this is the first time that an Indian made car is being speed tested on a two way journey, and the credit for the organisation of the trip and its success goes more than anyone else to Mr. P. F. Lally, the Secretary of the Redex Car Club, a popular organisation of motorists and motoring enthusiasts in the City of Bombay which has members all over India.

On the return trip, as the car was proceeding near Satara, the test was abandoned due to break trouble.

The Judges at Bombay therefore decided the test was a one way journey from Bombay to Madras in just over 22 hours.

Use only
genuine
LUCAS
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GIRLING
Spares



LUCAS ELECTRICAL EQUIPMENT

C.A.V. FUEL INJECTION AND ELECTRICAL EQUIPMENT

GIRLING BRAKES & DAMPERS

LUCAS INDIAN SERVICE PRIVATE LTD.

BOMBAY • CALCUTTA • MADRAS

THE AMERICAN AUTOMOBILE SCENE

Ford's New Ohio Plant

A 1.5 million sq. ft. car and truck assembly plant will be built by Ford Div. near Lorain, O. The new unit marks a continued effort by Ford to construct larger plants with more built-in flexibility for assembling the increasing number of car body styles and optional equipment being offered.

The new plant will be surpassed in size only by the 1.9 million sq. ft. Mahwah, N. J., assembly plant, one of three assembly plants completed by Ford last year. Basic operations of the new plant will parallel those of the San Jose, Calif. and Louisville, Ky., assembly plants.

To be located on a 250-acre site 30 miles west of Cleveland, the new plant will contain separate manufacturing systems for cars and trucks and will have a capacity to turn out 960 vehicles a day on a two-shift basis. The plant is scheduled for completion in 1958. It will employ approximately 2500 persons on a single shift.

Aluminum Ladling Unit

A new automatic ladling unit for aluminum which makes possible fully automatic processing of many types of casting, especially aluminum die casting and permanent mold, is now being offered.

The unit is manufactured of high grade special refractory materials, and is so arranged that the molten metal being ladled cannot come in contact with any metal structure. The basic pump has no moving parts, check valves or other devices. The unit operates on the principle of a pressurized chamber, the size of the shot depending upon both the time of pressure application and the pressure. The unit is so designed that ladled metal is withdrawn from beneath the surface of the bath.

There is a wide latitude in the ladling range and it can be adjusted to vary the size of the shot. The equipment is normally supplied to cover the range of 1 to 10 lb of aluminum; other sizes of shots in aluminum or other metals are also available. Accurate control of any

size shot within its range is provided with no interruption of the casting cycle during charging of metal. The unit is adaptable to electric furnaces or fuel fired reverberatory furnaces with no variation of size of shot due to metal level variation.

It is supplied as a complete package consisting of one ladling unit ready for immersion in molten metal, one control cubicle completely assembled and wired, and one pressure blower. All panel cubical internal equipment is front mounted and wired and front accessible to facilitate inspection. This feature allows for installation against a wall. Cubicle dimensions are 17½ in. wide by 72 in. high by 21 in. deep. Operating voltage is 220 or 440 as specified Lindberg Engineering Co.

Strip Coating

Called Strip-Kote, a new type of strip coating is a plastic emulsion for protecting smooth and wrinkled metal finishes, enamelled and lacquer finishes, highly machined precision parts, plastic, glass and chrome-plated surfaces from being marred or scratched during processing, shipment and storage. It can be applied by brush or spray gun. The film becomes transparent, tough and flexible after air-drying for 20 to 30 minutes. The dried film is permanently flexible and can be easily stripped, the announcement further states. The material contains no inflammable solvents.

Ultrasonic Tire Tester

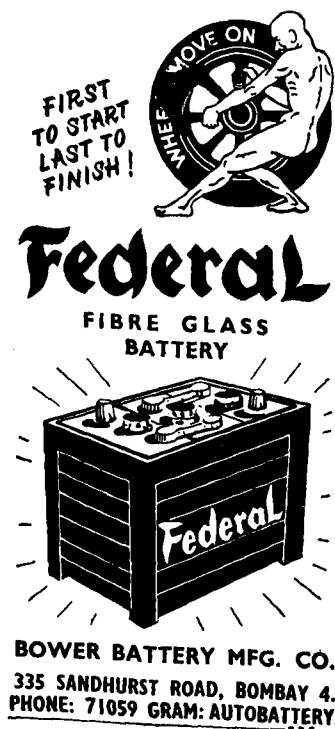
Uniformly high standards of quality can be achieved with an ultrasonic tire tester which locates and measures flaws in automobile, bus, truck and aircraft tires through the use of silent, invisible, non-destructive beams, according to an announcement. Imperfections such as minute blisters and tread separations are reported on an indicator, permitting rejects of casings with flaws larger than a predetermined size. Testing is accomplished by immersing the tire in a liquid bath containing a transmitter which directs an ultrasonic beam through the tire to a receiving soundhead suspended inside the casing.

(Continued from page 23)

out to an average of 45 miles to the gallon. As much of this motoring has been round Devon, and Somerset and Scotland, where there are very steep hills, 1 in 4 being quite common on the routes I have chosen that is astonishing performance. On the level stretches down the middle of England I averaged 45½ to the gallon. The cost in this country for the 4057 miles has been £24-4-2.

The cost of petrol and diesel is higher in England than on most of the continent and prices have risen sharply since the Suez crisis.

The engine has not been touched in all this time beyond the routine servicing. These facts and figures will speak for themselves and I need not embroider them with adjectives. I forgot to say that the engine starts up at once after the usual 30 to 40 seconds preheating even when the car has been left out all night with frost on the ground and, in Norway, with snow also."



LUBRICATION—Maintenance of automotive vehicles—

By T. S. Narayana Rao, S.V.O.C.,
Madras



Mr. T. S. Narayana Rao

Of all the inventions in the field of Mechanical Engineering during the last one hundred years, none has caused a greater change in our way of life than the invention of the Internal Combustion Engine. This has proved itself to be a reliable and economical prime mover in so many spheres, on the sea for the propulsion of ships, in the air as the motive power for aircraft and on land for the generation of power, the driving of machinery, in railroad locomotive and the greatest use of all, and the one in which we are primarily interested, the engine used in all forms of road transport, namely—motor cars, buses and trucks.

The development of the diesel engine from the early days to the reliable and economical unit of today was a slow, laborious and painful process, fraught with many disappointments. This development was largely depending on (1) the science of metallurgy, which resulted in the development of materials suitable for engine cylinders and pistons and (2) the production of mineral lubricating oils capable of withstanding the very severe conditions of operation encountered in the cylinders of diesel engines where combustion temperatures exceed 3,000°F.

As the total investment on automobiles and diesel trucks is considerable, to get the maximum return from this investment, it is necessary for us to protect this investment to the maximum extent possible.

Good transportation results in efficient and economical movement of men and materials. The maximum number of productive hours on the road can be obtained only by a programme of efficient maintenance of the vehicles and by getting maximum service life out of them. If the predicted life of a vehicle is five years, by a programme of careful maintenance, if the operator can extend the life of the vehicle to 7 or 8 years, he can delay the investment on vehicle replacement. The subject we will discuss today is how

(Gasoline & Diesel)

excessive blowing to avoid wastage of fuel, oil and power. It must also offset the corrosive effects of combustion products on cylinder walls and prevent corrosion of hard-alloy bearings. The oil must also function as a heat-transfer medium and must be stable against the effects of heat and oxygen. To enable the oil to perform all the above functions, the modern engine oils which are by themselves good, have been further fortified by the addition of oxidation, rust inhibitors, detergent/dispersal agents and anti-foaming agents etc. In spite of the severe operating conditions, the crank-case lubricant does an excellent job, but still it has its own limitations. The Fuel Air Mixture during its combustion inside the cylinder also generates water. Not all of it goes into the exhaust but a portion of it finds its way into the crankcase. This contaminates the engine oil.

The automobile needs lot of air besides fuel. Gasoline or Diesel is not explosive in its liquid state but a few drops of gasoline in a cylinder full of air produces a powerful bang. An operating engine can be likened to a multicylinder vacuum cleaner gulping in air and whatever that is floating in the air—at the rate of nearly 1250 cu/ft. air for every IG of full.

It is no secret that the air is full of dirt particles. We have removed

best this programme of Preventive Maintenance can be implemented.

I propose first of all to discuss the prime mover. As a matter of comparison, I list below the compression ratios and operating conditions involved between a Gasoline and a Diesel engine.*

The lubrication of the engine will normally be by a Force Feed Circulation System, oil being taken from the engine pump. The lubricant must prevent metal-to-metal contact between the moving parts viz. pistons, piston rings and cylinders, main and connecting rod bearings, camshaft bearings, gears—over the wide range from full-fluid film to boundary film conditions.

It must seal piston rings to prevent

*Diesel and Gasoline engines compared—Approximate full load operation

GASOLINE		DIESEL
Air & Fuel Mixture	Gas compressed	Air
7 : 1	Compression ratio	15 : 1
125-150 lb. per sq. in.	Compression Pressure	500-600 lbs. per sq. in.
400-500°F.	Compression temperature	1,000-1,200°F.
Spark	Ignition	Hot Air
Carburetor & Manifold	Fuel system	Injector pump & nozzle.
4,000-4,500°F.	Combustion temperature	4,000-4,500°F.
1,400-1,600°F.	Exhaust temperature	600-1,200°F.
25%	Brake Thermal Efficiency	34%
0-6	Pounds fuel per brake Horsepower hour	0-4

them from our eyes, washed them from our windshield, seen them collect on the finely polished surfaces of the car within a few seconds after polishing. Some of these particles are comparatively soft and harmless but an alarming percentage is hard and abrasive, capable of severely wearing closely fitted engine surfaces.

This state only tends to increase the foreign elements that can be mixed into the engine oil. These impurities can get completely mixed with the crankcase oil due to the agitation and besides due to the heavy temperatures encountered and the presence of air inside the crank-chamber, there is a continuous process of oxidation. Especially in the case of diesel fuel, where the sulphur content is likely to be high, the products of combustion also contain sulphur dioxide which when combined with water forms sulphuric acids. This is corrosive and is likely to affect the bearings.

