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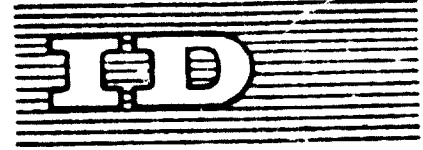
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The seminar on the Establishment and Development  
of the Automotive Industry in Developing Countries  
Karlovy Vary, CCSR, 14 October - 1 November 1968

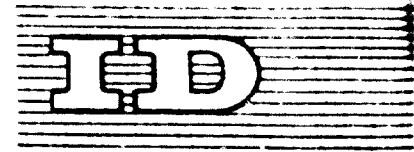
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ESTABLISHMENT AND DEVELOPMENT  
OF THE AUTOMOTIVE EQUIPMENT INDUSTRY  
IN INDIA<sup>1/</sup>

by

K. T. Merchant,  
Member, Tariff Commission  
Bombay, India

<sup>1/</sup> The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Government of India, the Tariff Commission, nor the Secretariat of UNIDO.



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SUMMARY

1. This paper points out the importance of the automotive industry and the use of automotive equipment for the economic development of the country. In developing countries, priority should be given to the construction of a network of roads.
2. The history of the automotive industry in India from the period of importation through assembly and finally to local production is comprehensively recorded. The development of the automotive and ancillary industries in India was considerably influenced by the policies of the Government. Since the early 1950s, only manufacturing firms have been allowed to continue their activities. Several protections have been established.

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\* This is a summary of a paper issued under the same title as ID/WG 13/10.

1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Government of India, the Tariff Commission, nor the secretariat of UNIDO.

3. The lack of foreign currency and the implementation of the recommendations for the substitution of imported parts by locally produced components stimulated the Indian automotive parts industry. The local content for approximately 73,000 vehicles produced in India in 1966 was about 84 to 96 per cent, including imported raw materials and contents of locally produced components. In 1965 an agreement was reached for the indication of items to be produced by components producers and those to be produced by vehicle manufacturers.

4. The paper discusses the difficulties of the Indian market and the disadvantages of the means of protection which permit producers of non-economic and substandard equipment to survive. A fear of monopoly was responsible for licensing too many manufacturers and this eventually led to low volume, costly production, and too great a variety of products. Production should be concentrated among a few manufacturers and emphasis should be placed on the development of general purpose machines.

5. The paper states that in India research and indigenous designing are neglected. Some ideas and recommendations are offered for improving the automotive industry's present situation in India. These might also be applicable to developing countries. The reasons for the success of the Brazilian automotive industry are cited and should be considered by Indian authorities and manufacturers.

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## I. IMPORTANCE OF THE AUTOMOTIVE INDUSTRY IN DEVELOPING COUNTRIES

1. The automotive industry has brought about a revolutionary change in western countries. Apart from its impact on the economy - today it is an index of the health of an advanced economy - it has brought about remarkable changes in habits, fashions and manners. It has made men and materials astonishingly mobile, destroyed age-old social isolation, discouraged parochialism and widened effectively the horizons of men.
2. The basic requirement for economic development is an adequate infrastructure and, in particular, adequate communications. Developing countries usually suffer from a grossly inadequate infrastructure which creates confusion and, what is worse, a vicious circle. Industries do not develop because the infrastructure is inadequate; the infrastructure remains inadequate because the industries do not develop.
3. Historically railways have played a crucial role in industrial revolution and economic development. In the context of modern technology it is necessary however, to give a higher priority to roads and automotive transport, as they are destined to play an increasingly significant role in the process of economic development. Railways require a much larger investment than roads, and the inadequate density of traffic in developing countries may not justify the development of railways even where the factor of distance is in its favour.
4. For a developing economy such as that of India the significance of the automotive industry has to be viewed in the context of its role in economic development. Developing countries are predominantly agricultural, with a low productivity, a high rate of population growth, a low per capita income, low saving, low capital and low living standards. All these create a situation which is apparently irremediable. The need for rapid economic development is all the more imperative in such countries, particularly in the context of a democratic system, as in India. Even for mere social and political stability, a rapid transformation from an under-developed economy to a fast developing economy has become essential.
5. The role of the automotive industry should be examined in this context. India remains basically rural despite industrial development under the five-year plans, and despite urbanization. The urban population is still approximately 20 per cent. Agriculture even now contributes about 50 per cent to the

national income. With its vast territories, India's essential need is a vast network of communications.

6. One of the main defects in agriculture is poor marketing. Farmers are spread over 550,000 villages, many of which are not within easy reach of markets in towns and urban centres. The linking of farms to villages, villages to towns, towns to cities and administration centres by a network of roads is absolutely necessary for economic development. The interior of the country and in particular the backward regions need to be developed. This can be done by means of roads rather than railways. Every village should be in easy and quick communication with the market so that fertilizers, equipment, other goods and facilities can be easily carried there. An inter-village communication system also needs to be properly planned, so that an integrated regional economy can be developed in this vast sub-continent. However, the bullock cart is still the main carrier.

7. In breaking the economic and social isolation of villages the automotive industry can play a significant role. Light trucks, vans, buses etc. will help to extend the rapid movement of men and materials to markets, and make the marketing of agricultural commodities more effective and profitable. Any improvement of this kind in agriculture - the foundation of all developing countries - is bound to galvanize and accelerate the entire economy. Higher incomes resulting from better marketing will encourage improvement in agriculture and increase the demand for consumer goods, which, in turn, would help industrial development. The automotive industry will encourage the construction of more and better roads; and these in turn will stimulate the automotive industry through a flourishing road transport industry. From the point of view of defence as well, the automotive industry is very vital. That the automotive industry would encourage other industries, build a skilled labour force and stimulate technology is evident. It would as well, have a political and psychological impact.

#### 11. BACKGROUND AND HISTORY OF THE ESTABLISHMENT AND DEVELOPMENT OF THE AUTOMOTIVE AND AUTOMOTIVE EQUIPMENT INDUSTRY IN INDIA, 1898-1960

##### Early history

8. It is not quite certain when the first automobile arrived in India. As early as 24 October 1895, Mr. Dinshaw E. Wacha proposed a resolution in the Bombay Municipality "that the Municipal Commissioner be requested to obtain all



necessary information with reference to Petroleum Automobiles with a view to their introduction by the Municipality, if possible, as a substitute for bullock carts.<sup>2/</sup> The introduction of automobiles in place of meat vans and garbage cars drawn by bullocks was considered uneconomic and hence no automobile was bought.

9. The first car seems to have arrived in India in 1897 or 1898. In 1894 there were not more than six cars even in the United States of America; so the import of a car to India as early as 1897 or 1898 is worth noting. Mr. B. H. Hewitt, a municipal engineer of Bombay, was one of the first owners of a car in Bombay.

10. According to S. M. Edwardes, more than 900 new motor cars appeared in the streets of Bombay between 1905 and 1907. In 1909, the total number of motor vehicles registered was 1,295, increasing to 4,947 in 1915. Heavy lorry type vehicles in use numbered 70 in 1915.<sup>3/</sup>

11. In Calcutta, according to E. P. Richards, only 17 heavy motor vehicles had been licensed at the end of 1910 and 22 in 1912. In 1912, 1,790 motor cars and taxis had been licensed.

12. The official figures of the value of imports by sea of motor cars, motor cycles and parts in British India are as follows:<sup>4/</sup>

Table 1

Value of vehicles and parts, 1907 to 1912

<u>Year</u>	<u>Value (in £)</u>
1905/06	234,830
1906/07	297,839
1907/08	422,956
1908/09	287,615
1909/10	317,139
1910/11	488,295
1911/12	669,020

<sup>2/</sup> Proceedings of the Bombay Municipal Corporation, Vol. XII (1895-1896), p.495.

<sup>3/</sup> S. M. Edwardes (1923) Bombay City Police - Historical Sketch 1672-1916, pp.130-131 and 176.

<sup>4/</sup> Statistical Abstract relating to British India, 1903-04 to 1912-13.

13. The First World War greatly stimulated the import of automobiles to India. In 1913/14, the value of imports (by sea) of motor cars, motor cycles, motor wagons and parts increased to £ 1,022,042. The number of imported motor cars was 2,880, motor wagons 76 and motor cycles 1,046. Despite a fall in 1914/15, the imports increased to a high degree in 1916/17 when 4,778 motor cars, 252 motor wagons and 1,675 motor cycles were imported whose value together with that of motor parts came to £ 1,429,384. Because of restrictions put on by the Government, imports fell in the next two years. In 1918/19, the total value of imports was only £ 259,261. With the removal of restrictions, however, the imports spurted to £ 3,928,433 in 1919-20 and the number of motor cars imported was 9,925, while that of motor wagons and motor cycles was 1,229 and 2,332 respectively.

14. An interesting feature of the imports was the increasing share the United States of America had in the Indian market since 1915/16. In 1913/14 out of the total 2,880 imported motor cars, 1,669 came from the United Kingdom and 868 from the United States, whereas in 1916/17 502 and 4,108 respectively were imported. Out of 9,925 motor cars imported in 1919/20, the United States supplied 9,295 as against 448 by the United Kingdom. Another interesting feature was that Bengal used to absorb a larger number of motor cars than Bombay until 1917-18. Out of 14,006 cars imported between 1913/14 and 1917/18, Bengal's share was 5,499 as against 4,691 of Bombay. The motor transport industry stimulated during the war had become a regular feature of the Indian economy.

15. The increasing number of automobiles on the streets of Bombay, Calcutta and Madras created a problem of regulation of traffic. The first act - the Bengal Motor Car and Cycle Act, 1903 - was passed at the instance of the Commissioner of Police, Calcutta ("in expectation that motor cars would be introduced in the country in some numbers before very long"<sup>5/</sup>), to invest him with powers to regulate their use. This act was followed by similar acts in Bombay (1904) and Madras (1907). The first car - a 12 hp Orleans - was registered in Bombay by Mr. Richard Lamb in 1905. With a view to bringing about uniformity on important matters in the different provincial vehicle laws, the Indian Motor Vehicle Act was passed in 1914 by the Government of India.

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<sup>5/</sup> Proceedings of Bengal Legislative Council, 1903, p.23.

16. The International Convention concerning travel by motor vehicles was drawn up and signed by a number of countries in Paris on 11 May 1909. The Government of India gave its concurrence to this convention on 15 July 1911.

17. One Mr. K. B. Wadia started a firm known as the "Bombay Cycle Agency" in Bombay as early as 1889. In 1898 this company claimed to be the first motor car agency in India, changing the name of the company to "Bombay Cycle and Motor Agency." No statistics of the imports of cars were maintained prior to 1906 though a number of different types of cars were already imported into the country, such as Veiturette 7 hp, Brown 12 to 14 hp, Speedwell, Argyll 10 to 12 hp, Orleans 12 hp and Oldsmobile.

18. The Indian Motor Taxi-Cab Company was the pioneer of the taxi-cab in Bombay operating twelve first class cabs in the streets in 1909. By 1911 the number of taxi-cabs licensed had increased to 94. A motor service was introduced in 1906 between Poona and Mahabaleshwar and Wathar and Mahabaleshwar by the Mahabaleshwar Motor Service Co. and the postal authorities entrusted their mail service to this company in 1907.<sup>6/</sup> It is reported that commercial bus service was started by Simpsons in Madras in 1905 and Walfords in Calcutta in 1922, but these were short-lived. T. V. Sundaram Iyengar & Sons Private Ltd., who started operations in 1912, claimed to be the pioneers in the development of commercial motor transport in India.

#### Automobile assembly

19. Two automobile manufacturers, one from the United States and one from Canada, set up local companies to do business in motor cars and trucks in the twenties. General Motors India Ltd. began assembling trucks and cars from components and parts imported from the United States in completely knocked down (CKD) condition in their factory at Bombay in 1928. Ford Motor Co. India Ltd., started assembling automobiles in Madras in 1930 and in Bombay and Calcutta in 1931. The assembly plants at Calcutta and Madras were later closed down by the company. According to Peninsular Motor Corporation Ltd., Calcutta their sister company, G. Mackenzie & Co. was the first to start the assembly of cars and trucks from CKD parts in their workshop at Calcutta in 1926. Addison & Co. commenced CKD assembly of cars and trucks in Madras in 1936. In 1944,

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<sup>6/</sup> M. G. Giles (1912) The Motor Vehicles Laws, pp. 62 and 97.

one Mr. Sambhai Mehta put up a plant to assemble Studebaker cars at Okha in Baroda State with the help of some Ahmedabad financiers. This was known as Motor House, Gujarat. Three other CND vehicle assembly plants were established between 1946 and 1950, i.e. Dewar's Garage and Engineering Works, Calcutta, Peninsular Motor Corporation Ltd., Calcutta, and French Motor Co. Ltd., Bombay.

#### Automotive industry in India

20. Sir J. Visvesaraya was the first to contemplate starting an automobile industry in India. He called a meeting of the leading industrialists, businessmen and financiers on 5 April 1935 at Bombay House. Thereafter, he undertook a tour of Europe and the United States to investigate and prepare a scheme proper for Indian conditions. His first report was circulated in April 1936 to those interested in the project. In May 1936 copies of this report were submitted as well to the Government of India and the Government of Bombay, seeking their active help. On 20 March 1939, the First Congress Government of Bombay under Mr. B. G. Kher expressed its willingness to guarantee interest on share capital of Rs. 15 million for the first ten years on certain conditions: First, that the promoters should obtain from the Government of India two concessions which they had previously applied for; second, that the present revenue duty of 37½ per cent on motor vehicles and parts would not be lowered for a term of ten years; and third, that a rebate would be paid on the duty on any imported special parts used in the manufacture of automobiles. A further condition was that the new factory should be set up and operated by a firm of managing agents.