I have said all these only to convince you how necessary it is to drain the crank-case. As a result of a survey conducted over a wide field, a normal crank-case period of 1,000 miles run is fixed as a safe interval for crank-case draining. The optimum interval for drainings of the crank-case of an automobile or diesel vehicle can be determined by a regular course of drawing samples from crank-case and testing the condition of oil in a petroleum testing laboratory. In the case of heavy lorries or field machinery, operated by diesel powered vehicles, similar to the contractors' equipment, it is not possible to reckon the draining period in the number of miles run. In such instances, normal period for draining the crank-case of the diesel vehicles is 60 hours of operation. The interval is set low because of the different operating conditions and the enormous dust that will be present in the atmosphere which the engine will be gulping in all the time.

Preferably, draining of the Engine Oil will have to be done when the engine is stopped after operation and the oil still remains hot.

Gear box and differentials

In the early days, when the gear boxes were fitted with ordinary spur gears or spiral bevel gears, it

was alright to use a straight mineral gear lubricant. With the advancement in the manufacture of gears and the necessity to transmit maximum power within a limited space, the adoption of hypoid gears became a necessity. Because of the high unit pressures between the meshing teeth, the already good straight mineral gear oil had to be fortified with chemical additives viz. sulphur, chlorine or phosphorus compounds. These compounding agents come into action only when their service is needed, otherwise being dormant during normal operating conditions.

The principal contaminant in the gear oils is the fine metal particles resulting from the wear of the teeth, bearings, thrust washers and other moving parts of transmissions and axles, which are unavoidable due to the very nature of the operation of such units. There is also the possibility of contamination from outside sources. Dirt, dust and water may be carried into the gear cases, especially if shaft seals are worn. Therefore, gear lubricant should be changed regularly just as is the case with engine oil and for the same basic reason viz. 'Contamination during Service.' The periods between changes are naturally longer for gear lubricants because the rate of contamination is normally much lower.

Based on a survey conducted on operation of a number of fleet of vehicles, it has been found beneficial to check transmission case and differential housing oil level every 1,000 miles and make up level, if required. Draining of the differential is recommended every 5,000 miles of run.

Chassis parts

Greasing of the under-chassis parts is recommended every 1,000 miles viz. at the same time, the engine crank-case oil is changed.

In order to make it possible for the operator to run his vehicles efficiently, the Oil Industry has invested large sums of money in Service Stations on the National Highways. The Manufacturers of Automotive Equipment provide them with complete Lubrication instructions and during servicing, these instructions are consulted frequently

and a good and complete lubrication job is carried out.

In the old days, it was customary to have different greases for the lubrication of the automobile, depending on the service conditions. With the advent of multi-purpose lithium soap base grease, the question of the compatibility of this grease with the grease already used on the particular automobile will have to be investigated. The admixture of the lithium based grease with any other soap base grease is likely to make the resultant grease very thin and run out of the bearings and cause failures.

Drained oil

We would be failing in our duty if we do not discuss what to do with the drained engine crank-case and gear case oils. In the case of straight mineral oils, filtration is a simple matter. With the advent of additive in lubricating oils, it is very difficult to filter the used engine oil as the sooty products of combustion are held in very fine colloidal suspension and it is not possible to eliminate them by any mechanical filtration process. If any chemical process or Fuller's Earth Treatment is adopted, the possibility of stripping the lubricant of all its additive is there, and the resultant filtered oil can, in no measure, compare with the new oil. The same is true in the case of drained gear oils and therefore, we do not normally recommend the use of the reclaimed engine oil or gear oil again. The best way of getting rid of this drained oils is to use them on a rough outdoor machinery or for the purpose of laying dust in the compound.

In conclusion, from what has been discussed above, it will be evident that the operator will have to chalk out a Planned Programme of Preventive Maintenance and strictly stick to it. A complete log or history of each equipment will have to be maintained so that the operator will know at a glance which of his equipment has been attended and which needs attention. It also occurs to me that a large fleet-operator can afford to

(Continued on page 38)



Photo shows the fuelling of the Service Buses in the premises of the Government Road Transport Department.



Photo shows the Engine Overhaul Section of the Workshop.

ROAD TRANSPORT FACILITIES IN MYSORE STATE

The Mysore Government Road Transport Department was established in the year 1948 with a view to afford greater and better transport facilities to the travelling public in the State of Mysore, by putting an end to the "inefficient" transport system that was prevalent in the State some time ago. This Department is located in Shantinagar in Bangalore, the capital city of the New Mysore State.

The Government Road Transport Service started functioning in 1948 with only 120 vehicles, and to-day it owns as 477 vehicles plying throughout, and even outside the State. Out of these, 101 vehicles belong to the Raichur Division, 131 to the Bangalore Transport Services and 245 to the Road Transport Department, Mysore. More than 2,700 employees are working in this Department now.

In 1948, the erstwhile Mysore State Government invested a sum of Rs. 17,76,515 on this Department towards its working capital, and the total amount thus invested so far works out to Rs. 71,87,549.

Regular transport facilities have been provided to all the district headquarters as well as to the important taluk headquarters and other places of importance within the State. Besides, the Government buses are plying on two inter-state routes also. Mails are also being conveyed on routes covered by these Government buses, wherever necessary. After the formation of

the New Mysore State, this Department has also commenced operating some new routes in some of the important places in Raichur Division. During the Second Five Year Plan, it is proposed to further improve and extend proper transport facilities to all the important places in and outside the New Mysore State as well.

The City Services in Bangalore, which were being managed by the Bangalore Transport Company Ltd., were taken over by the Government Transport Department in October, 1956, and efforts are now being made to put more buses into operation so as to provide more and better transport facilities to the people of Bangalore.

S. T. Buses in Morvi

The circuit Bench of the Bombay High Court has revoked its earlier stay order issued against the Saurashtra Road Transport Corporation restraining it from taking over the transport systems of Morvi and Wankaner. Immediately the Corporation resumed operation of its bus services on some routes in Morvi and Wankaner.

Two private bus companies had obtained the stay order stating that the Regional Transport Authority's decision to nationalise the service was illegal. The circuit Bench accepted the plea of the Corporation that the petitioners had earlier decided to wind up their business and

hence their contention was unacceptable.

Nagpur Transport Board

The Board of Management of the Provincial Transport Service Undertaking (now under Government ownership), Nagpur, has been reconstituted under the Chairmanship of the Motor Transport Controller, Bombay. The directors of the Undertaking are : Mr. K. N. Dave, the Superintending Engineer, Roads and Buildings Nagpur ; the Road Superintendent, Central and Western Railways ; and the District Commercial Superintendent, South Eastern Railway, Nagpur.

Bombay State Transport

The divisional centre of the Bombay State Transport is being shifted to Mehsana, according to Mr. R.G. Sarauja, Chairman of the State Transport Corporation. He said that because of lack of good roads and dearth of funds much could not be done by way of increasing the number of buses.

Motor driving training

Seven Dangi youths have been deputed for training in motor-driving under a scheme sponsored by the Danga District Development Board. The Board will meet the entire cost of the training. The scheme is intended to provide opportunities to backward Dangis to get employed. During the last two years also some youths were deputed for this course by the Board.

A Detailed survey of different Branches of Production of Perkins Engine

(Contributed)

One Hundred and Sixteen years are but a moment in the long history of the ancient land of India.

Travel along any of the shady roads of the mofussil and you may see how short these one Hundred and Sixteen years are, for in the space of an hour or so, the history of road transport in the century rolls before you.

Through the dappled light and shade of the dusty roadway comes the coolie, tramping along on his bare feet, his bundle on his head. Creaking past him in a covered wagon, the bullock driver sits his patient bullocks plodding along slowly with an occasional spasmodic effort at speed as the driver applies his stick or gives their tails a twist. Nearing a temple town, an elephant slouches along—the transport of the ancient and still used on occasions of ceremony and splendour. Passing these age old transporters comes the modern streamlined internal combustion engine power motor coach, speeding along in safety with its passengers.

Diesel Trucks also roll along, all ware methods of transport linking up village to village.

And so, in a short hour, more than a century's progress in road transport is bridged over, and we see the ancient and modern side by side.

The firm of Simpsons, Madras, has had the proud privilege of living through these one Hundred and Sixteen years of India's life, beginning with the manufacture of the Howdah, Litter and Palanquin, then Travelling Vans, State Carriages, Pony Tongas, Landaus, Victorias, etc., always keeping abreast with improved methods of road transport.

The year 1903 ushered in a new era in road transport in India with the introduction of internal combustion engine propelled vehicles and since that time, the firm specialised in Automobile Engineering, including Motor Car, Motor Coach and Motor Truck body building, in which field they have achieved and maintained an excellent reputation throughout India.

The advent of the Diesel Engine for Road Transport Vehicles was one of the most important developments in recent years and as Simpsons realised the popularity diesel transport would quickly gain, they entered into an agreement with F. Perkins Limited, Peterborough, as distributors for the whole of India for the famous Perkins "P" Series Diesel Engines. Subsequently they entered into a manufacturing agreement with the approval of the Government of India following which a Phased Manufacturing Programme was submitted to the Government. Co-operation of all administrative staff, draughtsmen, jig & tool designers, other technical, managerial and general staff, Workers' Union,

and every employee of the Company was most essential for such an undertaking, and it is undoubtedly a great credit to all that a project of such magnitude was accomplished in the very short space of 18 months.

Specifications and capacities of all plant and machinery had to be worked out to suit all machining operations for each and every component part of the Engine. Orders then had to be placed for deliveries in Madras to suit the respective phased periods of the Manufacturing Programme. Complete factory layout plans for positioning of the machinery for flow-line production had to be prepared, excavations made and machinery foundations laid ready for installation of machinery on arrival. Additional electric power supply had to be provided including purchase and installation of additional Transformers, new electric power cables and feeder lines together with distribution of boards and switch gear. The entire lighting arrangements throughout the factory had to be replanned.

Jigs, Fixtures and special Toolings had to be designed and manufactured at their Madras Works to the tune of nearly 3 lakhs of rupees value. Simultaneously, necessary labour force had to be trained, especially for the manufacture of high precision work involved in the production of Jigs and Fixtures. And high tributes should be paid to Indian labour for their remarkable adaptability and progress in this specialised sphere of engineering.



Mr. S. Anantaramakrishnan

SIMPSON'S' WORKS

A MASSIVE MODERN CONSTRUCTION DOUBLE-STORIED BUILDING HOUSES THE ADMINISTRATIVE OFFICES, FINANCIAL AND COST ACCOUNTS, DRAWING AND DESIGN OFFICE, SALES DEPARTMENT, CENTRAL STORES, PURCHASING DEPARTMENT, MATERIAL CONTROL AND PLANNING OFFICE. AND BEHIND THIS BUILDING IS THE SPACIOUS AND MOST MODERN WORKSHOP. THE FACTORY AREA COVERS APPROXIMATELY 2,50,000 SQ. FT.

This is a 6-cylinder unit, having cylinder bore 3-1½" and stroke of 5".

Swept volume is 4.73 Litres (288.6 cu. inches) and develops a maximum commercial vehicle rating of 83 b.h.p. at 2,400 r.p.m. Maximum torque is 202 lbs. ft. (27.9 kgms). The weight of the Engine with electrical starting equipment but without flywheel and starter ring is 696 lbs. In its power range, Perkins P6 is unquestionably the most popular diesel transport engine in the World and in India alone about 40,000 of these engines are operating with extreme reliability and efficiency.

The Perkins P6 Diesel Engine consists of nearly 1,800 component parts, and, of these, 20-odd items are still not manufactured in the country, viz., Proprietary items consisting of Motor Starter, Dynamo, Fuse Box, Venturi, Timing Chain, Starter and Heater Switch Assembly Etc.

The organization of the Planning Department has been done on modern lines, using very extensively the Graphdex Board Charting System and with this the day-to-day stock position of the various engine components and also the flow of the manufacturing programme can be gauged at a glance.

Job Control Boards are operated by the Loading Section of the Planning Office and this method ensures very proper loading of the various production machines and also helps to keep an effective eye on the planned and actual production hours for doing various machining operations. The efficient organization of the Planning Department and co-ordination with the Works and the Cost Office facilitate accuracy in determining the manufactured cost of the component parts day to day.

The various cutting tools required by the Machine Shop are planned and procured, taking into consideration the tool life and the monthly tool consumption. The tools are properly numbered and as per the Operation Sheet, these are stocked in the Tool Stores for easy delivery. The procurement of tools has become a very important function to keep the Machine Shop running uninterruptedly, especially in view of the country-wide shortage of and



Mr. A. J. Lund

import restrictions for various cutting tools. In the selection of various cutting tools, factors governing maximum production and tool life, and also the materials to be machined are taken into consideration.

The different types of raw materials required for the production of P6 Engines are procured through the Material Control Department. This Department is responsible for the location of suitable materials and ordering them as required. They take very suitable steps to contact various suppliers and ensure that only the right type of material as specified in the designs are procured. All raw materials received at the Works are bonded until material and chemical analyses as required have been taken. This procedure is rigidly followed to ensure that only approved materials to specification are used for the production of the Engine.

This Department also looks after the procurement of various purchased components and also maintains a close liaison with Messrs. F. Perkins Ltd., Peterborough, England, and their Resident Chief Inspector, for obtaining their approval for these items. In the case of completely machined purchase items, a rigorous inspection is instituted in our inward goods section and these goods, like parts manufactured in Simpsons' Works, are constantly under review by F. Perkins Ltd's Resident Chief Inspector and his assistants.

MACHINE SHOP

The Machine Shop is broadly divided into two sections: one section manufacturing miscellaneous component parts and the other is laid out for flow-line machining of Cylinder Blocks with Main Bearing Caps, Cylinder Heads, Connecting Rods, Camshafts, Crankshafts, Lubricating Oil Pumps, Water Circulating Pumps, etc. The arrangement of Plant and Equipment has been carried out with a view to obtain a good deal of flexibility in production. Various Capstan Lathes and Automatics have been grouped in one section and several Radial and Pillar Type Drilling Machines in another and in this manner general purpose Milling Machines including Gear Hobbing Machine and SS & SC Lathes have been arranged in different groups.

Four of the Machine Shop bays extend lengthwise within the buildings and this arrangement enables very effective supervision and easy flow of components from machine to machine to be achieved. Manual handling of the components is minimized by necessary mechanization and goods, wherever possible, are palletised and the movement of components at various stages of machining is carried out by the employment of a large variety of specially designed pallets.

CYLINDER BLOCK BAY

The rough castings are delivered at one end of the bay and these are first washed with paraffin in a cleansing tank.

Gravity Roller Conveyors are arranged all along the bay and the castings travel on these from machine to machine, thus reducing to the minimum physical handling. This also helps to avoid 'stock piling' of components on the floor at the various machine stations.

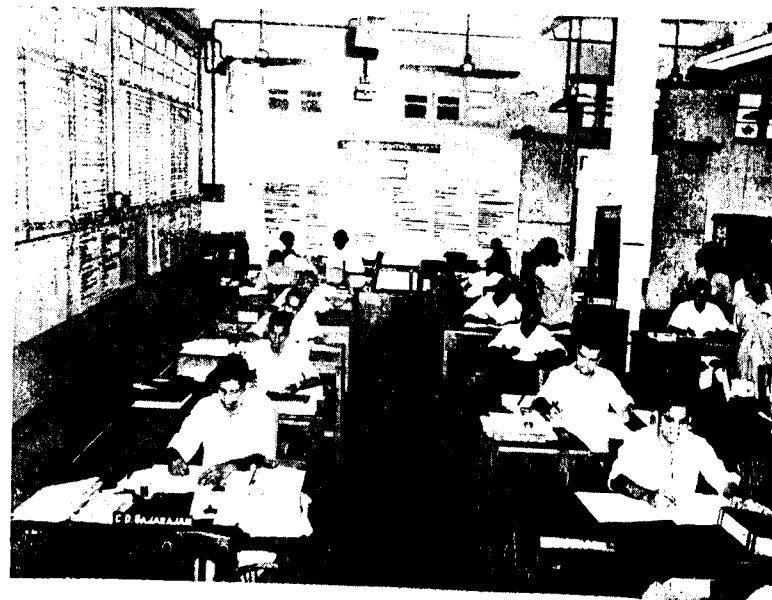
After fettling and washing, the castings are inspected with necessary inspection fixtures to ensure the correct locations of cores, jig location points and machining allowance and placed on the roller conveyor.

From these the work is loaded

directly into the fixture on the first machine, this being a Duplex Miller provided with 2 Nos. 16" dia. inserted tooth carbide cutters. After this operation the work is moved on the roller conveyor to the next operation, i.e., drilling of sump and head faces. In this operation two locating holes are drilled and reamed on the same face for jig location purposes for subsequent operations.

In the cylinder Block Bay there are several special purpose machines of the modern type such as 6-spindle Snout Borer specially designed for the rough boring of all the cylinder bores, Special Horizontal Drilling Machine for drilling the pressure rail hole in one setting and the wide base Miller for straddle gang milling the Crankshaft bearing sides and also for form milling the Crankshaft bore. 2 Nos. specially tooled Bore-matics are stationed for finish boring the parent bore of the Block and the Liners with hydraulically-operated 3 station fixtures. The Honing Machines are positioned next to the Bore-matics for rough and finish honing the Cylinder bores after finish machining of the Liners.

Most of the other operations are carried out on general purpose machines including Radial Drilling Machines, Vertical and Horizontal Milling Machines, Radial Arm Tappers, etc. All machines have been



Section of the Planning, Progress and Material Control Office.

tooled up for doing particular operations through suitably designed jigs and fixtures.

The Crankshaft and Camshaft bores are finish bored in a Horizontal Boring Machine after fitting the main bearing caps which are processed alongside the Block and brought over to a fitting station. When the machining operations on the Block are completed, the Main Bearings are fitted and line bored.

At every stage of machining, strict inspection is maintained by well trained stage Inspectors to ensure that only correctly machined Blocks are allowed to move forward to their next operations.

Before line boring the Blocks these are water tested and also the pressure rail paraffin tested to ensure that the Blocks are leakproof in every respect.

Completely machined Cylinder Blocks before delivery for assembly are inspected by Final Inspection Department, although rigid stage inspection has already been done at different stages of production.

CYLINDER HEAD BAY

The various machines for processing this component are arranged operation-wise. The rough castings are fed from one end and the completely machined heads are delivered to assembly from the other end. The work travels on roller conveyors and arrangements have been provided for lifting the work from machines to conveyor and conveyor to machines with the help of overhead lifting gear. For the machining of Cylinder Heads Vertical Milling Machines, Radial Drills, Radial Arm Tapping Machines, etc., are used, all of which are specially

tooled and jugged for rapid production and interchangeability of the component. As in the case of Cylinder Block, rigid stage inspection is maintained and the completely machined Heads are delivered to Assembly only after passing 100% final inspection.

Before commencing the first machining operation, the castings are thoroughly inspected on the production line itself for jig location points, machining allowance and to detect any casting defects.

After completing the machining operation, the Heads are also hydraulically tested and steam-cleaned.

Connecting Rod And Camshaft Bay

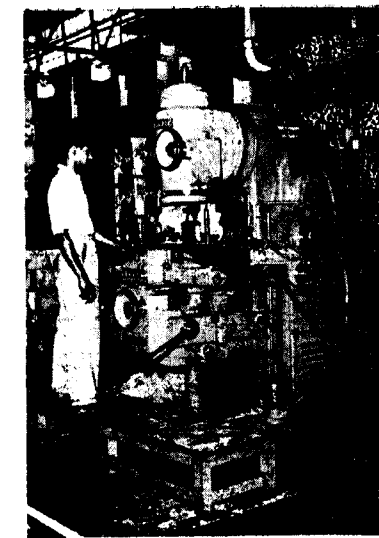
The Connecting Rod stampings, made out of Nickel Chrome Molybdenum steel, are first inspected very thoroughly in the materials inspecting wing of the Inspection Department to detect twists and other stamping flaws. Only approved stampings are then released to the production line and before the commencement of the first machining operation, the stampings are fettled and crack detected on a Magnetic Crack Detector.

In this bay also the machines are stationed on operation basis and, therefore, the Connecting Rods, move from one machine to the other in perfect sequence resulting in the least amount of handling.

Specially designed pallets are used for this bay instead of roller conveyors and the components are placed vertically on these pallets by the operative after completion of each operation.

The various milling operations are done by employing negative rake milling cutters as the material has over 65 tons tensile strength.

After the rods are completely machined, steel backed small-end bush is press fitted and then finish bored to size on a precision specially-tooled Fine Borer. On completion of all operations the rods are again crack detected and demagnetised before delivery to final inspection



Milling the Engine Sump faces on High Speed Vertical Mill.

where these are individually weighed and matched. Specially trained, Stage Inspectors vigilantly watch for any process variation at different stages of production.

P6 Engine Camshafts are machined on journals which are ground to micro-finish. The Cam Lifts are profile ground and a specially designed Cam-o-matic Grinding Machine, specially tooled, give correct profile of all cam lifts. Cam contour and respective cam lifts are checked on a specially designed fixture during process of manufacture.