21. The Government of India replied in May 1939 that it was impossible for them to give the guarantees desired. These conditions were later waived by the Congress Ministry of Bombay, but soon after that the war broke out and the Congress Ministry resigned. The Government of Bombay came under the personal rule of the Governor; yet he was willing to ratify his predecessor's promise provided that the Government of India agreed that the industry would help the war effort. The Government of India expressed mere countenance for the scheme and ultimately turned down the proposal in December 1940 on the grounds of difficulties created by the war, even though they were not only in need of automobiles of all kinds, but were actually placing orders on a large scale abroad. But for the negative attitude of the then British Government in India

the automobile industry would have been established before the Second World War, played its part in the war effort and saved valuable foreign exchange for the country. Stimulated by the war, the industry would have had a real breakthrough and been on a sounder footing today.

22. Messrs. Walchand & Co. entered into an agreement with the Chrysler Corporation of Detroit, United States, in July 1940, on a royalty basis, whereby the American company undertook to give all necessary help to establish a factory in Bombay for the manufacture of motor cars and trucks. On 30 October 1941 they submitted the plan for the manufacture of automobiles to the Government for their consideration. Despite strenuous efforts by Sir H. Visvesaraya and Mr. Walchand Hirachand, it was turned down. The promoters then sought the help of the State of Mysore. The State was at first willing to help but the British Government dissuaded it from doing so.

23. The first company, Hindustan Motors Ltd., was registered by Birlas in Baroda State in February 1942. They signed an agreement with Morris in 1945-46 to assemble or manufacture Morris 10 in the name of Hindustan 10. In June 1945 Premier Automobile Co. was registered in Bombay. Both these companies were started with the idea of manufacturing but began only as assemblers. A number of firms were already assembling different kinds of cars. The Okha plant of Motor House, Gujarat, was bought by Birlas in 1945. The exact location of the factory at Calcutta was decided in June 1947; a factory was constructed at Uttarpara in Calcutta and operations for assembly of CKD vehicles began in 1948. The Okha plant was transferred to Uttarpara. The company also established a complete plant for the manufacture of automobile components such as engines, gear boxes and differentials. They began manufacturing with imported castings and forgings towards the end of 1950. Premier Automobiles completed their factory and began operations and assembling of cars in March 1947. As of 1949, they manufactured components such as radiators, propeller shafts, universal joints, needle bearings, leaf and cushion springs, exhaust and tail pipes.

24. In addition to these two units, the Government approved the programmes of Standard Motor Products of India Ltd., Madras and Automobile Products of India Ltd., Bombay. The Government also recognized Ashok Motors Ltd., Madras as manufacturers. These firms constructed their factories and started assembly operations during 1952 to 1954.

Government policy

25. The need for the establishment of the automobile industry in India was recognized by the Government of India in 1945 when a panel on automobiles and tractors was set up to make recommendations for their development. The panel submitted its report in 1947.

26. The Industrial Policy Resolution of the Government of India of April 1948 classified automobiles and tractor industries as important subject to regulation and control by the Central Government. In 1949 the Government decided that the importation of motor vehicles should be allowed in CKD condition; and in the case of one assembler permission was given to import vehicles in semi-knocked-down (SKD) condition for one year. But a further increase in assembly capacity beyond what was in existence in 1948 was not encouraged. From April 1950 the custom duty on certain parts which were likely to be manufactured locally in the next two years was raised with a view to encouraging the rapid development of the automobile industry, pending an expert inquiry into the question of protection and/or assistance to the industry.

Automobile Expert Committee, 1950

27. An Automobile Expert Committee was appointed in June 1950 to make recommendations for reclassification of particular automobile parts in categories bearing different rates of import duty. According to the Committee, the parts that were manufactured in India at that time were:

(a) Engine components

- (i) Rubber mountings
- (ii) Hose pipes, other fuel line hoses with connexions
- (iii) Fuel pump diaphragms
- (iv) Fan belts
- (v) Mufflers
- (vi) Exhaust pipes and tail pipes

(b) Frame and body components

- (i) Carpets made to size and shape
- (ii) Cushion springs
- (iii) Door and window fittings excluding glass
- (iv) Trim materials (leather, jute, canvas and leather cloth) made to size or shape

- (v) Bus bodies
- (vi) Station wagon bodies
- (vii) Truck bodies
- (viii) Steel cabs for lorries
- (ix) Pick up bodies
- (x) Panel van bodies

(c) Other components

- (i) Gaskets
- (ii) Rubber components (not otherwise specified)
- (iii) Horns (not otherwise specified)

The automotive equipment industry had reached this stage by 1950 but raw materials and other items required for their manufacture were still being imported.

28. The reclassification recommended by the Committee was accepted by the Government and took effect March 1951. The Government also put restrictions on assembling in order to standardize types and models of imported vehicles. The assemblers were required to import only three types of cars and trucks from each of the dollar and soft currency areas. In May 1950, assemblers were informed that after 1950 automobile firms not having manufacturing plans would not be considered for allocation of foreign exchange for the import of motor cars and trucks. This date was subsequently extended to 1952.

29. After 1949 Hindustan Motors and Premier were given orders to supply Studebaker and Dodge trucks for defence requirements. In recognition of their progress, a small amount in foreign exchange was allocated to them in 1951. In June 1952 further encouragement was given them by reducing the exchange allocation for pure assemblers to the extent of 20 per cent and distributing this saving as an additional allocation to these two firms.

First Tariff Commission Inquiry, 1952

30. A reference was made to the Tariff Commission in 1952 to inquire into the automotive industry and to report on the question of protection or assistance to the industry, and on steps necessary to encourage the growth of ancillary industries. Mr. W. R. Vorwig, Secretary General of the Association of Automobile Industry in the Federal Republic of Germany, was appointed as an expert to assist the Commission in its inquiry.

31. According to the Commission report, the annual capacity of all the twelve assemblers in 1952 was 84,014 cars and commercial vehicles, with 31 models of cars and 17 of commercial vehicles. The average annual sales from 1948 to 1952 were 19,786 vehicles (9,426 cars and 10,360 vehicles). But a major part of the production was used only for assembling of vehicles and the capacity was much in excess of the domestic demand: less than 25 per cent of the production was being utilized.

32. Of the two manufacturing companies, Hindustan Motors had made some progress in manufacturing certain components (i.e. crank shafts, cam shafts, cylinder heads, valves, transmission gear and gear boxes, rear axles, hubs and brake drums, oil pumps, oil filters, frame and body components, nickel components and grey iron castings), though raw materials, stampings and castings were imported. Complicated items such as carburettors, air cleaners, window regulators, clutches, brake and clutch lining, body sheet metal parts and glass were all imported. Premier had not made any significant progress in the manufacture of major components (i.e. engines, transmissions, rear axles) but they were manufacturing some ancillary parts such as propeller shafts, radiators and jacks. Raw materials and some parts were imported.

33. The most important recommendations of the Tariff Commission were:

- (a) That the manufacture of motor vehicles should be restricted to the firms which had undertaken or would undertake to manufacture them in accordance with the phased programme;
- (b) That the present high rates of import duty on components did not help the industry and increased the price of vehicles to the consumers; and therefore the duty should be reduced to a flat rate of 40 per cent ad valorem.

The Commission emphasized the urgency of attaining self-sufficiency in the production of commercial vehicles both from strategic as well as economic considerations.

34. As only a nucleus of ancillary industry existed in the country, the Tariff Commission further recommended that the Government should give encouragement for the manufacture of certain important components such as carburettors, clutches etc. in technical collaboration with foreign firms. The Commission also suggested a plan for progressive manufacture of components over a five-year period, a scale of manufacturing of different models from year to year and allocation of foreign exchange according to that scale.



35. The other important recommendations were that:

- (a) The firms with manufacturing programmes should become independent of their foreign associates within as short a period as possible;
- (b) A designing and research section should be set up;
- (c) That plans for the training of apprentices be introduced;
- (d) A proper system of costing should be initiated within one year;
- (e) An association of manufacturers of motor vehicles and ancillary parts be formed to secure co-operation among the members;
- (f) An Automobile Standardization Committee be set up for formulating standards for motor vehicle components and a Development Council for the ancillary industry under the Industries (Development and Regulation) Act, 1951.

36. The Government accepted the recommendations of the Tariff Commission and recognized the following five firms as manufacturers: Hindustan Motors Ltd., Calcutta; Premier Automobiles Ltd., Bombay; Standard Motor Products of India Ltd.; Automobile Products of India Ltd., and Ashok Motors Ltd., Madras. Mahindra and Mahindra Ltd. and Dewar's Garage and Engineering Works both were allowed to function as assemblers of jeeps and Land Rovers despite the fact that they had at that time no manufacturing programme. Only Mahindra and Mahindra Ltd. submitted a programme for the manufacture of jeeps which was approved by the Government. The remaining pure assemblers, including Dewar's Garage and Engineering Works, were to curtail their operations by stages, ceasing their assembly operations within a period of three years. They were advised to continue operations in other activities, the most important being the maintenance and servicing of vehicles on the road. The Government had also accepted the recommendation regarding duty on components and reduced the duty on several components to bring CKD parts down an average of 40 per cent.

37. A new unit, Tata Engineering and Locomotive Co. Ltd. (TELCO), presented a programme for the manufacture of diesel commercial vehicles in collaboration with Daimler-Benz A. G. of the Federal Republic of Germany in 1954. In addition to this, Simpson and Co., Madras and Automobile Products of India Ltd., Bombay were approved as manufacturers of Perkins and Meadows automobile diesel engines respectively.

38. Of the five approved manufacturers, Automobile Products of India Ltd. was not able to proceed with their manufacturing programme of cars, but they became the pioneers in manufacturing scooters, three-wheelers and scooterettes

in 1955. They also became the leading manufacturers of clutch assembly and brake systems for all types of vehicles. Ashok Motors, due to various difficulties in connexion with their manufacturing programme, entered into an agreement with Leyland Motors of England and became a new company known as Ashok Leyland Ltd. for the manufacture of commercial vehicles of five tons and above.

Second Tariff Commission Inquiry, 1955

39. In 1955 the manufacturers asked for an increase in the selling price of vehicles on the grounds of increased costs. Though ad hoc increases were allowed, when a prima facie case for an increase had been presented by the manufacturers, the Government considered the issue of sufficient importance to merit a detailed inquiry by the Tariff Commission. An inquiry was therefore referred to the Tariff Commission in August 1955 concerning the progress of approved manufacturing programmes, the steps necessary to implement the programme fully and the fair ex-works and selling prices of motor vehicles. The services of Mr. A. J. Romer, Managing Director of the Associated Equipment Co. Ltd. (United Kingdom) and Director of Associated Commercial Vehicles Ltd. (United Kingdom) were obtained under the Colombo Plan to act as technical adviser to the Commission from 21 April to 16 June 1956.

40. The annual assembly capacity, as declared by the six approved manufacturers in 1956, was 49,800. This was regarded as adequate to meet the demand estimated by the Tariff Commission. The total production of all types of vehicles increased from 6,302 in 1953 to 12,146 in 1954; 22,153 in 1955 and 14,657 in the first six months of 1956. The number of cars produced increased from 3,586 to 12,772 between 1953 and 1955 and was about 17,000 in 1956. The output of commercial vehicles which was 2,716 in 1953 and 5,037 in 1954 increased to 9,381 in 1955 and 6,195 in the first six months of 1956. The production of diesel trucks which was only 15 per cent of the total production of medium and heavy trucks in 1953 increased to 20 per cent in 1954, 63 per cent in 1955 and 73 per cent in **first** half of 1956.

41. The following table gives the number and value of imported automobiles in India between 1953 and 1956:

Table 2

Imported automobiles into India, 1953 to 1956

	<u>1953/54</u>		<u>1954/55</u>		<u>1955/56</u>	
	No.	Value (Rs.lakhs)	No.	Value (Rs.lakhs)	No.	Value (Rs.lakhs)
<b>Motor cars (including taxi cabs)</b>						
(a) imported complete	1,424	86.45	1,247	72.71	1,582	109.24
(b) imported in CKD or SKD condition	<u>4,392</u>	<u>196.50</u>	<u>9,299</u>	<u>591.95</u>	<u>8,980</u>	<u>479.98</u>
Total	<u>5,816</u>	<u>282.95</u>	<u>10,546</u>	<u>664.66</u>	<u>10,562</u>	<u>589.22</u>
<b>Motor omnibuses, motor vans and motor lorries -</b>						
(a) imported with bodies	1,783	111.74	385	31.89	195	24.53
(b) chassis	<u>2,406</u>	<u>215.13</u>	<u>4,158</u>	<u>326.51</u>	<u>8,696</u>	<u>732.14</u>
Total	<u>4,189</u>	<u>326.87</u>	<u>4,543</u>	<u>358.40</u>	<u>8,891</u>	<u>756.67</u>

The above table shows that imports of completely assembled vehicles was small.

42. In the light of the progress made by the producers, the Commission in their report submitted in 1956 made various recommendations including granting protection for ten years. They laid down a definite programme of manufacture with priority for commercial vehicles.