CRANKSHAFT

The P6 Crankshaft is machined from high tensile Nickel Chrome Molybdenum steel drop forgings. This most important component has been tooled up with utmost care as the efficient performance of the P6 Engine depends to a very great extent on the precision of the Crankshaft.

Most modern equipment is installed for the production of Crankshafts, the general sequence being crack detection of Crankshafts before passing into Machine Shop, centering for turning operations, rough and finish turning main bearing journals and crank pin journals, rough grinding all journals, drilling lubrication oil holes, induction hardening all journals by a special induc-

tion hardening plant, tempering after hardening, finish-grinding, balancing the Crankshafts and final crack-detection before being passed for assembly. Very rigid inspection is employed throughout the various machining and grinding stages and 100% inspection is carried out after all the operations have been completed.

GENERAL SECTION

In the General Section in the Machine Shop, various component parts such as Water Pump, Fuel Pump Drive, Lubricating Oil Pump, Starter Ring, Timing Case, Exhaust and Induction Manifold, Sprockets etc. are manufactured. The Starter Rings are electrically butt-welded and passed through the Crack Detector before going forward for machining and cutting of teeth. The Starter Rings are again crack detected before 100% final inspection and utilisation in assembly.

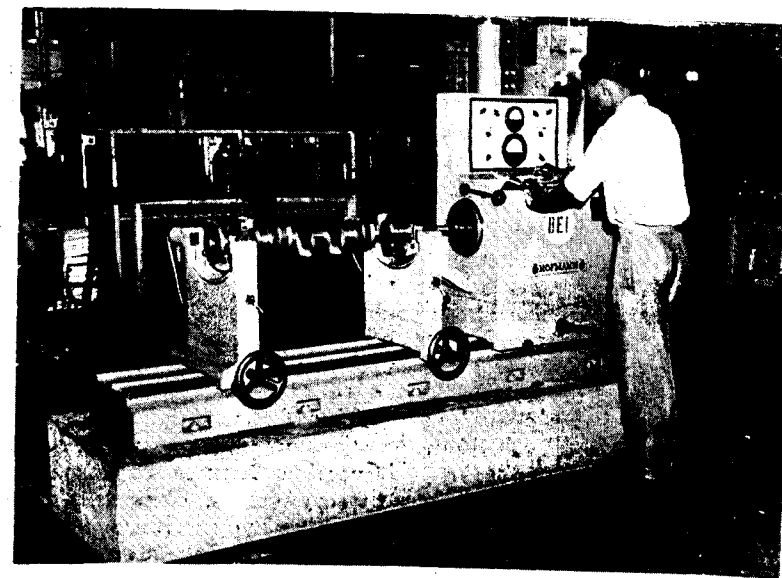
Two special Hobbing Machines are utilised for cutting teeth in all Chain Sprockets, Spiral Gears, and all gears are tested by means of a Goulder Gear Testing Machine fitted with chromium plated master gears.

TOOL ROOM

The Tool Room is equipped with excellent high precision machinery, including a Jig Borer. Special grinding machines are used for maintaining necessary supplies of correctly ground milling cutters, reamers, drills, taps and other small tools. All jigs and fixtures are periodically checked for wear and are carefully maintained to ensure absolute interchangeability and maintenance of very close machining tolerances.

Assembly of Engines and testing of Engines

The Engines are assembled in the well laid out Assembly Section on a line assembly basis and every Engine after complete assembly, is subjected to very rigorous functional tests utilising Hydraulic Dynamometers. Fuel and Lubricating Oil Consump-



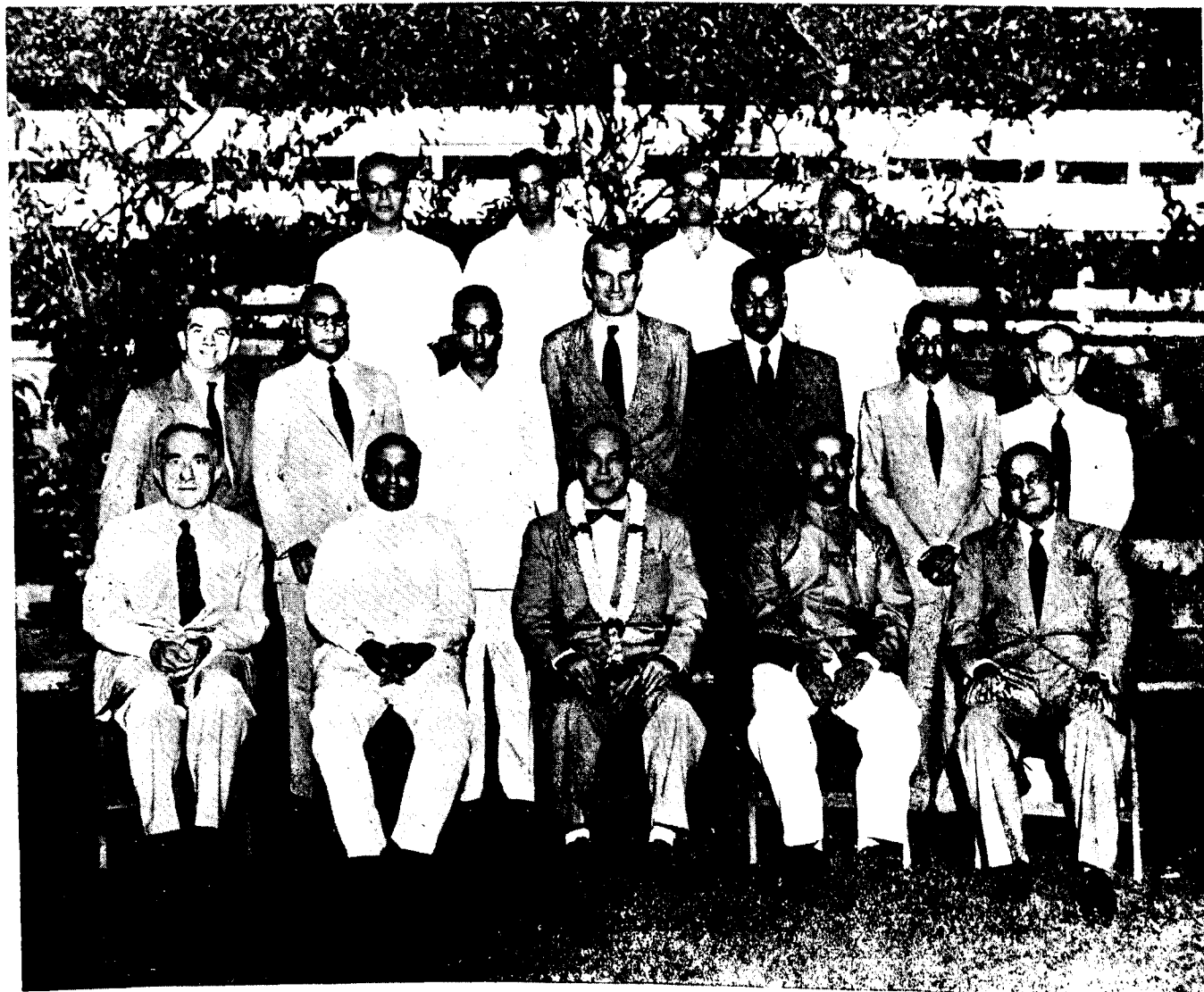
Dynamically balancing finished Crankshafts.

tion figures are checked to ensure that each and every Engine complies with the very rigid standards laid down. Each engine averages 5 to 6 hours of actual functional test. After test, each and every Engine is very carefully examined, after finish painting and packing prior to despatch from the Works.

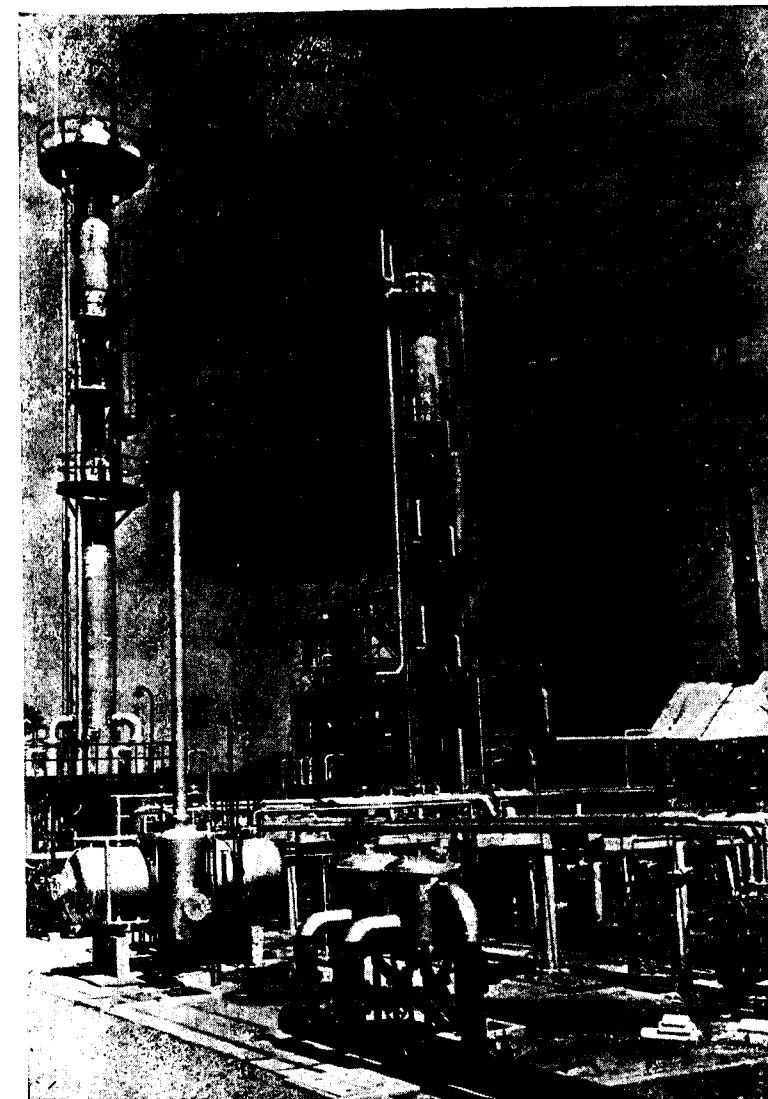
The production of an automotive type diesel engine of the Perkins P6

type calls for very efficient technical planning, extreme skill and supervision and also the adoption of modern production methods. The Perkins P6 Engine is world famous for its simplicity, rigidity, accessibility, economy and high quality, and Simpsons have taken every care to ensure that each and every component fitted into the Madras-manufactured Engine is, in every respect,

equal to, if not better than, the previously imported product. From the manner in which the various machining operations on the several components of the Engine are produced in Madras and the excellent administrative co-ordination, one can very boldly state that the Perkins Engine being produced in Madras is not, in any way, inferior to the foreign product.



Group photo taken on the occasion of the Party given to Mr. A. J. Lund, Director and General Manager, Simpson & Co. Ltd. on the eve of his departure to the States on Home Leave.



The Crude Distillation Unit of the Caltex Oil Refinery at Visakhapatnam which went into operation on April 15th.

VISAKHAPATNAM

The Caltex Oil Refinery has begun operating its Crude Distillation unit, the first major processing unit to be completed. Crude petroleum was charged to the Unit as a necessary prelude to the operation.

It is in the Crude Distillation Unit that crude petroleum undergoes the first in a series of processes which eventually convert it into refined products. This unit produces straight-run naphtha, which is used in the blending of petrol, plus kerosene, aviation turbine fuel, light and

heavy diesels, gas oil, and a heavy residuum. The gas oil is later catalytically cracked to become another blending component of petrol and the vacuum residuum is further processed to become the principal component of fuel oil.

Both Minas crude from Indonesia and Middle East crudes will be processed in the Crude Distillation Unit. When all other units are completed and the refinery is in full operation by the middle of this year, about 13,500 barrels of high quality petroleum products will be produced for the Indian market.

Mr. Bramstedt is new Chairman of Caltex

BOMBAY

Mr. W. H. Pinckard has announced his retirement as chairman of the board and chief executive officer of California Texas Oil Company Ltd., New York, after forty years of service. Mr. W. F. Bramstedt, president, has been elected to succeed him. Mr. A. J. Singleton, Executive vice president, has been elected president.

Mr. Pinckard spent more than twenty years of his "oil" career in the Far East and other foreign posts of The Texas Company. It was in 1936 that he participated in the formation of the Caltex group and became Manager of Caltex Asia Division in India in which role he was concerned with organizing Caltex (India) Limited. In 1950 he became chairman of the board of the California Texas Oil Company Ltd., after serving as vice president and president.

Mr. Bramstedt who began his oil industry career in 1927 held executive posts in Standard Oil Company subsidiaries in Canada and Alaska before he joined the Arabian American Oil Company as technical representative on crude oil sales. In 1947 he became vice president in charge of crude sales for California Texas Oil Company Ltd. In 1950 he became president of the company.

Mr. Singleton joined the new Galena Signal Oil Co., (of Ireland), Ltd., in 1923 and later became its managing director. When the Irish Galena Company was acquired by The Texas Company, he was appointed managing director of The Texas Company's English subsidiary in London. He became assistant vice president, California Texas Oil Company Ltd., in 1947 and executive vice president in 1951.

PLEA TO IMPORT MORE PISTONS, RINGS

The view that while the protection should be continued at the prevailing rate of Tariff to the Piston and Piston Ring Industry in India, the import of pistons and rings should be slightly relaxed to meet the increasing demand for these articles, is expressed in a Memorandum submitted by the Calcutta Motor Dealers Association to The Tariff Commission.

In their Memorandum, the Association says, *inter alia*.

There can be no two opinions that due protection should be given to the indigenous industries and as our Association is closely connected with this particular industry, we are all the more anxious for its rapid development.

Road Transport will have to shoulder the responsibility for fulfilling the great task of moving the urgently required heavy materials from place to place and for this purpose, we will have to see that every available vehicle is kept road-worthy. It is in this context, we feel, that the protection to the industry must be considered.

Therefore, we suggest that while the protection should be continued at the prevailing rate of Tariff, the import of Pistons and Rings should be slightly relaxed to meet the increasing demand of these articles. *The Vehicles on the road have increased in substantial number but contrary to expectation the import of Piston Assembly has gradually decreased and the import of Rings has been brought down to a level of only 10% of the past imports.* The effect of such a policy will not help the trade we are representing, to perform the obligations and duties of services in a manner that is expected of it.

Now, 17,31,000 pistons that are approximately required during a year, should be met by supplies from the indigenous industry as well as from imports. The figure of 17,31,000 has been arrived at basing on the statistics of the number of Vehicles given to us by this Commission that there are 93,000 Commercial Petrol driven Vehicles, 30,000 Diesel Commercial Vehicles and 1,60,000 light Cars. This also includes the number of Pistons re-

quired for stationary Engines, Motor Cycles and Tractors and also for other defence services.

Actually more than 6 pistons would be required instead of 5, as suggested by the Commission for a Commercial Petrol Vehicle every year, as there are hardly any Commercial Vehicles of the 4-Cylinder type but there are quite a number of 8-Cylinder Commercial Vehicles.

(a) So the average should be 7 pistons for each vehicle. However, even calculating at the rate of 6 pistons per vehicle, which is on the low side, the pistons required for Petrol Commercial Vehicles would be 5,58,000 for 93,000 Vehicles, on the basis that replacements are necessary every 12 months.

(b) We feel that 6 Pistons would be required for every Diesel Vehicle after every 18 months. Therefore, we conclude that 1,20,000 Pistons would be necessary in a year for 30,000 Diesel Vehicles.

(c) On the average 5 Pistons would be required for Cars every three years, therefore, for 1,60,000 Cars 2,60,000 Pistons would be necessary in a year.

(d) 74,000 Pistons would be required for Stationary Engines, Motor Cycles and tractors.

(e) 6,00,000 Pistons are necessary for defence services. These figures have been provided to us by the Commission.

(f) Thus the total estimated requirements would be 17,31,000 but in our view this is on the low side—as thousands of Vehicles have since been added. Therefore, we suggest that import upto 35% of its quota licence be allowed to relieve the shortage.

Development of technique in this particular industry is greatly required in line with the speedy im-

provement and developments that are taking place in foreign countries.

It has been reported that the supply position is not good and that many types are not manufactured at all. Therefore, we suggest that Rings and Pistons which are not manufactured should freely be allowed to be imported against the balance of 65% of the Piston Licence (basing the Piston quota Licence as 35%) of even against the Motor Vehicle Licence.

Piston, Piston Rings, Gudgeon Pins which are suitable for Cars, Trucks, Tractors and Motor Cycles used exclusively upto 1937 model and are not interchangeable with any later model, should be allowed to be imported under Motor Vehicle Parts Licence freely.

It is seen from the registration record of the Motor Vehicles Department that there are a good many Vehicles as stated above and running in the road. As aforementioned articles are not manufactured by any of our manufacturers, free importation of the articles under reference should be allowed as suggested above.

(Continued from page 30)

have specialists or mechanics assigned to each particular job. As an illustration, one man may be assigned the responsibility of servicing air cleaners. By repeatedly doing that job, he would be familiar with all the difficulties that an air-cleaner is likely to be subjected to and do an excellent job of servicing it at short notice. The job of greasing wheel bearings is also a delicate job, which can be assigned to a particular Mechanic. These are only a few thoughts on the Preventive Maintenance of Automotive Equipment, which is so essential to insure the vast amount of capital that is being invested in road transportation. (*Being the gist of a talk at the Indian Institute of Road Transport, Madras Branch on May 3.*)

World Automobile Production Down

Total production of motor cars by the WORLD'S major manufacturing countries went down from 10,796,000 in 1955 to 8,783,000 in 1956 (18.7 per cent) and production of commercial vehicles dropped, from 2,409,000 to 2,297,000 (4.7 per cent). Last year's figures were (in thousands, with 1955 figures in brackets) cars : U. S. A. 5,816 (7,920) ; W. Germany, 845 (706) ; U. K., 707 (897) ; France, 663 (546) ; Canada, 374 (375) ; Italy, 280 (231) ; U. S. S. R., 98 (107) ; commercial vehicles : U. S. A., 1,104 (1,249) ; W. Germany, 228 (203) ; U. K., 299 (341) ; France, 164 (161) ; Canada, 99 (79) ; Italy, 36 (36) ; U. S. S. R., 367 (337).

The NORWEGIAN State Railways is to acquire during the next five years 80 new diesel engines and 12 diesel rail cars, initially for use on main routes in southern Norway. During this period, electrification will be carried out on all southern main lines and will be completed by 1970.

The ITALIAN firm of Montecatini has introduced a newly developed thermoplastic material, produced at Ferrara by polymerizing propylene obtained by oil cracking. The new product, known as Moplen is credited with combining remarkable lightness (specific gravity 0.9) with high mechanical strength and resistance to heat and chemicals.

The output of gasoline and diesel oil from lignite in CZECHOSLOVAKIA will be increased this year by 44.6 and 31.3 per cent respectively. Last year's production of oil from lignite, all in the hydrogenation plant at Most, has been estimated at 400,000 tons, but production capacity may be higher. Policy hitherto has been against an extension of coal/oil production.

By 1975, Czechoslovakia expects to obtain 60 per cent of her electricity from nuclear plants.

Pakistan Sun Oil Company, subsidiary of the U. S. concern Sun Oil Company, is negotiating with the PAKISTAN Government for exploration rights over 6,400,000 acres.

Owing to extensive use of materials from the previous war destroyed 1,000,000-ton plant, Burmah Oil Company's 200,000-ton refinery at Syriam, BURMA, which recently came on steam, cost only about £880,000 to build ; a completely new similar refinery would have cost £3 million. The combined outputs of Chauk and Syriam refineries (the latter using some imported crude) total nearly 340,000 tons, thus meeting Burma's requirements of gasoline, kerosine, wax and fuel oil. Resulting foreign exchange savings are over £1½ million a year.

Caltex is to invest several million dollars in developing two fields in Sumatra, INDONESIA, at Duri and Bekasap, both about 35 miles north of the company's Minas field. From Duri, where 22° A.P.I. crude was discovered at 800 ft. in 1940 and several wells are shut-in awaiting production, a 30-mile 30-inch pipeline with a road alongside will be built through the jungle to a new deep-water terminal to be constructed at Sumai, off the Strait of Malacca, where the largest tankers will be able to load. At Bekasap, where 35° crude was found two years ago at 3,000 ft. further wells will be drilled and the field connected to the Duri-Dumai pipeline, to which also the Minas field, which last year produced 88,000 b/d, will probably eventually be linked. Minas' oil is at present shipped by river tanker to seaboard.