43. Among other important recommendations were:

- (a) Earlier phasing of the manufacturing programme of the engine, transmission, rear axle, suspension and chassis members;
- (b) Need for a suitably phased manufacturing programme for the industry as a whole as well as for individual units in order to avoid excessive increase in the cost of vehicles;
- (c) Imposition of a definite obligation on the manufacturers with approved programmes to start production from indigenous materials within a specified time limit;
- (d) Avoidance of giving approval to too many ancillary projects simultaneously and to risky and costly ventures like the manufacture of body panels for passenger cars;

- (e) Revision of existing agreements to clearly define the obligations of the foreign firms with regard to the establishment of manufacture in India;
- (f) Setting up shops (such as the one at TELCO works) for training workers before they were admitted to the factory;
- (g) Developing facilities for designing of jigs and tools.

As regards fair price, the Commission was not in favour of a rigid system of price control as it would have adverse repercussions on the development of the automobile industry because the adoption of a maximum price would be inequitable.

Ad hoc Committee, 1959

44. An ad hoc Committee was appointed in April 1959 to review the progress of the automobile industry and the automobile ancillary industry. It recommended measures to increase the indigenous content of different vehicles in the shortest possible time and to reduce the cost to the consumer of cars, jeeps and trucks. It proposed an appropriate pattern of organization for the future expansion of the industry to ensure low cost production and further suggested the examining of the feasibility of producing a low cost passenger car within the price range of Rs.5,000 to Rs.7,000.

45. According to the ad hoc Committee, the majority of automobile factories were not equipped with machinery either well balanced or capable of the most economic production, particularly in the case of the two oldest units, Hindustan Motors and Premier Automobiles. Only TELCO, which had the advantage of beginning their operation to meet a relatively large market, had modern equipment. The policy of concentrating total domestic demand on relatively few approved companies was to be continued, as it was essential for ensuring economic development. The importance of competition was emphasized by expanding the productive capacity of the existing units rather than by adding new units. Companies that started as assembly units and later converted themselves into manufacturing units were at a disadvantage in matters of input-output ratio and cost of production as compared to the later organized companies that were started as manufacturing units.

46. Though the importance of a suitable training scheme had been emphasized time and again by the Tariff Commission in 1953 and 1956, the ad hoc Committee was disappointed to find that the oldest units had not accepted this advice. Only TELCO had a satisfactory training programme and their experience showed that the Indian worker was not much behind his German counterpart, taking into account the differences in wages and working conditions.
47. Inadequate technical supervision and wasteful expenditure on sales and distribution were also noted by the Committee. No manufacturer except TELCO had even attempted to compare its standard time for production with that of its collaborator in spite of a wide divergence in the cost of production between the local manufacturer and its foreign associates. Such a comparison would have revealed steps to be taken to improve the technique of production so as to secure better productivity and utilization.
48. Despite the recommendations of the Tariff Commission in 1956, the industry did not take any steps to maintain an adequate system of cost accounting. In order to make the industry cost conscious the Committee recommended that the Government should instruct the industry to introduce an adequate system of cost accounting within six months after which the factory should be visited again by the chief cost accountant to see that the instructions had been followed. The Committee also noted that some of the companies had embarked upon a major manufacturing programme without making sure of the capital resources required for an expansion of this kind.
49. The technical sub-committee of the ad hoc Committee assessed the production capacity of the automobile industry in 1961 at 53,500 (20,000 cars, 20,000 commercial vehicles and 5,500 jeeps and jeep station wagons) and 3,000 petrol engines. So far as ancillary industries were concerned, the Committee reported that the progress made was substantial.
50. They classified the ancillary industry into three broad categories:
- (a) Items the importation of which is not necessary - paints, lacquer, varnishes, brake fluid; all upholstery materials and trimming parts; tires, tubes, flaps, fan bolts, hoses, bulbs, horns, weather strips, door buffers and all other rubber components, except fuel and brake hoses and brake parts; shackles, shackle pins, U bolts, centre bolts, muffler and tail pipes; batteries, battery cables, rear lights, parking and stop lights, auto bulbs, spark plugs of 14 and 18 mm; rear view and mudguard mirrors, number plates, sun shades, sun visers, luggage carriers, mascots and motifs, ash trays; cab bodies and truck bodies of all categories; tire inflators and jacks.

- (b) Components the production of which had started but complete self-sufficiency had not yet been achieved - leaf springs, hub caps, shock absorbers, brake lining, clutch facings, gaskets, cylinder liners, piston pins, piston rings, electric horns, wire harnesses, dynamos for cars, roof lamps, bulb sockets; fuel injection equipment, inlet and exhaust valves, shell type bearings, radiator assembly, nuts and bolts, ball bearings up to 2" size, fuel and air filters, laminated glass; fuel tanks, clutch and brake assemblies; car bodies, hinges, door handles, window regulators.
- (c) Components for which production plans had been approved or were under consideration, and for which production was likely to be established by 1961 - starter motors, dynamos, voltage regulators, distributors, ignition coils, switches, head and side lamps, traffic indicators, contact brake points, windscreen wipers, timing chains, hooven cables, oil seals, oil pumps, fuel pumps (petrol), fuel hoses, carburettors, brake hoses, brake shoes, back plates, vacuum serve brakes; valve guides, valve seats, valve springs; steering assembly, tie rod ends; propeller shafts universal joints, ball tapers, cylinders and self-lubricating bearings; wheels and rims; instrument panels, dash board instruments, flexible shafts.

The above components which were being or were to be manufactured by the ancillary industries were exclusive of those manufactured by vehicle manufacturers themselves.

51 For the period October 1959 to March 1960, the local content by different companies varied from the lowest 32.5 per cent (Standard 10) to the highest 71 per cent (Tata Mercedes Benz Bus) as calculated by the ad hoc Committee. The calculation was made by taking the ex-factory price of the completed vehicle in the country of origin and by determining the ex-factory price of the components which were still being imported as a percentage thereof. Though this method was regarded as defective by the Committee, they considered it practical.

52. Recognizing the important function ancillary industries had in the development of the automotive industry in India, the Committee recommended that even some of the major items not generally considered the responsibility of the ancillary industry could be properly developed not singly but in companies catering to the needs of members. This would not only be more economical but would reduce the expenditure of foreign exchange on imports of plant and machinery. Thus, the cost of manufacturing presses, gear cutting machines, equipment etc. could be substantially reduced by establishing common facilities.

53. The Committee discussed the possibility of a co-operative venture by the automobile manufacturers but the response was not encouraging. They even provided initiative in the matter of joint ventures by providing bulk capital.

Even today a joint venture has not come into being, the Indian manufacturers being steeped in the spirit of going alone, whatever the cost.

54. Among other recommendations, the Committee encouraged manufacturers to use local components by not cutting the foreign exchange saved, allowing them to use it for other imported items. They reduced prices for original equipment produced by ancillary industries (charging a price not more than 40 per cent above the c.i.f. price of similar components). They provided for a suitable check on quality; developed facilities for quality tests in India; determined capacity to be developed for O. E.<sup>7a/</sup> with due regard to demand and not merely competition; recommended standardization of components for more economic production, thus expediting the sanctioned programme stating the undesirability of giving an assured market regardless of the cost or quality. These recommendations were brought to the notice of the automobile ancillary industries by the Government. The Government also instructed the Commissioner of Small-Scale Industries to create a special department for the development of ancillary industry in small and medium scale sectors during the Third Plan.

### III. PRESENT POSITION OF THE AUTOMOTIVE AND AUTOMOTIVE EQUIPMENT INDUSTRY IN INDIA

#### Automobiles

55. According to the All India Automobile and Ancillary Industries Association, the total vehicle population increased from 0.31 million in 1951 to 1.10 million in 1966 (31 March), of which 74 per cent were Indian-made vehicles. These vehicles included 400,000 cars, 61,500 jeeps, 73,100 buses, 330,000 miscellaneous vehicles, and 240,000 two and three wheelers.<sup>7b/</sup> Due to the difficult foreign exchange position in 1957, the Government had limited the types and makes of vehicles to be developed to three passenger cars, three medium and one heavy commercial vehicles, one jeep and one light truck. At present the following types are being produced in India: two small and one medium passenger cars; two heavy (over 9 tons), four medium heavy (5 to 9 tons), two medium (3 to 5 tons), four light (up to 3 tons) commercial vehicles; and one jeep.

<sup>7a/</sup> Original equipment.

<sup>7b/</sup> Automobile Ancillary Industry 1967, p.5.

56. The development of the automotive industry can be judged by the following ratio of vehicles on the road with the base 1955/56 = 100:

Table 3

Ratio of vehicles based on 100 (1955/56), 1960 to 1965

<u>Types of vehicle</u>	<u>1960/61</u>	<u>1964/65</u>
Private cars (including jeeps)	153	205
Taxis	141	196
Buses	122	154
Trucks	141	204
Others	226	416
All vehicles	146	207

Table 4

Production of automobiles, 1957 to 1967

	<u>Passenger cars</u>	<u>Jeeps</u>	<u>Commercial vehicles</u>	<u>Total</u>
1957	12,203	3,450	17,109	32,762
1958	8,103	3,134	15,652	26,889
1959	11,993	3,841	21,036	36,870
1960	19,097	4,532	28,435	52,064
1961	21,663	5,949	26,810	54,422
1962	23,326	6,909	27,581	57,816
1963	15,711	7,815	28,769	52,295
1964	23,227	10,300	33,607	67,134
1965	24,790	10,483	37,403	72,676
1966	27,597	9,807	35,208	72,612
1967 (Jan.-June)	16,889	4,286	16,467	37,642

57. From the above table it can be noted that the production of automobiles increased from 32,762 in 1957 (cars 12,203, jeeps 3,450, commercial vehicles 17,109) to 72,612 (cars 27,597, jeeps 9,807, commercial vehicles 35,208) in 1966. In addition to this, the Defence Ministry produces Shaktiman trucks and Nissan jeeps in collaboration with the Federal Republic of Germany and Japan respectively, figures for which are not available. Production in the public sector has accentuated the fragmentation of the automobile industry.

58. The over-all production of automobiles registered an increase of 121 per cent during the decade 1957 to 1966 but only in the case of jeeps was the target of 10,000 for the final year of the Third Plan (1965/66) reached by 1964,



possibly due to increase in the deference demand. The production of commercial vehicles fell short of the Third Plan target by 47 per cent and that of cars by 15 per cent, due mainly to two successive monsoons. On the whole, the trend of production has been upward except for the setback in 1958 due to a foreign exchange crisis and another in 1963 because of Chinese aggression. The decline in production in late 1967 was due to a recession in the engineering industry. In recent years the production of cars increased over that of commercial vehicles despite the priority given to the latter. The targets for the Fourth Plan have been tentatively fixed at 160,000 vehicles (60,000 passenger cars, 15,000 jeeps and station wagons, and 85,000 commercial vehicles).

59. The principal automobile manufacturers estimated an investment of Rs.30 million in 1953, which increased to Rs.64.4 million in 1956, Rs.267 million by the end of 1961, and to Rs.450 million in 1964. The total net worth of investment in the automotive industry was Rs.703.3 million and the capital employed was Rs.1260.1 million in 1965/66. Locally produced content is estimated to have reached from 84 per cent, lowest (Standard 20 light truck) to 95.9 per cent, highest (Fiat 1100) in 1965/66. It may be noted, however, that the formula adopted for computing local content does not give the true picture, inasmuch as it does not take into account the foreign exchange spent on the manufacture of ancillaries and raw materials that are incorporated in automobiles otherwise built by the vehicle manufacturers.

#### Three wheelers, motor cycles, scooters and mopeds

60. The demand for these vehicles was met by imports until 1955/56. Automobile Products of India was the pioneer in the manufacture of scooters, three wheelers, and scooterettes, beginning production in 1956. Between 1956 and 1966 eight manufacturers with foreign collaboration were licensed. Their total capacity in 1966 was 80,300 units. Production increased from 6,286 units in 1956 (scooters 4,735 motor cycles 1,022, three wheelers 529) to 25,354 units (scooters 12,817, motor cycles 8,636, three wheelers 1,267 and mopeds 2,634 in 1961. Progress continued during the next five years when production attained the level of 50,988 units (scooters 20,296, motor cycles 21,364, three wheelers, 1,884 and mopeds 7,444) in 1965. The industry had produced a surplus capacity by 1965/66 and would have exceeded the planned target of 60,000 at the end of the Third Plan but for the inadequacy of foreign exchange.

61. According to recent surveys, companies manufacture fourteen different types of vehicles with a total production of 153,600 vehicles per year. The local content reached 90 per cent and is expected to be 98 per cent by the end of the Fourth Plan in 1970/71. Machinery worth about Rs.60 million has been installed and the total block capital and working capital are estimated at more than Rs.90 million and Rs.60 million respectively. A target has tentatively been fixed at 125,000 scooters, 50,000 motor cycles, 60,000 mopeds and 15,000 three wheelers by the end of the Fourth Five-Year Plan.

#### Ancillaries

62. An automobile is an end product which has more than 5,000 parts. The automobile producer is, or rather should be, essentially an assembler, though in a number of cases he produces certain vital components as well. Automobile manufacturers in western countries depend upon vehicle component industries for from 50 per cent to 70 per cent of their parts requirements. In India they buy only about 20 to 25 per cent. When automobile manufacturing began in India, no ancillary production existed (except for a few small parts) because the engineering industry was just evolving. Subsequently, according to the phased programme of the Government, due to unavailable foreign exchange, their capacity to produce components locally was extended.

63. At the commencement of the First Plan only a nucleus of an automotive industry was in existence. Its annual production was less than Rs.1.5 million. It increased to Rs.230 million in the first year of the Second Five-Year Plan, and about fourfold at the end of the Second Plan in 1960/61. A number of important ancillary items such as brake linings, leaf springs, fuel injection equipment (elements, nozzles, delivery valves, injection pumps), valves, shock absorbers, radiators, brake assemblies, clutch assemblies and gaskets were produced in the Second Plan period. A statistical table of production of some important components is given in annex 1. The progress of this industry can be ascribed to the recommendations of the Tariff Commission to encourage local industry and protect ancillaries, such as leaf springs, hand tire inflators, spark plugs, piston assembly, and diesel fuel injection equipment. All these ancillaries, except multiple cylinder pumps, have now been deprotected.

64. Very rapid progress has been registered by the industry during the Third Plan period ending 1965/66. Not only did production increase remarkably but

new items were generated for production (i.e. carburettors, fuel pumps, steering gear, electrical equipment including dynamos, starter motors, voltage regulators, head lamps, distributors, electric horns, windscreen wiper motors, arms and blades; wheels and rims, transmission gears, servo brake system, dashboard instruments, steering wheels). Garage equipment (i.e. hoists, car washers, garage compressors, lubricating equipment) was also produced during the Third Plan period. The value of production of automotive components and parts which was Rs.120 million in 1961/62 reached the high level of Rs.528 million at the end of the Third Plan (1965/66). Further progress was registered in 1966/67 when production reached the level of Rs.641 million.

65. The progress of the ancillary industry from 1956 to 1966/67 can be seen from the following figures:

Table 5

Progress of ancillary industry, 1956 to 1963

<u>Production</u> (in million Rs.)		<u>Production</u> (in million Rs.)	
1956/57	23	1963/64	290
1960/61	90	1964/65	403
1961/62	120	1965/66	528
1962/63	200	1966/67	641

66. During the Third Plan period the capacity for local production of an entire range of components was established, but the production of some items was inadequate to meet the demand (i.e. carburettors, magnetos, rear axle tubes, axle shafts, long members of chassis frames, fuel pumps, steering mechanisms, special types of bearings and fasteners, thermostats.) Plans for expanded production of these items have been approved and are in various stages of implementation. Similar progress has been made in producing automotive castings and forgings which formerly accounted for large imports of semi-finished items.

67. There are 170 firms on the list of the Auto Ancillary Industries Directorate of the Directorate General of Technical Development approved for the manufacture of automobile components. The approved phased manufacturing programme, ranging from one to four years according to the items produced, has been implemented although some firms have lagged behind due to a delay in receiving licenses for capital goods, the restricted allotment of foreign exchange and the uncertainty of the supply of local items.

68. The following table gives the figures of production in money value of main ancillaries for 1961, 1965 and 1966:

Table 6

<u>Value of production of parts and components in Rs., 1961 to 1966</u>			
	<u>1961</u>	<u>1965</u>	<u>1966</u>
Engine parts	30,878,661	212,228,511	260,565,267
Electric parts	6,602,692	54,931,727	65,235,347
Drive, transmission and steering parts	12,423,494	108,052,600	134,130,461
Suspension & braking parts	36,854,089	121,247,152	177,534,171
Equipment	8,262,843	31,908,711	41,791,163
Chassis and body parts	7,426,472	25,358,611	33,642,423
Miscellaneous	<u>25,978,112</u>	<u>60,772,073</u>	<u>104,849,031</u>
	178,426,323	614,499,385	817,742,863

Source: Automobile Ancillary Industries, 1966 and 1967, pp.10-11

69. In view of the expanding local market, the need for export was not felt by the industry until recently. A growth in exports has exposed the industry to international standards in quality and prices. This will have a healthy effect on the industry.

70. The following figures giving the value of exports show this new trend:

Table 7

Export of automobile ancillary items, 1962 to 1966

	<u>Million of Rs.</u>
1962	1.3
1963	1.7
1964	4.7
1965	6.2
1966	10.0

Ancillary industry has established a target to export 10 per cent of its production. Exports earn valuable foreign exchange for the country, making the industry less a burden. Accurate statistics of capital investment in the automotive ancillary industry are not available. According to official estimates, approximately Rs.407 million are invested in this industry.

71. The following table gives the value of capital employed in relation to production as estimated by the All India Automobile and Ancillary Industries Association for 1965 and 1966:

Table 8

Classification of manufacturers by capital employed and production in 1965 and 1966

<u>Capital employed</u> (in Rs.)	<u>Number of manufacturers</u>		<u>Value in rupees</u>	
	<u>1965</u>	<u>1966</u>	<u>1965</u>	<u>1966</u>
Less than 500,000	22	22	13,797,910	13,291,416
500,001 to 1,000,000	28	30	34,931,061	45,637,157
1,000,001 to 5,000,000	59	64	206,868,575	210,120,871
5,000,001 to 10,000,000	12	23	90,706,757	188,018,603
Over 10,000,000	<u>13</u>	<u>15</u>	<u>268,195,082</u>	<u>357,679,816</u>
	134	154	614,499,385	819,747,863

Source: Automobile Ancillary Industry 1966 (p.8) and 1967 (p.8)

72. The Association has also estimated the number of employees in relation to production in money value in 1965 and 1966.

Table 9

Classification of manufacturers by number of employees and value of production in 1965 and 1966

<u>Employees</u>	<u>Number of manufacturers</u>		<u>Production in rupees</u>	
	<u>1965</u>	<u>1966</u>	<u>1965</u>	<u>1966</u>
Less than 100	50	56	51,668,675	89,128,386
101 to 200	33	36	96,805,071	126,287,579
201 to 500	37	45	187,752,389	245,537,415
Over 500	<u>14</u>	<u>17</u>	<u>278,273,250</u>	<u>358,794,483</u>
	134	154	614,499,385	819,747,863

Source: Automobile Ancillary Industry 1966 (p.8) and 1967 (p.8)

Small-scale sector

73. As a part of the Government's policy for developing automotive ancillary industries, small-scale companies were also encouraged. No licensing was required to establish such companies. Small-scale ancillary firms were put on a

par with all other small-scale companies except investment was limited to Rs.10 lakhs for the former while it was Rs.7.5 lakhs for the latter. Financial assistance, rental of machines, technical assistance from The Central Small Industries Organization, (CSIO) raw materials, factory accommodations in industrial estates etc. were granted by the Government. These ancillary units received technical assistance from the Small-Scale Service Institution.

74. There are more than 300 small-scale companies engaged in the production of automobile ancillaries in India. But statistical information regarding capacity, production etc. is not available. Data available are meagre and incomplete. The majority of the firms are located in Maharashtra, Andhra Pradesh and the Punjab. Most of them manufacture parts and components against specifications and drawings supplied by the large companies. They do not manufacture complete units and therefore the items cannot be sold in the servicing market. Some of them have good testing equipment like gauges, tools etc. and their production quality is good. Competition from companies producing with foreign collaboration is demanding. If these small-scale units were organized on a co-operative basis as in Japan, they could make a substantial contribution to the development of the automotive equipment industry.

75. In view of the large replacement market, a number of spurious small firms have sprung up which produce components and sell them cheaply. There is a flourishing trade in non-genuine spare parts in India. Unless the consumers are quality conscious and recognize the value of higher priced items, this "pirate or spurious parts evil" as Edsel Ford termed it, cannot be checked. The spare parts trade, however, can significantly help in curbing this evil by refusing to deal in them.

76. The progress attained in 1965 and 1966 is to some extent the result of the demarcation of fields of ancillary production between automobile and ancillary manufacturers by a mutual agreement. The demarcation of items approved by the Development Council for Automobile and Allied Industries was accepted by the Government in March 1965 and issued in September. It covers a list of 34 engine items to be manufactured by ancillary industries, 18 items of clutch, transmission, propeller shaft and differential; 20 of chassis frame, front axle and steering items; 29 items of electrical equipment; 9 of rubber parts; 27 of body parts;

and 7 of service equipment items. These listed items were expected to be purchased by the vehicle manufacturers from the ancillary industry, subject to considerations of quality, delivery and price. It was understood that the vehicle manufacturers would give the necessary help and technical guidance to the ancillary industry to enable it to cater to the O. E. market. The vehicle manufacturers were given option to continue with the manufacture of those items which they were already producing. The second list consists of items which may be manufactured either by the vehicle manufacturers or by the ancillary firms. These lists are given in annex 2.

77. The growth of the ancillary industry was also helped by financial assistance from the World Bank. This industry has been placed on the list of priority industries and as such was allotted substantial foreign exchange released against International Development Agency credit. The All India Automobile and Ancillary Industries Association established in 1959 has also played an active part in accelerating the development of this industry.

78. As of today, a plan for the expansion of the production of automobile components of quality has been almost completed. To progress, however, requires stabilization and consolidation. The Government has now placed the entire group of automobile ancillaries on the rejection list which should help the industry to stabilize and consolidate itself. What is most needed is co-operation between vehicle and ancillary manufacturers and a properly co-ordinated plan of production.

#### Important ancillaries

##### Tires and tubes

79. The requirements for tires and tubes in India from 1898 were met through imports which were distributed by a branch organization of Dunlop Rubber Co. of England until 1926 when the Dunlop Rubber Co. of India Ltd. was formed and took over distribution. It established the first factory to manufacture tires and tubes in Calcutta in 1936. In 1922 the Goodyear Tire and Rubber Co. of India was registered as a trading company. The Firestone Tire and Rubber Co. (India) Ltd. began operations in 1930 and erected their own factory at Bombay in 1939. The India Tire & Rubber Co. Ltd. was established in 1938. Only Dunlop Rubber of India Ltd. and the Firestone Tire & Rubber Co. of India were manufacturing tires and tubes at the time of the Tariff Commission inquiry in 1955 into fair prices.

Goodyear products and India Tire products were manufactured in the Dunlop factory at Calcutta.

80. According to the Commissions' Report, the total production of rubber tires and tubes in 1947 was 47.3 million lb. of which tires contributed 88 per cent and tubes 12 per cent, while in 1953 production had increased to 58.5 million lb. with the respective shares of tires and tubes being 90 per cent and 10 per cent. The average production during 1947 to 1953 was 4.86 million lb. of tires and 0.58 million lb. of tubes. The imports during this period increased from Rs.0.58 million to Rs.2.2 million. These figures include tires and tubes for cycles also.

81. At present there are eight companies manufacturing tires and tubes with a total capacity of 3,273,200. Licensed expansion plans under implementation by existing companies is 380,000 additional tires and tubes, and licenses granted to four new companies includes 1,200,000. Thus the total installed capacity of tires and tubes at present is 4,853,200. It is interesting to note that the tire and tube industry has experienced increasing exports in recent years, valued at Rs.11 million in 1965/66.

#### Batteries

82. Tropical Accumulators, Calcutta was registered in 1936 to commence manufacture of batteries. Prior to this (since 1931) it had tried to manufacture batteries as an unregistered firm. Five more factories were organized in Calcutta between 1933 and 1939. One was established in Bombay in 1934 (but in 1937 it moved to Bangalore). All these factories produced on a small scale and therefore the demand for batteries had to be met through imports, particularly from the United Kingdom and the United States.

83. The outbreak of the Second World War caused a severe decline in imports of batteries. Local industry was called upon to meet the entire defence demand. Government assistance was given for the expansion of existing firms and also to set up new firms by granting import licenses for battery producing plants, and by securing the steady import of raw materials required for their manufacture. However, it was difficult to import containers. There was only one local firm manufacturing these on a small scale. Hence, the Chloride Electrical Storage Co. (India) Ltd. was set up in Calcutta at the instance of the Defence Services for meeting requirements for batteries in the eastern theatres of war, and was granted



War Project Co-ordination and Administrative Priority No. 2 Project M-20 which helped the company to obtain building materials and plants. It could not actually start manufacturing, however, until the war was over.

84. The case for protection to the motor vehicle battery industry was referred to the Tariff Board in 1946 which considered the industry eligible, and granted protection for three years. At the time of the 1952 inquiry by the Tariff Commission, the number of producing firms had increased from ten to eighteen and the total annual capacity rose from 265,900 in 1948 to 534,820 batteries in 1951. Actual production registered over a hundred per cent increase from 106,553 in 1948 to 251,584 in 1951. The Commission reported that the industry had made satisfactory progress in several directions since protection. In addition to increased production of the main product, ancillary firms for production of containers, lead oxides plates and separators had also developed and the prices charged were reasonable. Protection was recommended to be continued for three more years.

85. At the Tariff Commission Inquiry in 1955, there were twenty production firms of which eight were in Calcutta, seven in Bombay, two in Bangalore and one each at Madras, Delhi and Kolhapur. Out of these, only two had large capacities - Eastern Battery Makers Ltd. Calcutta and Standard Batteries Ltd. Bombay, both on a single shift basis. The total capacity of the twenty firms based on single shifts was 329,000 batteries per year; production had increased from 176,515 in 1952 to 202,237 batteries in 1954. For 1955, production was estimated at 240,000. There were also a number of unregistered small-scale companies assembling or re-conditioning batteries from purchased components. As the industry had made satisfactory progress during the period of protection and was capable of producing standard quality batteries to meet the entire requirements of the motor vehicle industry in the country, the Commission then recommended deprotection of the industry.