Total crude oil production in Indonesia in the last three months of 1956 was 3,238,000 tons.

In PAKISTAN Hunt International Petroleum has abandoned its first well on the Mekran coast at Dhak, 80 miles west of Karachi at

8,400 ft. and is drilling a second well two miles away, which is now below 9,000 ft. A seismic survey is being carried out north of Karachi.

It has been announced in Peking that oil-bearing structures were discovered last year in the Nagchu area of eastern TIBET.

The JAPANESE Ministry of Transportation has drawn up a 10 year programme of research on nuclear propulsion for merchant ships, to be carried out with the co-operation of Japanese shipping and shipbuilding interests. The Mitsubishi Heavy Industries Co., recently started that its naval engineers have started the basic design of two atomic tankers, one being a large submarine vessel to be capable of cruising at 22 knots submerged.

Oil is reported to have been discovered in AFGHANISTAN at the first well drilled at Sar-i-pul in the Mazar-i-Sharif area in the far north of the country, about 80 miles from the Russian frontier, by the Swedish Diamond Drilling Company operating on behalf of the Afghan Government. A second well is now drilling.

The first wildcat to be drilled in BURMA since the war will shortly be begun at Ondwe, 30 miles south-east of the old-established field of Yenangyaung in central Burma. Pre-war shallow wells at Ondwe yielded non-commercial shows of oil and gas and now a deep test will be carried to 10,000 ft. by the Burma Oil Company (1954), which is owned one-third by the Burmese Government and two-thirds by Burmah oil, Indo-Burma Petroleum and British Burmah Petroleum. The company's refinery at Syriam near Rangoon will go on stream this month, rebuilt to a capacity of about 200,000 tons a year, one-fifth that of pre-war.

PLEA TO RESTORE OPPORTUNITY TO NEW COMERS AND REMOVE CUT IN QUOTA LICENCES

*Madras Motor Parts Dealers Association's
useful suggestions Re: Import Control*

The Madras Motor Parts Dealers Association, in a communication to the Secretary, Ministry of Commerce and Industry, Government of India, have drawn the attention of the Government to certain practical difficulties experienced by dealers of automobile parts in respect of satisfactory servicing of existing vehicles, and have suggested proposals for consideration and incorporation in the Import Trade Control Policy for the forthcoming half year July-December 1957, which is expected to be issued in the ordinary course on the last day of June.

Hoping that the Government would welcome the reactions and knowledge gained from practical experience by various categories of importers in the past, the Secretary of the Association in the communication to the Government has pleaded for a careful consideration and incorporation of the Association's proposals in the forthcoming Policy announcement in so far as it would relate to motor vehicles parts and accessories falling under Sec. Nos. 293, 295 and 297 of Part 4 of the Import Trade control. Stressing the responsibility of the dealer and the importer to keep the vehicles moving and roadworthy, efficient and dependable so that road transport can play its due part in the implementation of the Second Plan, and appreciating the fact that everybody has to help in his own way the conservation of foreign exchange by the Government to meet present requirements, the Association feels its duty to bring to the notice of the Government the measures that would most effectively facilitate the achievement and larger and ultimate interests of the Nation.

NEW COMERS

The Association points out that while liberal licensing to newcomers

during the several preceding licensing periods since 1953 had produced no small benefits to the general public and an impetus to every dealer to play his part in the trade besides developing healthy competition resulting in surprisingly low rates for the consumer, the withdrawal of opportunities to newcomers in the last Import License Policy issued on 31st December last, coupled with the cut in the quota of imports now threatened to lead to an inevitable rise in the prices and what is worse, a shortage of materials, either way affecting the maintenance side of transport vehicles. The Association, therefore, suggests either the restoration of the opportunity to all newcomers to enter the import sphere as in the early licensing periods, or in case this is not found feasible to restore the cut in the quota licenses, so that the quota licenses may be given to the extent of 100 per cent of dealers past year's imports.

BASIC YEAR

The Association also suggests that the basic year should be extended to March 1957, so that most of the newcomers during the last licensing periods can qualify themselves as established importers. It is also suggested that in view of the very large number of items entered in

the various lists, and with a view to minimising much cumbersome work both to the licensing authorities and the importers, that a special license be issued covering the various restricted items in a single consolidated form specifying therein the maximum. Such licenses, it is suggested, should be general licenses applicable to both soft and dollar currency areas and the validity of the licenses should be not less than 12 months.

VALIDITY

Another important suggestion contained in the communication is that all soft currency area licenses issued for all licensing periods should be made valid for imports from dollar areas well up to 50% without restriction as to the face value of such licenses, as the need for such an amendment of Policy was obvious in the view of the Association.

BALL BEARINGS

Referring to the Red-book for January-June 1957, the communication says that in Part 7 of Appendix XXVI, one per cent of the face value on licenses is allowed to be utilised for the import of ball-bearings. The Association has found from experience that this quota is very meagre especially since indigenous sources are not as yet in a position to meet

CONSOLIDATED LICENCE FAVOURED FOR BRAKE LININGS AND CLUTCH FACINGS

the local demands fully. It is, therefore, felt that at least up to 5% of the face value of the licenses should be allowed for the import of alternative ball-bearings at least until such time when indigenous manufacturers can take care of the requirements in full.

In regard to Paragraph 9 which deals with bolts, nuts and washers, which are very indispensable parts in respect of motor vehicles, the Association feels that the present limit of 1% is absolutely low and therefore, submits that these items should be allowed to be imported under M. V. parts licenses under Sec. Nos. 293, 295 and 297 without any restriction.

GASKETS

The Association also points out that in regard to oil seals and gaskets the restriction on their import should be deferred because though protection have been extended during the last two licensing periods the local industries have not yet made available their products to the market. It is further requested that the limit up to which the restricted items in list 2 can be imported under M. V. parts licenses be increased to at least 10% of the face value of the license.

With regard to items in list 3, the Association suggests that a consolidated license should be issued for brake-linings and clutch facings since they both belong to the same industry. In this connexion, it is pointed out that there must be no indigenous manufacture of woven brakelining, both metallic and non-metallic, which are used popularly for old vehicle maintenance. As such, the restriction of 50% of the face value of licenses for moulded type and for Woven non-metallic types, is considered by the Association as not justified in view of the demand and the inability of indigenous manufacturers to supply the demand. The Association, therefore, prays that the restriction on import of Woven brake-lining and clutch facings must be relaxed till such time that the Indian manufacturers were able to produce them.

PISTON ASSEMBLIES

In regard to piston rings below 6" diameter which is only used for old motor vehicles, petrol or diesel

driven, in view of the fact that not even half the requirements of the country are met by local manufacturers and in view of the fact that the restriction on imports for rings amount to virtually making the face value to 10% only, it is recommended that at least 50% of the face value be allowed for the import of piston rings below 6" diameter with proper allowances or the import of steel segments.

In regard to piston assemblies, the Association feels that at least 50% of the value of the piston licenses should be allowed for the import of pistons below 6" diameter with suitable allowances for piston pins and bushes.

As regards such of those pistons, piston pins and piston rings, which are not manufactured in India, and for those makes covered by no programme of manufacture in this country, the Licensing Policy should allow import without restrictions under the regular M. V. Parts License under sec. Nos. 293, 295 and 297.

SPARK PLUGS

As regards the spark plugs, the Association, pleads for an increase on the percentage limit to at least 10%.

GARAGE TOOLS

With reference to garage tools, it is the submission of the Association that since the percentage allowed now was very meagre at least 5% of the motor parts licenses should be allowed for the import of garage tools and this should include battery chargers of the Tunger type.

CORK PRODUCTS

Finally, the Association regrets that there is not a single manufacturing programme in regard to manufacture of Cork products in the country. It is, therefore, suggested that the percentage quota in regard to import of Cork products be increased to 25% of the face value.

It is hoped that the above points will be considered by the Government in the spirit in which they are offered and that they will be incorporated in the forthcoming Import Policy to be announced at the end of June, so that road transport can play its part in the economy of the nation.

MOTORINDIA
IS THE APPROVED ORGAN
OF THE MADRAS MOTOR PARTS DEALERS' ASSOCIATION

MOTORINDIA NEWS SECTION

(BY OUR SPECIAL CORRESPONDENTS)

Tractor testing station for Nagpur

BOMBAY
The union Ministry of Agriculture will shortly set up an Indian tractor testing station at Nagpur, it is learnt. The land and a few buildings to house the station have been offered by the Bombay Government. Tractor manufacturers both in India and elsewhere will find the station useful in that the tests will enable them to take special note of the technical requirements needed while manufacturing such equipment.

The station will also circularise technical information on the performance of tractors and their detailed specifications so as to enable the public to select machines suited to their needs. Equipment for this station is being imported from the U. K. under the Colombo Plan aid. The station will be modelled on the lines of the Nebraska Tractor Testing Station in the U. S. A. and the National Institute of Agricultural Engineering in Britain.

Robot tractor demonstrated

SYDNEY
A driverless radio-operated tractor was successfully demonstrated in Sydney recently. Although only in the experimental stage, the invention offers a glimpse of the possibilities of farming by automation.

A Sydney firm, British Farm Equipment Proprietary Ltd., evolved the new machine in under five months. Electronic equipment for remote tractor controls were provided by Electric Control and Engineering Ltd., and hydraulic equipment by C.S. Archer Proprietary Ltd., both of Sydney.

At its first demonstration the tractor was controlled from a box which can comfortably be carried with two fingers. The box was supported by a thin spiked shaft which was pushed into the ground like a shooting stick.

There were eight push-buttons on the control panel, including one for emergency stops and another for

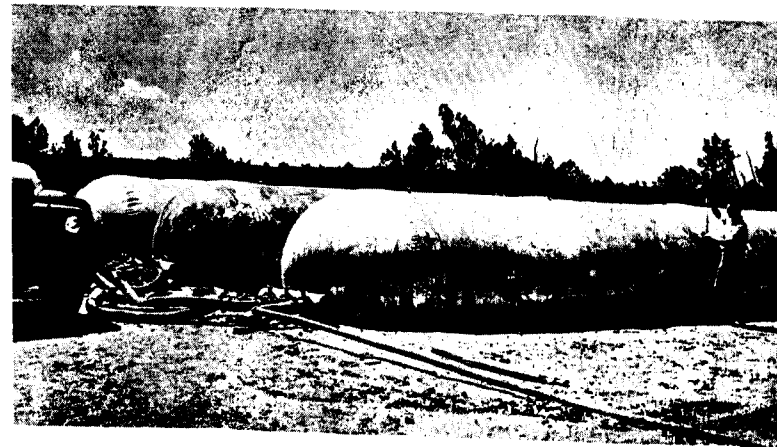
the clutch and brake. Cables from the panel led to a radio transmitter and a 12-volt battery.