86. Today there are twelve producers with an installed capacity of 672,700 batteries and an additional licensed capacity of 251,900. Thus the total capacity is 924,600 batteries as against the target set for the Third Plan of 900,000. (One firm with an installed capacity of 20,000 produced batteries only up to 1955. It has since resumed production under new management). Production increased from 529,930 in 1961 to 745,028 in 1965. It declined somewhat to 719,392 in 1966. In recent years batteries have been exported. In 1965/66 the value of exported batteries was Rs.26 million.

87. Thus, as regards the two important ancillary industries - tires and tubes and batteries - the automotive industry in India is today well served. Except for the importation of nylon tire cord, sulphur and zinc metal, the major raw materials required by the tire and tube industry are available indigenously (i.e. natural rubber, synthetic and reclaimed rubber, rayon tire cord, carbon black, rubber chemicals, wire, tube valves). As regards batteries, non-ferrous metals such as copper, zinc, lead and tin are imported at present. Some natural rubber and special grade of PVC composition are also imported. Requirements for containers and separators are expected to be met in full, locally, in the next two or three years.

### Equipment

#### Distribution and services

88. Marketing of automobiles in India is done through dealers. They enjoy exclusive jurisdiction for sales and services in their allotted territories. The pattern and terms of dealership are governed by agreements between the automobile manufacturers and the dealers. Dealers are required to have showrooms, keep adequate stock of spare parts, provide well equipped workshops and service stations for repairs and maintenance of the vehicles sold by them. A suitably trained staff in the sales, service and spare parts sections must be maintained by every dealer and sub-dealer. All dealers are obliged to render after-sales-service including free services during the warranty period and fulfilment of warranty claims.

89. The automobile manufacturers have a network of authorized dealers and sub-dealers throughout the country. According to the Association of Indian Automobile Manufacturers, the total estimated number of major automobile dealers was 471 and of sub-dealers 750, with 50,000 employees for a total automobile fleet of 884,000 as of 31 March 1964. Their paid-up capital was estimated at Rs.250 million and the working capital at Rs.780 million.<sup>8/</sup>

90. The number of authorized automobile dealers of the seven vehicle manufacturers is 260 according to the Federation of Automobile Dealers Association, and the total

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<sup>8/</sup> The Automobile Industry of India, 1964-65.

number of sub-dealers including branches and service organizations is 800. The estimated capital investment made by them is approximately Rs.500 million and the capital employed is Rs.1,000 million. They employ about 100,000 men.

Petrol pumps

91. There are five oil companies in India, (i.e. Burma Shell, Esso Standard (Eastern), Caltex Company, Indian Oil Corporation (IOC) and Indo-Burma Petroleum Company). They have a network of depots and retail outlets spread throughout the country. According to recent information the number of retail outlets is as follows: Burma Shell 3,429; Esso 1,786; Caltex 1,403; IOC 1,295; and Indo-Burma Petroleum Co. 220.

92. Some are equipped with service facilities only; others provide other facilities in addition to service as shown below:

Table 10

Service and other facilities of major oil companies

	<u>Burma Shell</u>	<u>Esso</u>	<u>Caltex</u>	<u>IOC</u>	<u>Indo-Burma Petroleum</u>
Service facilities	193	230	164	58	-
Service and other facilities	330	268	171	-	51

93. It appears that service facilities have not kept pace with the increased vehicle population in India. Most of these facilities are concentrated in cities, while in the interior service facilities are comparatively few or nonexistent. This adversely affects the road transport industry. Trucks, for instance, have to be towed long distances for service and repairs. If the automotive industry is to flourish, an adequate network of well equipped garages and repair shops should be spread throughout the country, especially on the national highways and in the interior.

Spare parts retailing

94. With the increase in the number of vehicles on the roads, there is need for a proper retailing of spare parts all over the country. Usually automobile producers as well as ancillary manufacturers have their own agents who supply spare parts to stockists, wholesalers and retailers on a margin basis which varies

according to the popularity and demand and other conditions of their particular territory. There are thousands of dealers in automobile spare parts all over the country catering to the needs of car owners, fleet operators, and other consumers. Here also the concentration is mainly in cities. According to the Federation of the Spare Parts Dealers Association, established in 1962, they have seventeen dealer associations with a membership of about 4,000 dealers, some of whom deal in petrol, oils, tires and tubes, batteries, tractors, motor cycles, scooters, new cars and vehicles. Some of these also run service stations and repair workshops. In addition to this organized sector, there is also an unorganized group of about 5,000 dealers. In all, 9,000 to 10,000 dealers are in the spare parts business today in India. It has been estimated that Rs.500 million are invested in the spare parts trade; The annual turnover is about Rs.1000 million. The trade employs about 500,000 persons.

95. Spare parts trade is a keenly competitive but flourishing business. It is interesting to note that many such dealers claim to have been manufacturers of automobile ancillaries in recent years.

#### IV. NECESSARY CONDITIONS FOR THE DEVELOPMENT OF THE INDUSTRY

##### Raw materials

96. Automotive and automotive equipment industries belong to the group of metal-transforming industries which plays a strategic role in the process of economic development. The automotive industry is significant not only for its own importance but also because of its impact on the other sectors of this group of industries. It is conditioned by a number of factors and facilities, among which the most important is the availability of raw materials, especially iron and steel. The increasing demand for steel is an index of the dynamism of an economy. Steel plays a significant role not only in construction and transport but also in the production of both intermediary products and other consumer and capital goods.

97. India has a well established iron and steel industry. With the commissioning of four steel plants set up with foreign collaboration in the public sector, there has been a substantial increase in the output of steel products. Projects for the production of alloy steels and other special steels are in process and it is expected that most, if not all, of the requirements for steel will be locally available within the next three years. With large iron resources, estimated at

about 210,000 million tons of which 22,000 million are of very high grade iron, India has the prospect of a vigorous steel industry and of being self-sufficient in alloy and other steels.

98. The other important raw materials are non-ferrous metals - aluminium, copper, zinc, lead and tin. Aluminium is now produced in the country in large quantities, obviating the necessity of most imports. In view of tremendous resources of bauxite there is ample scope for an even increased development of the aluminium industry. Regarding other non-ferrous metals, India is very deficient. For some years to come India will have to depend upon imports of these materials for the automotive industry. Stringent foreign exchange has, however, compelled a search for substitutes. The requirements of steel bars and billets for the automotive industry have now been rationalized into 28 categories by the technical unit of the industry in consultation with Indian Standards Institute. Copper and brass are being substituted by steel to some extent.

#### Technical know-how

99. The gap between advanced and developing countries in the sphere of technology was wide before the Second World War. It has become even wider due to the rapid pace of research and development made by the advanced countries. It is very doubtful if this gap can be bridged in the near future. The fact that the country requires development is in itself an index of outmoded technology. The manufacture of vehicles and automotive equipment is a highly complex process; the developing countries must depend upon foreign assistance for the technical know-how at least in the early phase of development. Hence, all developing countries including India have commenced manufacture of automobiles with foreign collaboration. As the industry progresses, however, local technical skills must develop. The problem is not only that of adopting or copying the technical expertise of the advanced countries but that of adapting it to suit the particular conditions of each developing country. Moreover, technical know-how is continuously improving through research.

100. Product development, industrial engineering, designing etc. are dependent not only upon the facilities for training and research, but also upon a proper atmosphere and opportunities. Engineers in India, though competent, are frustrated because of the conservative and complacent attitude of most of the automobile manu-

facturers who are not willing to take risks, and are content to depend upon foreign collaborators as they mean less investment and higher profits. As early as 1953 the Tariff Commission recommended that all firms with manufacturing programmes should become independent of their foreign associates within as short a period as possible, and that they should set up designing and research sections of their own. Comparatively little progress has been made during the last fifteen years in India except by TELCO which has developed a fine research department. A Research Association was registered in mid-1967 by the automobile and ancillary manufacturers. It will take some years before it can start functioning.

101. It is no wonder, therefore, that designing has not yet developed in India. The short-sighted policy of the manufacturers is responsible for the retardation of the development of both the automotive and automotive equipment industries. Locally produced components require not only testing of the components by the collaborators abroad, but also local final approval which is inordinately delayed. This has led to the setting up of ancillary firms with foreign collaboration. Out of 120 manufacturing units licensed under the Industries Development and Regulation Act of 1951, as many as 117 were covered by foreign technical collaboration at the end of the Third Five-Year Plan.

#### Skilled labour and training

102. The availability of skilled and trained labour poses a special problem for all developing countries. Despite a large labour force, it is mostly unskilled, due to the lack of adequate facilities for training. This has been repeatedly emphasized by the Tariff Commission since 1953, and yet until 1960 the two pioneering manufacturers had not bothered to accept the advice. TELCO alone has satisfactory and adequate training programmes which have been responsible for their high quality products and their popularity.

103. Recently the Government appointed a committee to inquire into the quality of passenger cars. Since this inquiry, manufacturers have instituted training schemes but much remains to be done. (The commercial approach in this matter will not pay in the long run; it would not necessarily be in the interest of the industry.)

104. As early as July 1907 motor mechanic classes were started in the Victoria Jubilee Technical Institute at Bombay. Even evening classes were provided for amateurs and private owners of motor cars who wanted to learn motor-car mechanics.

In recent years a number of polytechnics and other institutions have been started to give training in automobile engineering. Post-graduate diplomas have been awarded. Highly specialized training in automobile engineering, however, has not yet developed to any appreciable extent.

Machinery

105. Developing countries are lagging behind in the production of machines and tools. India has in recent years made substantial progress in this field, especially with the development of Hindustan Machine Tools Ltd.

Road development

106. Developing countries suffer from an inadequate network of roads and for the development of a dynamic automotive industry this defect has to be remedied. The following table shows the progress in road development since 1951:

Table 11  
Progress in road development, 1951 to 1966  
(in kilometres)

	<u>Surfaced roads</u>	<u>Unsurfaced roads</u>	<u>Total</u>
1951	156,107	241,512	397,619
1956	181,960	313,490	495,450
1961	234,419	470,581	705,000
1962	245,563	499,019	744,582
1963	250,498	501,320	751,818
1966 (estimates)	283,680	674,240	957,920

Source: Tarlok Singh Committee (1966) Final Report on Transport Policy and co-ordination, p.62.

Thus, between 1951 and 1963 the length of surfaced roads increased by 60 per cent and of unsurfaced roads by over 100 per cent. A further addition of 33,182 kilometres of surfaced roads was anticipated by the end of the Third Plan.

107. Towards the end of the Second Plan (1961), the chief engineers from the Centre and the States formulated a twenty-year road development programme. The plan envisaged the average length of the road per 100 km<sup>2</sup> then at 16 km should increase to 32 km. by 1981. The plan is based on the assumption that no village in a developed agricultural area should be more than 6.4 km from a paved road or more than 12 km. from any other type of road. The cost of completing the programme was estimated at

Rs.5200 crores, of which Rs.crores were for village roads. This plan has been the broad guide for road planning in the states.

108. The paved road length in India per 100 km<sup>2</sup> is very low - 12 km as against 25.6 km in Ceylon, 44.9 km in the United States of America, 126 km in France and 149.9 km in the Federal Republic of Germany.

109. Road development is conditioned by the volume of freight and passenger traffic. The following table gives the indices of the freight and passenger traffic carried by rail and road transport along with the indices of the growth of national income with 1950/51 = 100 as base:

Table 12

Freight and passenger traffic and national income indices, 1955 to 1964

	National income at 1948/49 prices	Freight ton kilometres			Passenger kilometres		
		<u>Rail</u>	<u>Road</u>	<u>Total</u>	<u>Rail</u>	<u>Road</u>	<u>Total</u>
1955/56	118.4	135.0	162.7	138.1	93.8	136.1	104.7
1960/61	144.1	198.7	316.4	211.8	116.8	246.4	150.2
1961/62	147.6	206.8	381.8	226.2	123.1	255.0	157.2
1962/63	151.1	228.2	454.5	253.3	126.3	281.0	166.2
1963/64	157.5	242.2	490.9	269.7	133.1	298.3	175.7

Source: Tarlok Singh Committee (1966) Final Report on Transport Policy and co-ordination, p.13.

110. It is doubtful that the target set in the chief engineers' plan will be fulfilled because of the bias in favour of railway development. The following figures of allotment are for expenditures in rail and road development during the three Plans and the estimates for the Fourth Plan:

Table 13

Investment in rail and road transport

(in crores of rupees)

	<u>I Plan</u>	<u>II Plan</u>	<u>III Plan</u>	<u>IV Plan</u> (estimated)
Road	134.47	245.80	445.00	760.00
Road transport	122.00	155.00	290.00	695.00
Sub-total	256.47	400.80	735.00	1455.00
Railways	423.23	1043.6)	1673.00	2094.00

Source: Memorandum on Automobile Industry submitted to the Tariff Commission, Tata Engineering and Locomotive Co. Ltd. (1967) p.24



The automotive industry can flourish only if a policy of quantitative as well as qualitative development of road transport is pursued with vigour.