Because no provision has yet been made for remote starting or gear-changing, an operator started the tractor, put it into gear, and walked away to the control panel. The machine then went into action like an ordinary tractor with a driver.

A heavy reversible disc harrow attached to the driverless tractor cut a row of straight furrows to 200 yards, then turned and dug another row parallel to the first.

Apart from the fact that the cost of this tractor is still too high for commercial manufacture, it has a very limited demand no matter what equipment it hauls.

One possible important use is to fight bushfires; such a machine could carry fire-fighting gear or a bulldozer blade right into a fire itself. It could also be used for small-scale farming in difficult weather, with the operator protected from rain or sun.



Successful tests of giant collapsible rubber tanks have just been completed in American oil fields under actual operating conditions. The tanks, designed for oil, water or other liquids in areas where storage or transportation problems occur, are made of tough, rubberized nylon and have a 15,000s gallon capacity.

DAIMLER-BENZ AG

STUTTGART :
The Daimler-Benz AG has the pleasure to announce the following : Negotiations between the Daimler-Benz AG, Stuttgart, and the American firms Curtiss-Wright, Studebaker-Packard and Utica-Bend concerning an export expansion of Mercedes-Benz cars, commercial-vehicles and engines to the USA and, at a later date, the maintenance of Curtiss-Wright engines and their production under licence in Germany, have now led to an agreement. This agreement defines the interests of the contracting firms in the above-mentioned fields without impairing the absolute independence of their individual business policies.

According to the agreement just signed, in the automotive field Daimler-Benz can dispose in the United States of the Studebaker-Packard sales organization and service facilities for their vehicles imported to the USA.

Technical co-operation in the production of cars and engines and, at a later date, aircraft engines, with reciprocal exchange of licences between the above-mentioned firms will be the result of these agreements

The U.A.Z-450 Delivery car

A new delivery car, the UAZ-450 has been produced at the motor works in Ulyanovsk, the Russian Federation. It is designed for the delivery of manufactured goods and foodstuffs and for service in postal and medical institutions.

The new model is based on the Gaz-69 and utilizes many of its sections and parts. Its motor is the same as in the Volga. Experimental models of the new car have passed tests successfully.

Soviet automobiles in foreign markets

The low-powered automobile plant in Moscow has shipped a consignment of Moskvich automobiles to foreign countries, the first of the year.

The USSR exports to various countries of the world nearly 30 types of motor cars, lorries and autobuses.

Large numbers of automobiles produced by the Gorky, Moscow, Yaroslavl and the Urals factories are being exported to the People's Democracies. The Soviet-made Pobeda motor car is used as a taxicab in Finnish towns where there is also a big demand for the Moskvich automobiles. An association of Pobeda taxicab owners has been set up in Norway.

Very popular abroad is the Soviet GAZ-69 cross-country vehicle. It finds ready buyers in the People's Democracies, in Afghanistan, Burma, Finland and other countries. It has gained recognition in the world market due to its sturdiness and reliable performance in various climatic conditions.

The Roads Wing of the Union Ministry of Transport has undertaken a broad study of the development of rural road communications in the country.

This study would cover primarily the question of integration of the various programmes of rural and development included in the Second Five Year Plan, the adequacy or otherwise of the standards adopted for rural roads, arrangements for the maintenance of rural roads, and the extent to which the provision made in the Second Five Year

Plan would help to achieve the broad targets set in the Nagpur Plan.

ATTENTION OPERATORS

A Notification in the Fort St. George Gazette says that the Governor of Madras has directed that for the purpose of calculating and determining the registered weight, the permissible weight of any axle and the registered laden weight of any transport vehicle permitted to ply on the State Highways and National Highways certain new schedules be adopted in addition to the 7th Schedule to that Act. The attention of operators are drawn to the Gazette Notification issued by the Home Department on this subject dated 10th April.

In modification of their previous order, the Government of Madras have directed that the Divisional Engineer, Highways, of the Divisional Engineers, Highways, where there is more than one Divisional Engineer in a district should also be members of the District Transport Advisory Committee.

★

WAGE RATES

Revised minimum rates of wages have been fixed by Government for employment in public motor transport under the minimum wages Act. This Notification has come into force from 31st March 1957 and concerns minimum rates of basic wages for travel conductors, mechanics, fitters, electricians, clerks, inspectors etc., and also skilled and unskilled workers. These revised rates of minimum wages shall not apply to such cases where higher minimum rates of wages has been fixed by the former T. C. Government in regard to workers now in the Kanyakumari and Shenkotta areas.

Sales Tax on Battery cells

INDORE
Torch battery cells are electrical goods for the purpose of the Sales Tax Act according to the ruling given by the Madhya Pradesh High Court.

Their Lordships, Mr. Justice Dixit and Mr. Justice Samvatsal,

disposed of a reference following a dispute between the Sales Tax Commissioner and a local firm in respect of payment of Sales Tax on battery cells. It was contended by the assessee that battery was no electrical goods in as much as it only stored electrical energy and did not generate it like a dynamo. The court held that such distinction "is utterly untenable." There was no difference between electrical energy produced by voltaic or galvanic action as in a battery or generated by a dynamo rotated by mechanical or other kind of power.

Auto transporter

Canadian National Railways scored another North American "first" when its newest and largest freight car, the automobile double-deck transporter, was put through its paces in a public demonstration in downtown Montreal.

Representatives of manufacturers and auto dealers joined railway officers at the CNR's Bonaventure Yard to watch 1957 model cars being loaded and unloaded through the giant and doors of the auto transporter.

The auto transporter is the second new type of freight car which the CNR has introduced to the railroad industry within the past year. First came the pupwood car, designed to improve loading and transportation of pupwood and to increase car capacity by 70 per cent.

The auto transporter measures 74 feet, six inches long by 16 feet, six inches high. The car is the largest freight unit in service on any railway in North America.

Eight autos are carried on the two decks, loading and unloading under their own power via the special lightweight ramps.

A special feature of the car is the shock-absorbing tie-flown equipment which insures a safe, smooth ride for the automobiles. Each auto rides on platforms which can slide a few inches in either direction along the length of the car. The sliding action is controlled by heavy custom built coil springs. Each

auto is fastened down to its platforms by means of chain and turn buckle linkages which fasten to special hubs attached to the auto's wheels and axles.

Despite the car's great size, it can go anywhere on Canadian National Railways lines in Canada except for some half-dozen points where clearness is limited.

The car is not unusually heavy, even when fully loaded, and it rides on standard freight car wheels and axles.

The transporter will find its greatest utilization carrying cars into "mass market" auto sales areas such as Canada's large cities.

600 MILES FREE TRAVEL FOR TOURISTS!

MADRAS

According to a London message tourists visiting Russia this year will receive 600 miles of free travel and pay only half rates for journeys beyond that distance. There is to be another 25 per cent reduction for tour by students, workers and others with limited means. Intourist, the Soviet Tourist Agency has prepared 17 tours for this year embracing the most interesting tourist areas.

Indians, however, are not likely to be benefited by this in view of Government decision announced on January 3 that "with a view to conserving foreign exchange the Government have decided that the basic allowance of foreign exchange for purposes of travel abroad for pleasure or convenience should be stopped."

A circular issued by the Reserve Bank states that with effect from this year there will not be any basic allowance of foreign exchange for the purpose of travels abroad except for people going out of India for educational, bona fide business and health reasons who would be excluded from the purview of the order. Till now anybody could get a basic foreign exchange of £750 for two

years by merely presenting a passport.

HEAVY AIR TRAVEL IN CANADA

Trans-Canada Air Lines experienced outstanding growth in almost every phase of its operations in 1956.

In an annual review, T.C.A. President, G. R. McGregor, said the airline had greatly stepped up its activities to meet the demands of what has been described by economists as the most prosperous year in Canadian history.

The transportation industry as a whole shared in the buoyancy of the national economy, and the record levels of production and trade, Mr. McGregor said. The upward trend of air travel popularity was more apparent than ever before and all previous peaks of traffic volume were exceeded. To keep pace with Canadian transportation needs, T.C.A. made available for sale the greatest number of seat miles in its history—some 1,635,000,000.

BIG BUSINESS

Visiting big game hunters spend an average of seven days in Alberta at an all-inclusive estimated cost of \$300 weekly, provincial authorities state. Receipts from licence fees last year totalled \$13,750, and about \$4,500 was spent by big game hunters in the province.

Big game hunters invest more money in equipment than their fellow sportsmen. Most spend about \$250 on rifles and accessories, and some invest much more. A few have been known to buy a small

truck and even deep freeze units as a direct result of their hunting trips.

It is believed 85,000 tourists and resident hunters took to Alberta's mountains, fields and marshes in the autumn of 1956. Since 1951 there has been a phenomenal 50 per cent increase in the number of game and bird hunting licences issued in the province.

TOURIST TRAFFIC Growing increase in Germany

BONN

Tourist traffic with foreign countries was being facilitated in 1956 by means of a complete liberalisation of payments, so that for each journey to a country abroad the amount of foreign exchange demanded could be made available without delay or unnecessary formalities. Except for journeys to Spain and Yugoslavia a visa was no longer necessary and later even in the case of Belgium, Luxembourg and Switzerland the countries agreed that a passport should no longer be demanded. Journeys for foreign visitors travelling in the Federal Republic by car were being facilitated by no longer insisting on triptychs and introducing a much cheaper reservation ticket. The number of tourists who stayed overnight in hotels of the Federal Republic reached 90 millions in 1956 which figure includes the 9 million hotel bookings made by foreigners. This is compared to 1950 an increase by 142 per cent of the total tourist traffic and a growing by 256 per cent of the number of foreigners visiting Germany. Receipts of foreign exchange resulting from this will in 1956 in all probability amount to 1, 3 million DM which means an increase of 37 per cent compared to the year 1955.