#### Road transport industry

111. According to the Tarlok Singh Committee Report, commercial motor transport comprised a total fleet in British India of 23,645 buses and 12,397 trucks by 1938/39. In 1946/47 the number of trucks had increased to 40,107 and the number of buses, after a period of decline, again attained the pre-war level. At the commencement of the First Plan there were 34,411 buses and 81,888 trucks; the number increased to 57,049 and 171,045 respectively by 1960/61. Thus, buses increased by more than 66 per cent and trucks by about 100 per cent between 1950 and 1961. In 1960/61 buses represented 25 per cent of the commercial vehicles in use.<sup>9/</sup>

112. An interesting feature of the road transport industry in India is the degree of nationalization by different states. In 1960/61, out of a total 57,409 buses, 33 per cent were operated by states.<sup>10/</sup> There are as well transport co-operative societies. At the beginning of 1962 there were 172 co-operative societies dealing exclusively with trucking, 612 with passenger traffic, and 24 engaged in both passenger and trucking transport. These co-operatives operated 1,385 vehicles, i.e. less than one per cent of the total number of commercial vehicles in the country.<sup>11/</sup> A large number of small operators owning not more than one vehicle each, dominate the road transport industry. They constituted 89 per cent of the operators in 1963. The proportion of operators with 5 vehicles or less was 98 per cent.

113. The following table shows distribution of road transport operators according to the number of vehicles owned in December 1952 and March 1963 as estimated by the Ministry of Transport.

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<sup>9/</sup> Tarlok Singh Committee (1966) Final Report on Transport Policy and co-ordination, p.76.

<sup>10/</sup> Ibid.

<sup>11/</sup> Ibid.

Table 14

Road transport operators - distribution of owned vehicles in 1952 and 1963

<u>Size of fleet</u>	<u>Number of operators</u>		<u>Total number of vehicles owned (estimated)</u>	
	<u>December 1952</u>	<u>March 1963</u>	<u>December 1952</u>	<u>March 1963</u>
One vehicle each	} 46,000	136,000	} 83,153	136,000
2 to 5 vehicles each		14,046		50,000
6 to 50 vehicles each	1,500	3,187	30,000	61,449
51 to 100 vehicles each	50	32	3,000	2,000
More than 100 vehicles each	25	37	14,000	21,000
Total	47,575	153,302	130,153	270,449

114. The development of the road transport industry is hindered by several factors: rising prices of commercial vehicles and automotive equipment; increasing costs of repairs and maintenance; increasing vehicle taxation which is said to be the highest in the world; lack of finance. The total incidence of multiple taxation, direct and indirect, on commercial vehicles came to from 42 per cent to 49 per cent of ex-factory value of which about 18 per cent to 20 per cent is from excise duties.<sup>12/</sup> The average rate of motor vehicle taxation in India is estimated at Rs.1,300 in the United Kingdom, Rs.1,200 in the Federal Republic of Germany, Rs.850 in France and Rs.500 in the United States. The road transport industry suffers a disadvantage in relation to the railway system as the tax incidence of seven paise per ton-mile on road transport equals the average ton-mile tariff of the railways.<sup>13/</sup>

115. It is important that the handicaps suffered by the road transport industry be removed if the automotive and automotive equipment industries are to flourish. Moreover, the high employment possibilities in the road transport industry is of

<sup>12/</sup> National Council of Applied Economic Research (1967) Taxation and Price Structure of Automobile Industry, p.83

<sup>13/</sup> Tata Engineering and Locomotive Co. Ltd. (1967) Memorandum on Automobile Industry submitted to the Tariff Commission, p.24.

great importance to developing countries such as India which are faced with the critical problem of mass unemployment.

#### V. MANUFACTURING TECHNIQUES IN DEVELOPING COUNTRIES

116. An important problem for the development of the automotive equipment industry in the developing countries is that of technology. This problem, however, must take into consideration that the demand for automobiles is low, due to low national income and the slow pace of economic development. It is, therefore, neither possible nor desirable to apply the criterion of extensive mass production which would necessitate the use of highly sophisticated special purpose machines and automation to secure the greatest economies. The size of an automobile and automotive equipment company in developing countries has to be in realistic relationship of volume of sales to cost. It is to be remembered, however, that a motor vehicle is not a single unit with one production scale but a collection of components with different optimum scales of production. Hence, it is not easy to arrive at an economic scale of production.

117. Various estimates of volume for low cost companies have been given by experts in advanced countries. According to Romney, an annual volume of about 200,000 units on a one-shift basis could be expected to secure most of the economies of scale available from the manufacturing technology of the nineteen fifties including tooling costs.<sup>14/</sup>

118. According to Professor Bain, who based his estimates on the study of economies of scale in the production of passenger cars around 1950, "the trend of estimates is that costs would be 'moderately' high at 150,000 units .... substantially higher at 60,000 units and uneconomical at smaller scales."<sup>15/</sup>

119. Before the Second World War, the maximum output of any one model in the United Kingdom was about 50,000. But Maxcy and Silberston conclude from their study that under the existing techniques there is a limit to the gains in economies from expansion.<sup>16/</sup> Taking the final assembly of a car to be "a relatively small scale operation" they conclude that "the efficient use of best assembly techniques calls for a volume of roughly 60,000 units which need not be all of one model.

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<sup>14/</sup> (1966) Charles E. Edwards Dynamics of United States Automobile Industry, p.160

<sup>15/</sup> Quoted by Edwards, *ibid.* p.162.

<sup>16/</sup> Maxcy and Silberston (1959) The Motor Industry, pp.75-76.

Where are probably further smaller gains at higher volumes, but the significant economies in car assembly appear to be exhausted at about the volume of 100,000 units.<sup>17/</sup> According to this same study, the press shop sets the over all optimum for car production probably in the region of 1,000,000 per annum.<sup>18/</sup>

120. These estimates refer to the conditions prevailing in the United States and the United Kingdom which are obviously not applicable to developing countries such as India. The highest combined production of automobiles by all the seven manufacturers in India came to approximately 75,000. Thus, according to these estimates, it is economically feasible that there be only one manufacturer of automobiles.

121. To create a more sound automotive industry, reference need be made to the appointment of the Low Cost Car Committee (Pande Committee) which examined the feasibility of producing a small car within an ex-factory price of approximately Rs.5,000 with an annual production of 50,000 cars for India. The low cost car at the ex-factory price of Rs.5,000 would be possible if the production of vehicles reached 50,000 units per year. Thus, this expert committee regarded a company producing 50,000 cars as economic for India.<sup>19/</sup>

122. The fear of monopoly and need to provide competition has been responsible for licensing too many manufacturers in the automobile industry. The same is the case in the automotive equipment industry where there are many producers, each producing a low volume uneconomically.

123. It is, therefore, imperative to consider the whole question of automotive manufacturing techniques in a proper perspective. Emphasis today needs to be put on general purpose machines that can produce more than one item rather than on sophisticated special purpose machines which not only entail high initial costs but also continuing high overheads because they would be under utilized. This would give the needed flexibility in production.

124. It is also important to restrain the development of new firms producing the same item, concentrating the production instead in one or, at the most, two companies. The concept of monopoly in advanced countries is not applicable to developing countries such as India. Fragmentation has made production too costly.

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<sup>17/</sup> Ibid. p.79.

<sup>18/</sup> Ibid. p.82.

<sup>19/</sup> Planning Commission (n.d.) Programmes of Industrial Development, 1961-66, p.187.

However, it should be noted that despite the number of producers there has been very little real competition except perhaps in trucks. There is a sellers' market and prices continuously increase as a result of the protected market. It is necessary that fragmentation not be permitted and if need be, prices charged for ancillary products by the so-called monopolists can be controlled, as has been done until recently for automobiles in India. Jeeps and commercial vehicles have been only recently decontrolled.

#### VI. THE ROLE OF FOREIGN COLLABORATORS IN RELATION TO DESIGN, STANDARDIZATION AND RESEARCH

125. Another important problem for the developing countries is that of design and standardization. The multiplicity of designs and lack of standardization have been greatly responsible for the retardation of the automotive equipment industry. It is essential that developing countries such as India should concentrate on utility and economic designing rather than copying the sophisticated designs of the advanced countries. What is needed today in developing countries is a utility automobile with long durability suited to hazardous conditions of the roads. Unfortunately what has been done is mere copying of designs developed in countries where foreign collaborators operate without any attempt to make significant changes to suit local conditions. This is particularly true of the passenger car.

126. Components and parts have to be manufactured according to the specifications and drawings of the foreign country's designs, leaving no scope for any independent local development.<sup>20/</sup> Very little standardization has been possible because of the large number but small, uneconomic volume of different parts and components that must be produced. As a report of George Fry and associates has pointed out, the standardization of components and parts, with the Indian automobile manufacturers tied to nine different foreign engineering firms, is a difficult problem. Hence, the reduction of costs would be practically impossible to achieve without joint standardization effort and co-operation.<sup>21/</sup> Unfortunately, the Indian automobile manufacturers have an uneconomic independent attitude. This has to be changed in the interest of the industry, as well as the country.

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<sup>20/</sup> According to the expert opinion, U.S. standard for radiator design should not be used in India without modification.

<sup>21/</sup> George Fry et al. (1961) Survey of Indian Automobile and Ancillary Industry. This is an excellent survey and the recommendations made by the authors are still relevant.

127. There is no doubt that foreign collaboration has helped developing countries such as India by giving technical assistance to the industry, without which little development would have taken place, as the indigenous technological base is very weak. It has also provided a certain amount of training. But constant changes in designs abroad have had to be introduced in India, entailing unnecessary expenditure. Standardization and development of product design, engineering and research have been held back.

128. While recognizing the role played by foreign collaboration in developing countries, its disadvantages must not be overlooked. It is not possible, for instance, to calculate exactly the cost of royalties, which are known to be high. The terms of agreement vary from collaborator to collaborator; in a number of cases the payment of royalty is based on the total sales. Thus, the country continues to pay increasing royalties even as local production increases. Some agreements further require not only the purchase of special parts from the collaborating firms but also expenditures incurred by periodic inspection tours of technical experts.

129. However, the most serious drawback of foreign collaboration is the passive absorption of the western technology by the developing countries.<sup>22/</sup> A study on Latin America shows that this consists "mainly in training in the operation of new production equipment, but not affording sufficient mastery to provide a basis for creative activities that might have been reflected at least in the adaptation of technical progress at the world level to the special conditions of the Latin American environment. Even this passive absorption is concentrated in specific sections of the production system - in the economy as a whole and within the manufacturing sector itself - so that veritable strata of technology have been formed,

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<sup>22/</sup> In Latin America, for example, the cost of royalties "varies from 3 to 5% of gross sales values, or even more in the special case of the pharmaceutical industry, and these proportions in turn may represent from 6 to 10% of the fixed capital of the enterprise which is unquestionably a heavy burden. In 1955 as much as 32.2% of the remittances of the United States manufacturing companies operating in Latin America corresponded to royalties, and that between 1961 and 1963 the royalties received by industrial consortia in the United States from their Latin American subsidiaries averaged 46 million dollars yearly." United Nations Economic Commission for Latin America (1966) Process of Industrial Development in Latin America, p.186.

with strongly marked differences between them. It would thus be more appropriate to speak of the superimposition than of the assimilation of technology and of training in the use of techniques transplanted from abroad, rather than of technical know-how.<sup>23/</sup> These observations on Latin America are somewhat true of India and of other developing countries.

130. The important aspect is in understanding the technical development in advanced countries and adapting it suitably to the special conditions of the local situation. The available resources are often different. They must be efficiently and economically exploited with the help of science and technology.

131. The best practice is to give foreign collaborators a substantial financial stake to make them involved in the development and progress of the industry in developing countries. The success of the Tata Engineering and Locomotive Co. - the result of financial participation by their German collaborators - is clear evidence of this. A license and royalty agreement is not likely to help much.

#### VII. COMPARISON WITH BRAZIL

132. In the absence of adequate data about other developing countries, it is not possible to make a comparison of the development of India's automotive and automotive equipment industry with that of many other countries. The only countries for which some data is available are Brazil and Argentina. With Brazil being similar in size to India, a comparison could be valid to some extent despite notable differences.

133. A number of assembly operators, mostly foreign firms, existed in Brazil in the mid-twenties; similarly in India. A number of local and foreign firms were producing certain parts for the replacement market as well, i.e. tires, batteries, springs, glass, paints and upholstery. In 1952, 104 such items were excluded from the necessity of import licenses. In India, also, a number of parts were being produced by 1952 (see para. 27).

134. The imports of vehicles in Brazil wholly or locally assembled from CKD imports was 37,742 (24,749 passenger cars and 12,993 commercial vehicles) in 1925 and reached the high level of 103,612 (47,907 passenger cars and 55,705 commercial

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<sup>23/</sup> Ibid. p.229

vehicles) in 1951. India imported 17,597 vehicles (12,757 passenger cars and 4,480 commercial vehicles) in 1925/26 while the largest imports were 39,251 automobiles (18,012 passenger cars and 21,299 commercial vehicles) in 1948/49. The difficulties of foreign exchange necessitated restrictions on automotive imports into Brazil. There is, thus, a close parallel between the two countries.