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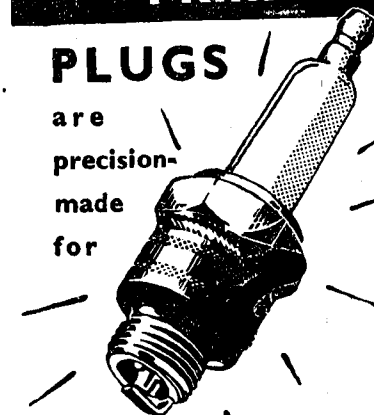
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May 1957

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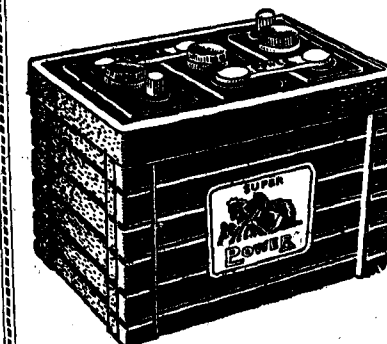
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	Rs.	as.
Plymouth Car, (Sundaram Motors Private Ltd.) Ex. Premier Automobiles Factory, Kurla ...	20,270	0
1956 Model Plymouth Suburban ...	22,646	0
Hindustan Landmaster 1956 (Southern Automotive Corporation Private Ltd.) ex plant Uttarpara ...	9,999	0
Dodge kingsway sedan ...	20,371	0
Dodge Suburban (Addison & Co. (P) Ltd.) ex Bombay ...	22,899	0
Baby Hindustan 1956 (Addison & Co. (P) Ltd.) ex Madras including S.T. & Import charges ...	9,550	0
Standard Super Ten Saloon (Union Co. (Motors) Private Ltd.) on the road ...	10,022	2
Standard Estate Car (Union Co. (Motors) Private Ltd.) on the road ...	14,889	2
Studebaker 'Parkview' station Wagon 1956 model (Reliance Motors Ltd.) ex plant Calcutta ...	20,280	0
Studebaker 1956 Commander (V.S.T. Motors Private Ltd.) Including S.T. & Delivery Charges ...	19,850	15
Studebaker 1956 President Classic [V.S.T. Motors Private Ltd.] ...	22,237	13
The Fiat 1100 The Elegant [Sundaram Motors Private Ltd.] ...	8,847	0
Willys C.J. 3B Universal Jeep [Sundaram Motors Private Ltd.] ex plant Bombay ...	12,160	0
Willys Model 4 x 4—75 Station Wagon [Sundaram Motors Private Ltd.] ex plant Bombay ...	18,150	0
Jeep 1 ton truck ...	13,046	0

MOTOR CYCLES

Royal Enfield [The Madras Motors (Private) Ltd.]—		
“150 Ensign” ...	1,890	0
“350 Bullet” with spring frame ...	3,430	0
499 c.c. Model ‘j2’ ...	3,500	0
“500 Bullet” with spring frame ...	3,950	0
“500 Twin” with spring frame and with Magdyno or coil ignition ...	4,450	0
“700 Super Meteor” with spring frame and with Magdyno or coil ignition ...	4,650	0

	Rs.	as.
Matchless 350 c.c. with rear suspension [Addison & Co. (P) Ltd.] ex Madras ...	3,675	0
Triumph Terrier [Addison & Co. (P) Ltd.] ex Madras ...	2,175	0
Triumph Tiger Club [Addison & Co. (P) Ltd.] ex Madras ...	2,325	0
The New Bina Peugeot 48 c.c. [The Union Co. (Motors) Private Ltd.] on the road. B.S.A. Motor cycles. [The Union Co. (Motors) Private Ltd.]—	970	3
125 c.c. Bantam on the road ...	1,880	4
150 c.c. Bantam Major on the road ...	2,212	0
250 c.c. Model C. 11. G. on the road ...	2,736	8
350 c.c. Model B. 31. on the road ...	3,978	11
650 c.c. Plunger type on the road ...	4,629	13
50 Swinging Arm on the road ...	4,892	8
Jawa (S.P. Ratnam & Sons) 2.5 H.P. with spring frame, dual seat, with unique kick starter and gear change lever in one	2,660	0

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48 c.c. Scooterette ...	872	0
150 c.c. ‘D’ Model Standard Scooter ...	1500	0
150 c.c. ‘LD’ Model Deluxe Scooter ...	1795	0

VANS

Standard Delivery Van. [Union Co. (Motors) Private Ltd.] on the road ...	10,628	9
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[George Oakes Ltd.]		
Leyland Comet “203” WB Passenger Diesel Chassis including S.T. & dely. charges, ...	36,000	0
Leyland ECPO 2/2R-176 WB full forward control Passenger Chassis S.T. & dely. charges ...	35,500	0
Leyland ECOS 2/1R-163 WB goods chassis including S.T. & dely. charges ...	34,700	0
Leyland ECOS 2/2R-118 full forward Tipper chassis including S.T. & dely. charges ...	34,500	0

Rs. as.

[Rane (Madras) Ltd.] Studebaker 1956 Diesel Truck Chassis.		
2E 38B-155 W.B. Chassis with Diesel Engine ex plant Calcutta ...	21,317	0
2E 38B-155 W.B. E.H.D. Chassis ex plant Calcutta.	16,208	0
Willys Model 4-75 Wheel Drive one ton truck chassis 118" W.B.		
[Sundaram Motors Private Ltd.] ex plant Bombay ...	13,935	0
Jeep Trailer ex plant Poona or Madras ...	1,800	0
[V.S.T. Motors Private Ltd.] Tata-Mercedez-Benz. Diesel Truck and Bus Chassis L 312/42 165" W.B. 5-Ton Truck Chassis ex Works Jamshedpur ...	26,430	0
LP 312/42 165" W.B. Full Forward Control Truck Bus Chassis ex Works Jamshedpur ...	27,295	0
LP 312/48 190" W.B. Full Forward Control Bus Chassis ex Works Jamshedpur ...	28,085	0
L 312/36 142" W.B. 5-Ton Truck Chassis ex Works Jamshedpur ...	25,905	0
LK 312/36 142" W.B. 5-Ton Truck Chassis ex Works Jamshedpur ...	29,475	0
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C4H6-153" WB ...	17,710	0
C4H6-153" WB ...	17,979	0
C4H6-171" WB ...	18,805	0
C4H6-193" WB F/F ...	18,116	0
C4H6-193" WB F/F ...	18,385	0
C4H6-193" WB W/S ...	18,479	0
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C3D6-116" WB ...	15,012	0
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C4H6-153" WB ...	22,937	0
C4H6-171" WB ...	22,903	0
C4H6-171" WB ...	23,172	0
C4H6-193" WB F/F ...	22,992	0
C4H6-193" WB F/F ...	23,261	0
C4H6-193" WB W/S ...	23,298	0
C4H6-193" WB W/S ...	23,567	0

DIESEL TRUCKS

105P6-165" WB ...	22,018	0
105P6-165" WB ...	22,287	0
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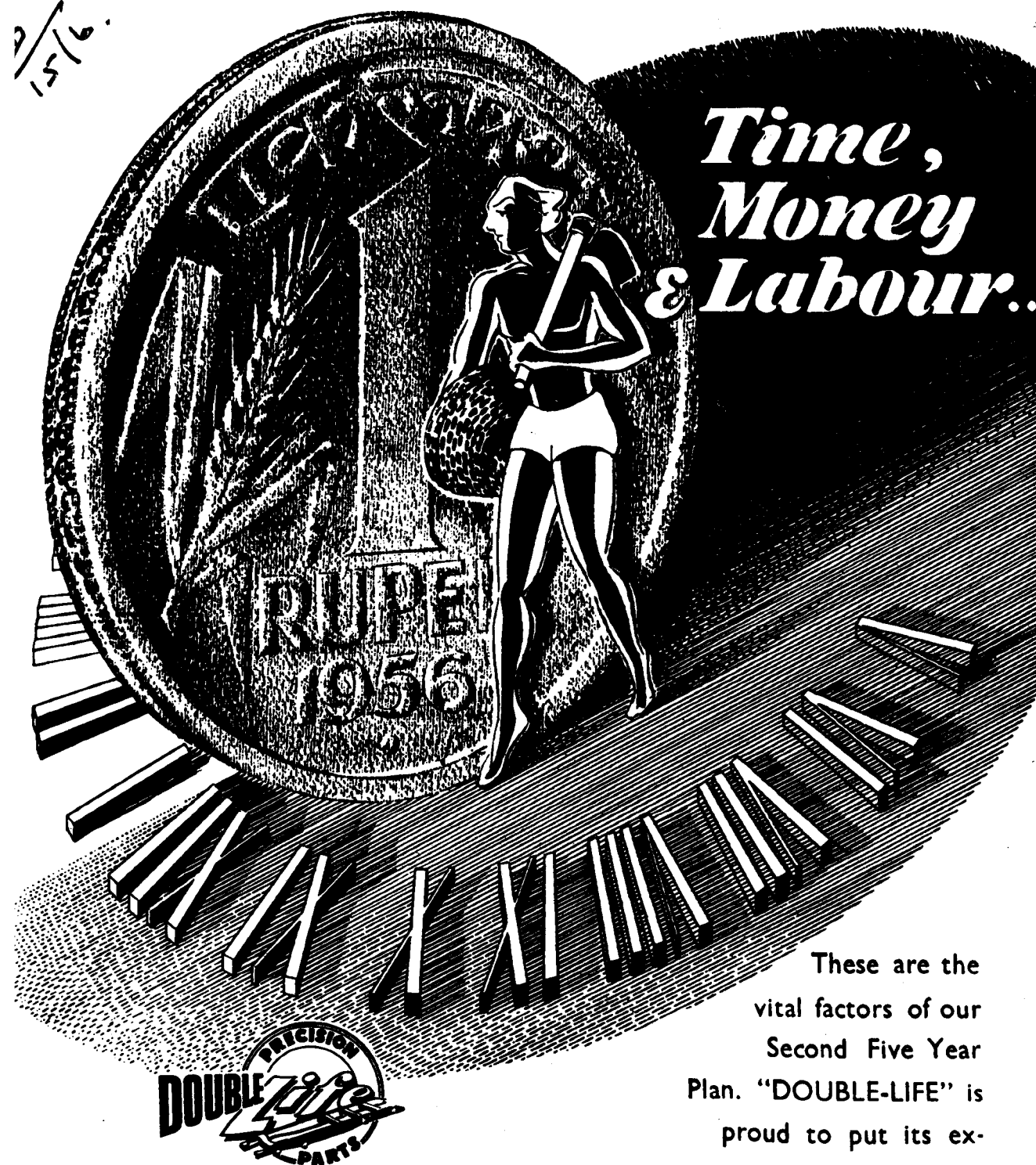
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