135. In India the idea of establishing a local automotive industry was considered as early as 1935 by Sir M. Visvesaraya. The idea did not bear fruit because of the hostility of the then administering foreign Government. We do not have details regarding the early period in Brazil. The Brazil Government indicated the possibility of establishing an automotive industry in the early nineteen fifties in consultation with United States manufacturers. Similarly in India, the Tariff Commission enquired into the question of establishing an Indian automotive industry in 1952. The Executive Group for the Automotive Industry (GEIA) was established in Brazil in 1956 and had worked out a programme under which firms were allowed to continue if they had a definite plan for substituting locally made components for imported ones, and a planned programme for the curtailment of imports. As in the case of India, purely assembly firms were to be excluded from the local market. Various incentives were given to import manufacturing equipment for the automotive industry, such as "preferential cost-of-exchange treatment for debt financing with a minimum repayment period of five years" under Instruction II3, and exemption of such equipment from import duties for a period of thirty months (later extended). Along with the programme of nationalization, as local production has been termed in Brazil, imports of components not yet replaced were allowed liberally.

136. The following table shows the minimum required programme of nationalization in Brazil from 1956 to 1960:

Table 15  
Production of vehicles in Brazil, 1956 to 1960  
(in percentage of total weight)

	<u>Trucks</u>	<u>Vehicles</u>	<u>Jeep Type Utility</u>	<u>Pas- senger</u>	<u>Average</u>
By 31 Dec. 1956	35	50	40	-	41.6
By 1 July 1957	40	60	50	50	50
By 1 July 1958	65	75	65	65	67.6
By 1 July 1959	75	87	75	85	80
By 1 July 1960	90	95	90	95	92.5

Source: Executive Group for the Automotive Industry (GEIA) quoted by Gordon and Grommers (1962) United States Manufacturing Investment in Brazil, p.49.



137. The above figures are not comparable to the figures of progress of local production by Indian automotive manufacturers, as the figures for Brazil are in weight whereas in India they refer to the cost of the imported components related to the cost of the entire vehicle. It is, however, interesting to note that due to the very active steps taken by the GEIA and the granting of incentives of exchange benefits, imports were very small by 1960. Thus, in less than five years, Brazil achieved a very high degree of local production, whereas the automotive industry in India had reached only 71 per cent local content by 1960. According to the study by the Economic Commission for Latin America, the import coefficient in the automotive industry in Brazil had already dropped to less than 42 per cent by 1957 and to insignificant proportions by 1961 when the annual output had reached about 200,000 units.<sup>24/</sup> Even today the automobile manufacturers in India have not attained the same degree of local production as in Brazil.

138. It can be noted from the following table that India's performance has been very poor, though both India and Brazil started manufacturing about the same time. From 1962 to 1965, there is a decline in the total production of vehicles though there is an increase in the production of passenger cars in Brazil, whereas in India, except in 1963, the production has been increasing.

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<sup>24/</sup> United Nations ECLA (1966) Progress of Industrial Development in Latin America, p.112

Table 16

Comparative table of vehicle production in Brazil and India, 1962 to 1965  
(in thousands)

	<u>1962</u>		<u>1963</u>		<u>1964</u>		<u>1965</u>	
	<u>Brazil</u>	<u>India</u>	<u>Brazil</u>	<u>India</u>	<u>Brazil</u>	<u>India</u>	<u>Brazil</u>	<u>India</u>
Heavy lorries and buses	4.1		3.5		3.5		4.1	
Medium lorries	35.6	27.6	20.5	15.7	21.0	33.6	20.9	37.3
Freight and passenger vans	54.4		50.2		48.5		46.7	
Jeeps	22.2	6.9	13.9	7.8	12.9	10.3	10.0	10.5
Passenger cars	74.9	23.3	86.0	28.8	97.8	23.2	103.0	24.8
Totals	191.2	57.6	174.1	52.3	183.7	67.1	184.7	72.6

**Source:** Figures for Brazil for 1962 are taken from United Nations ECLA (1962) The Progress of Industrial Development in Latin America, Table 20, p.113, and for 1963-65 from United Nations ECLA (1965) Economic Survey of Latin America, Table 251, p.323.

139. In Brazil the automotive industry was regarded as a basic industry, as in India. Definite encouragement was given to independent producers and subcontractors for the production of components and specialized parts, unlike India, where the manufacturers themselves were encouraged to produce components.

140. A large automotive component industry has been built up in Brazil consisting of independent ancillary producers. Unlike India, integrated firms were positively discouraged. In India the manufacturers began by producing a number of components because of the absence of an ancillary industry, even today they continue this production (and in some cases have expanded their capacity) though the ancillary industry can meet the demand. They developed a "making" rather than a "buying" philosophy. This has resulted in unnecessary duplication of facilities for such components as leaf springs, shock absorbers, radiators, propeller shafts, inlet and exhaust valves etc. In addition, they have also established a number of integrated units.

141. As in India, CEIA gave priority to the production of commercial vehicles. They regarded passenger cars a definite luxury. Such has not been the case in India as can be seen from the fact that the production of low cost passenger cars was considered by the ad hoc Committee in 1959, again by the Pande Committee in 1961 and is once again being considered.

142. A major difference between the development of the automobile industry in India and Brazil is the effect of the restrictions on imports. When such threats were applied in India, manufacturers such as Ford and General Motors withdrew their assembly operations. In Brazil it had the opposite effect. Foreign collaborators were optimistic about the potential market in Brazil, whereas they lacked confidence in India's capacity to develop her economic future as an independent nation and become a sizeable market.

143. Another major difference in the two countries was the definition of a manufacturing programme. In India a firm was not regarded as manufacturing unless it had begun to produce the engine, transmission, rear axle, suspension and chassis members, resulting in vertical integration. CEIA emphasized horizontal development defining manufacturing as the replacement of imported parts by locally produced items. Manufacture meant production in which more than 60 per cent consisted of locally produced components. This has resulted in the establishment of a flourishing automotive industry in Brazil and a continuing increase in the production of vehicles, unlike India. The vehicle manufacturers in Brazil were not only made to adhere strictly to their manufacturing programmes, but were also required to help actively the development of an independent ancillary industry - not the case in India.

144. Thus, the progress of the automotive and automotive equipment industry in Brazil is much more striking than that of India during the same period of development.

#### VIII. CRITICAL APPRAISAL AND CONCLUSION

145. It is not the purpose of this paper to make an appraisal of the entire automotive industry, as it is primarily concerned with the automotive equipment industry. However, a few salient features may be noted, for the progress of the automotive equipment industry is linked closely with the development of the automotive industry itself. It is true that there has been more than 120 per cent expansion in vehicle production over the last decade; this would have been more striking if the base itself had not been so slender. It is also true that there has been a qualitative change - a change from mere assembly to manufacturing.

But this qualitative change came about late. Production has been fragmented. The continuous existence of a sellers' market and the policy of government price control have enabled companies - inefficient technically as well as financially - to survive and to remain in production at great cost to the country.

146. There has been no effort to keep abreast of development elsewhere in the world. Design and research so vital to any progressive and dynamic industry have been neglected. This was caused by the conservative attitude of manufacturers concentrated in the hands of a small group enjoying a built-in monopoly, by foreign collaboration, and by the system of price control. Local production was adopted reluctantly, and what little exists does so under the pressure of foreign exchange stringency.

147. The defects of the automotive industry are many and varied. External economies effected by not buying from outside are neglected (even now about 20 to 25 per cent are bought out components as O. E. in terms of value as compared to over 50 per cent in other countries). Competition is absent as new entrants are barred. Manufacturers follow the unwise and uneconomic policy of producing as many components as possible. Financial resources of the promoters are limited, expansion in recent years being based on money borrowed under foreign aid. In brief, the manufacturers have been purely commercial in their approach.

148. The future of the automotive industry depends considerably on the eradication of these defects and, in particular, on the effective amalgamation of inefficient units. Limitations due to foreign collaboration should be banned. A healthy spirit of internal competition could exist without price control. As far as local production is now possible, new firms should be allowed to enter the field freely, subject of course to the allotment of a clearly fixed amount of foreign exchange. Most of the existing manufacturers are complacent; they need to be shaken out of their complacency.<sup>25/</sup>

149. The growth of the automotive equipment industry is substantial, yet it is doubtful if it is on the right lines. It is excessively dominated by foreign technical collaboration which has been a major restrictive factor, as pointed

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<sup>25/</sup> For a critical appraisal see Arthagnani (1967) "A Policy for the Automobile Industry in India", Economic and Political Weekly (Bombay) 2 (32).

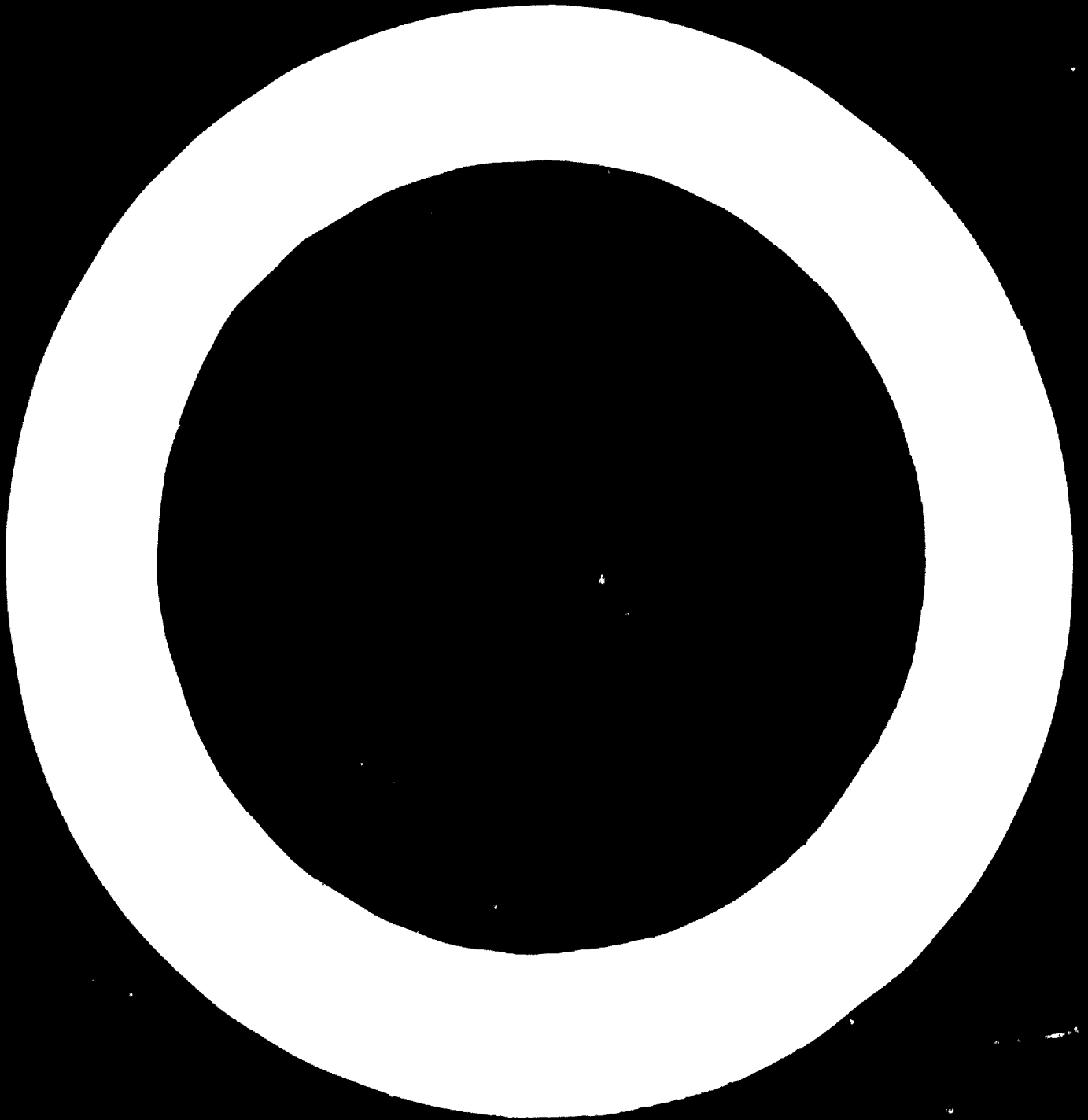
out by George Fry and Associates in their Survey of Indian Automobile and Ancillary Industry.

150. There is inadequate co-ordination and co-operation between the vehicle manufacturers and ancillary manufacturers. A "making" rather than a "buying" policy among automobile producers has retarded the development of the automobile component industry. Product design is neglected and standardization has not progressed. There is a lack of confidence in the local engineering talent. The industry is dominated by a commercial rather than an industrial approach. These are the main weaknesses of the automotive ancillary industry in India today.

151. To ensure a healthy growth of the industry, it is necessary to bring about a radical change in the attitude, approach and the thinking of the vehicle manufacturers, the ancillary producers and the Government. The automobile manufacturers must be compelled as in Brazil to buy components and not to produce them. No further expansion of the present capacities for production of components should be permitted and in due course the existing capacity should be gradually liquidated. The process of horizontal growth of the automotive industry must be accelerated. The existing firms in the ancillary industry should be expanded to an economical size rather than the Government continuing to issue licenses to new firms.

152. The most important step necessary is in connexion with the road transport industry, which is stifled by restrictions, lack of uniformity in inter-state rules and practices, excessive taxation and the bias in favour of railways. Unless there is a radical change in the government policy to stimulate the road transport industry, there is no hope for a rapid and healthy growth of the automotive industry in India. From an economic point of view and, more significantly, a social point of view, developing countries including India must give priority to and stimulate the production of commercial vehicles. The removal of the existing excise duty on commercial vehicles would be an asset. India could learn much from a study of the automotive industry in Brazil and Japan.

153. With her large iron resources, India has bright prospects of meeting all her requirements of steel within the country in the near future. She can substitute non-ferrous metals from available resources with the help of modern technology. A vigorous policy of standardization and local product engineering can be pursued. Then a strong automotive and automotive equipment industry could be developed in India. Yet, social consumption rather than individual consumption of automobiles will have to be encouraged by developing countries, such as India, for political and social stability, at least for the present.

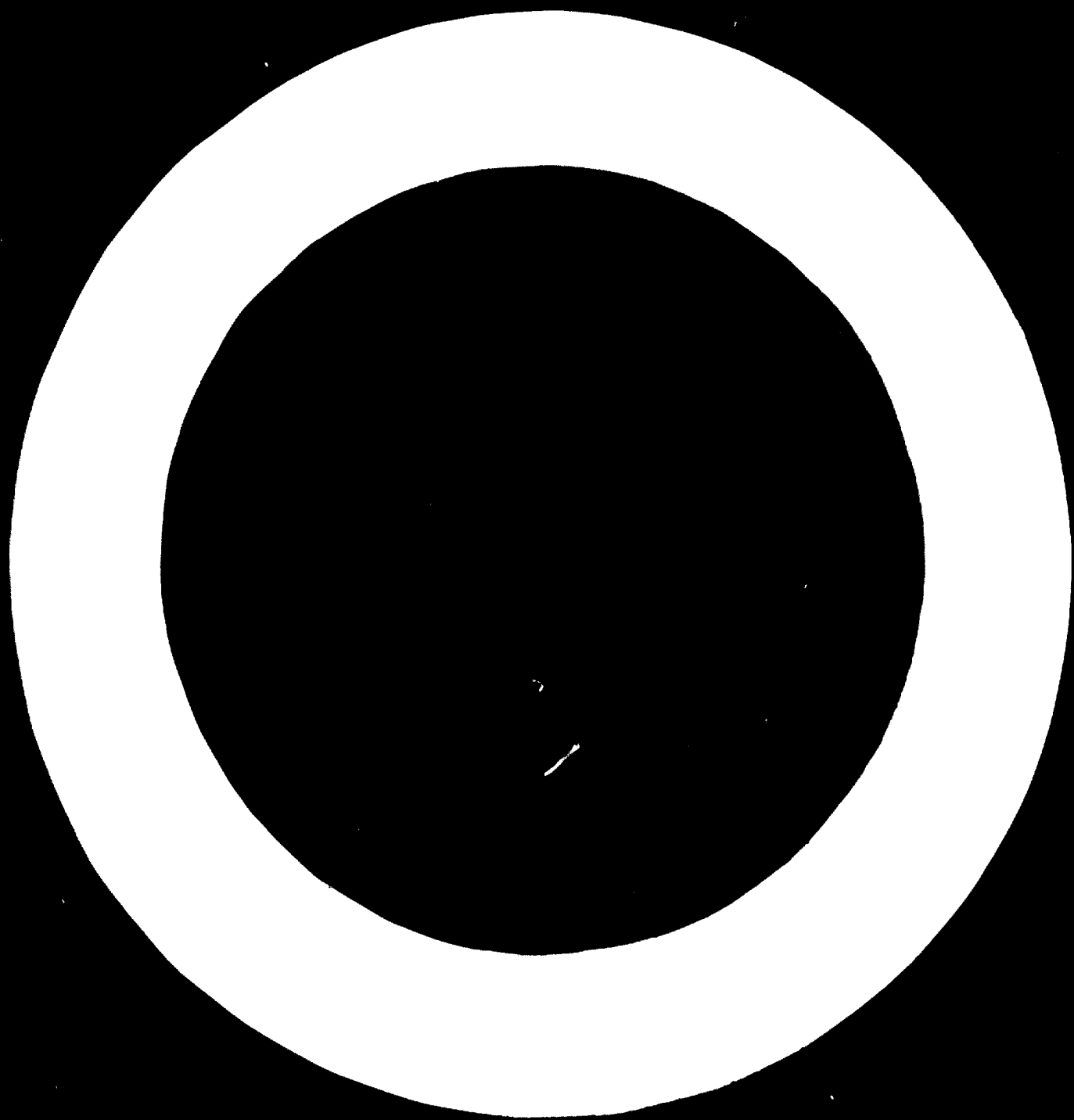


ANNEX I

PRODUCTION OF IMPORTANT COMPONENTS, 1956 to 1960

<u>Item manufactured</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Pistons	132,042	192,216	203,356	263,213	294,968
Piston rings	1,917,762	2,162,434	2,381,316	5,199,708	5,979,197
Cylinder liners	65,177	75,775	83,327	109,535	100,768
Gudgeon pins	133,326	159,312	173,924	240,422	257,305
<b>Fuel injection equipment</b>					
Elements		50,169	168,073	128,134	291,312
Delivery valves		78,061	134,657	108,660	289,361
Injection pumps		20,934	36,324	60,297	89,800
Nozzles		40,643	133,692	110,765	389,543
Spark plugs	531,884	369,401	736,251	885,503	1,107,789
Valves		38,484	56,459	290,743	514,568
Shock absorbers		8,185	13,093	22,773	62,409
Radiators		14,419	12,444	23,071	34,765
<b>Brake assemblies</b>					
Hose assemblies		39,523	39,523	32,827	) 230,179
Master cylinder kits			21,568	69,420	
Wheel cylinder kits			29,587	63,891	
Brake lining (in feet)		451,387	664,965	1,023,017	309,961
<b>Clutch assemblies</b>					
Cover assemblies			254	2,103	) 58,648
Driven plate assemblies			8,521	26,833	
Gaskets		112,065	3,215,128	6,091,598	9,899,763
Clutch facings of discs		43,910	63,197	141,838	179,378
Automotive diesel engines		3,333	4,255	8,707	10,065

Source: Planning Commission [n.d.] Programmes of Industrial Development 1961-66, p.184.





ANNEX IIDEMARCATIION OF AUTOMOBILE PARTS TO BE MANUFACTURED BY THE  
MAIN VEHICLE MANUFACTURERS AND THE ANCILLARY INDUSTRYItems normally expected to be manufactured by the ancillary industryEngines

- |   |   |
|---|---|
| 1. Pistons  | 18. Fuel pumps  |
| 2. Piston pins  | 19. Injection pumps   |
| 3. Piston pin bushings  | 20. Fuel filters  |
| 4. Piston pin retainer rings  | 21. Oil filters   |
| 5. Piston rings   | 22. Fuel hoses  |
| 6. Crankshaft bearings (steel backed<br>white metal or copper lead) | 23. Oil hoses   |
| 7. Roller chain   | 24. Air cleaners  |
| 8. Valves   | 25. Cylinder gaskets (all types<br>of gaskets and packings) |
| 9. Valve springs  | 26. Nozzles   |
| 10. Radiators   | 27. Nozzle holders  |
| 11. Radiator caps   | 28. Fuel pump elements                                      |
| 12. Fuel tank caps  | 29. Delivery valves   |
| 13. Exhaust mufflers  | 30. Thin walled bearings                                    |
| 14. Exhaust pipes   | 31. Ball bearings   |
| 15. Tail pipes  | 32. Boden cables  |
| 16. Fuel lines  | 33. All types of oil seals                                  |
| 17. Carburettors  | 34. Bolts, nuts, screws etc.                                |

Clutch, transmission, propeller shaft and differential

- |                              |                                   |
|------------------------------|-----------------------------------|
| 1. Clutch plates             | 10. Disc wheels                   |
| 2. Clutch facings            | 11. Wheels                        |
| 3. Clutch carbon or bearings | 12. Wheel bolts and nuts          |
| 4. Clutch springs            | 13. Front and rear wheel bearings |
| 5. Clutch pressure plates    | 14. Differential bearings         |
| 6. Clutch covers             | 15. Oil seals                     |
| 7. Universal joints          | 16. Brake linings                 |
| 8. Propeller shafts          | 17. Grease nipples                |
| 9. Transmission bearings     | 18. Bolts, nuts, screws etc.      |

Chassis frame, front axle and steering

- |  |                              |
|--|------------------------------|
| 1. Leaf springs                                      | 11. Bolts, nuts, screws etc. |
| 2. Spring brackets, shackles, hangers<br>(cast type) | 12. Suspension coil springs  |
| 3. Shock absorbers                                   | 13. Suspension leaf springs  |
| 4. Hydraulic brake system                            | 14. Spring U.bolts           |
| 5. Vacuum servo or air brakes                        | 15. Spring shackle bolts     |
| 6. Brake cables                                      | 16. Spring centre bolts      |
| 7. Brake fluid                                       | 17. Spring shackle pins      |
| 8. Ball bearings                                     | 18. Spring clips             |
| 9. Roller bearings                                   | 19. Spring bushes            |
| 10. Taper roller bearings                            | 20. Spring seats             |

Electrical equipment

- |   |                          |
|---|--------------------------|
| 1. Dynamos                                | 15. Fog lamps            |
| 2. Starter motors                         | 16. Stop lamps           |
| 3. Batteries                              | 17. Spotlights           |
| 4. Starter cables                         | 18. Control lamps        |
| 5. Wiring harnesses                       | 19. Direction indicators |
| 6. Ignition coils                         | 20. Flashers             |
| 7. Spark plugs                            | 21. Stop lamp switches   |
| 8. Distributors with vacuum control       | 22. Horns                |
| 9. Voltage regulators                     | 23. Horn buttons         |
| 10. All types of <b>electrical cables</b> | 24. Bulbs                |
| 11. All types of ignition switches        | 25. Bulb sockets         |
| 12. Head lamps                            | 26. Wind shield wipers   |
| 13. Tail lamps                            | 27. Fuses                |
| 14. Side lamps                            | 28. Fuse boxes           |
|   | 29. Contact brake points |

Rubber parts

- |                                     |   |
|-------------------------------------|---|
| 1. Tires                            | 6. Bulb horns                                 |
| 2. Tubes                            | 7. Weather stripping                          |
| 3. Flaps                            | 8. Door buffers and similar rubber components |
| 4. Fan belts                        | 9. Silent block or resilient mountings        |
| 5. <b>All types of rubber hoses</b> |   |

Body

- |  |                                      |
|--|--------------------------------------|
| 1. Door locks                            | 15. Flexible shafts for speedometers |
| 2. Hinges                                | 16. Oil pressure gauges              |
| 3. Windows for buses and trucks          | 17. Fuel gauges                      |
| 4. Seats for buses and trucks            | 18. Air pressure gauges              |
| 5. Safety glass (laminated or toughened) | 19. Thermostats                      |
| 6. Window regulators                     | 20. Paints, lacquers, varnishes      |
| 7. Window guides                         | 21. Sun shades                       |
| 8. Ornamental fittings                   | 22. Sun visors                       |
| 9. Upholstery materials                  | 23. Luggage carriers                 |
| 10. Trimming materials                   | 24. Ash trays                        |
| 11. Rear view mirrors                    | 25. Door handles                     |
| 12. Dash board instruments               | 26. Bolts, nuts, screws etc.         |
| 13. Ammeters                             | 27. Mascots and motifs               |
| 14. Speedometers                         |                                      |

Service equipment

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1. Tool kits                      | 5. Hand and foot tire inflators |
| 2. Starter handles                | 6. Air pressure gauges          |
| 3. Tire levers                    | 7. Lubricating equipment        |
| 4. Mechanical and hydraulic jacks |                                 |

Note: The Vehicle Manufacturers were expected to purchase the items listed above from the ancillary industry subject to considerations of quality, delivery and price, it being understood that the vehicle manufacturers would give the necessary assistance and technical guidance to the ancillary industry to enable the latter to cater to the O.E. market. If these essential conditions were not fulfilled the Government would give consideration for the manufacture of one or more of the above listed items to the vehicle manufacturers also. Further, these vehicle manufacturers have the option to continue with the manufacture of those of the items which were produced in their own works under their existing production programme.

Items which may be manufactured either by the vehicle manufacturers or by the ancillary industry

Engine

- |                         |                      |
|-------------------------|----------------------|
| 1. Cylinder liners      | 8. Water pumps       |
| 2. Connecting rod bolts | 9. Fuel tanks        |
| 3. Starter gear rings   | 10. Oil pumps        |
| 4. Oil fans             | 11. Tappets          |
| 5. Timing gears         | 12. Valve seats      |
| 6. Valve seat inserts   | 13. Engine mountings |
| 7. Valve guides         |                      |

Clutch, transmission, propeller shafts and differential

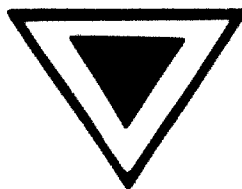
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|---|--------------------------|
| 1. Clutch levers  | 6. Crown wheels          |
| 2. Clutch housings                                      | 7. Differential gears    |
| 3. Flywheel housings                                    | 8. Differential housings |
| 4. Transmission cases                                   | 9. Rear axle shafts      |
| 5. All types of transmission gears (excluding bearings) | 10. Brake drums          |
|   | 11. Hubs                 |

Chassis frame, front axle and steering

1. Tie rods
2. Tie rod ends
3. King pins
4. Steering columns
5. Steering gears
6. Steering arms
7. Spring shackles (forged types)
8. Torsion bars

Body

1. Cabs
2. Bus bodies
3. Truck bodies
4. Car seats
5. Hub caps



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