ROAD TRANSPORT IN THE USSR

BY M.V. HAMBLY

1968

ROAD TRANSPORT IN THE USSR

INTRODUCTION

Climatic extremes together with vastness of territory, much of it of very low density of population, must necessarily cause transport to be a major preoccupation of those concerned with the economic development of Russia, whatever the prevailing political institutions. The development of these falls outside the scope of the present study; it is sufficient to observe that over the centuries they have in their enduring characteristic of arbitrary rule reflected the overriding concern of the central authority with the maintenance of the integrity of the state against external and internal threats, and a commercial tradition never took root - when still a legal possibility, that is.

Centralism has on the whole favoured the efficient physical operation of the railways which, as is the case the world over, entails the imposition of certain overall standards of equipment and procedure. In respect of commercial practices however other criteria of judgment must apply; it is sufficient at this point to note that from their inception Russian railways have been instruments of governmental economic policy.

The roads as arteries of communication were of course important long before the coming of the Soviet system of government. The first half of the nineteenth century witnessed the construction of certain main roads, mainly in European Russia, having foundations and surfaces greatly superior to those which had been usual up to that time. Road transport in the modern sense - that is, based on the use of the internal combustion engine - was for most practical purposes born in Russia during the First World War; and so the Soviet regime and motorised transport

"May be said to have grown up together.

The attitude of the Soviet planners to motor transport has at times seemed ambiguous, but by and large they have had few reservations about the need for its development. A keynote was sounded by Stalin himself in 1929:-

"We are advancing all out along the path of industrialisation to socialism, leaving behind the age-old Russian backwardness. We are becoming a country of metal, a country of avtomobili, a country of tractors. And when we have put the USSR in an avtomobil' and the muzhik upon a tractor... we shall see which countries may then be classed as backward and which as advanced". *

Provided avtomobil' is correctly rendered in English as "motor vehicle", the true purport of Stalin's words is conveyed: the practical and symbolic importance of transport based on the use of the internal combustion engine, both in production and for private use, in the new Soviet industrial society. Rendered as "motor car", it must inevitably conjure up in the mind of a Western reader notions of an advanced consumer society. Such ideas may have had a place somewhere in Stalin's mind, but can hardly have been to the forefront when he was uttering the remarks just quoted. As will be made abundantly clear, the mass production of passenger cars did not become a feature of actual Soviet planning until the inception of the plan for 1966-70.

In the context of the present study road transport will normally mean

---

* Pravda, 7th November, 1929

either the road sector in general - i.e. roads included - or else vehicular movements alone. Road passenger transport, as opposed to road haulage, will receive only occasional mention, but its partial exclusion is not intended as a judgment on its relative importance; for during the period since the Second World War bus travel has increased to such an extent that over much of European Russia at least it is now normal for the greater proportion of inter-city journeys. The reason for the concentration of attention on road haulage is, questions of space apart, the fact of its having become so important to the industrial economy of the USSR.

The state of the "track" is a necessary part of the study of any means of land transport, and so the course of development and present state of the Soviet road network will be duly analysed.

Again, the pattern of production of motor vehicles is an important indicator of coming changes in road transport, and the geographical distribution of manufacturing plants may be shown to be related to road development. The basic facts about the motor vehicle industry are therefore covered in an appendix.

Most of the writing on Soviet (rail) transport to date has consisted of an examination of operational performance based upon the considerable amount of statistical material available. Such an approach is hardly open to a writer on Soviet road transport, even if a relative neglect of institutional factors may be justified, for statistics are in short supply, and even then mainly concern the common-user sector (to be defined) which is largely a post-war growth, accounting in most union

republics for less than half the goods haulage. In the case of the railways restriction of study to the common user (MPS) sector - which accounts for just over half the total route length - is justified to the extent that it has a monopoly of the basic national network.

Forms and conventions used

(a) Footnotes

Three self-contained sequences respectively cover Parts 1, 2 and 3 of the study.

(b) Transliteration

A standard system is used for Russian words, book titles, etc. In the case of geographical names the same system is employed, but with certain concessions to simplicity and to general usage.

(c) Administrative and technical terms

Not all Russian terms can be readily rendered in English, for the following reasons:-

(i) Some terms simply have no satisfactory English equivalent (e.g. khozyaistvo and vedomstvennyi).

(ii) Others may be more or less literally translated, but to little purpose in the absence of an account of their institutional background (e.g., transport obshchego pol'zovaniya: "common-user transport").

(iii) Yet others have over the years shifted in meaning, or become outmoded, with technological and administrative changes; and it is the relative slowness of popular response to these changes which is largely responsible for differences between lay and specialist

usage of terms - not only in Russia. Descriptions of types of road and of their surfaces are particularly subject to these differences.

The various terms used will be explained in context, and some are included in a glossary. A list of abbreviations is supplied also.

PART I

HISTORY 1921-41

Section A	NEP
Section B	The First 5-year Plan
Section C	The Second 5-year Plan
Section D	The Third 5-year Plan

SECTION A

During the Civil War there had existed within the territories under the control of the Soviet authorities a variety of bodies concerned with transport. Some of them were of pre-war standing; others had come into being to meet the special needs of the period. Among the latter were the motor transport authority TsAS [1] under the supreme economic council Vesenkha, and the road constructional body Upshoss, a subsidiary of the state constructional committee of Vesenkha.

In 1921 the transport commissariat NKPS, which for most of the previous three years had functioned as a railway authority only, again acquired responsibility for all forms of transport, which it exercised through four administrations: for railways, for inland waterways, for sea routes, and for "local transport" - TsUMT [2]. In the same year TsUMT took over TsAS - except for its motor constructional functions, which were transferred to a separate body which became Avtotrest in 1925.

At first TsUMT was given jurisdiction over all types of road; but in 1922 the local authorities, which by then had their own budgets, regained formal responsibility for roads of local importance - under the general supervision of the section of the NKVD concerned with local economic activities. Construction and maintenance of roads of state rank continued under TsUMT, which thenceforward however operated through approximately fourteen "territorial administrations for local [3] transport" (OMES), covering areas corresponding in extent very broadly to present-day

major planning regions - one for example being Central Asia (TurkOMES) (4). In 1924 there existed under the OMES approximately one hundred "road constructional sections", about half of them for main and better built roads (shosseinye dorogi) and the remainder for inferior, unmetalled roads (gruntovye dorogi) (5).

TsUMT formally retained certain overall planning responsibilities for all types of road, as laid down by the NKPS; but such responsibilities it could have little chance of exercising effectively in the context of the times. In practice control over local roads seems to have worked out as follows:-

In central Russia, the Ukraine and Belorussia, where local organs of government were well established, the pattern was as already described: the local bodies worked under the general direction of the NKVD. In certain underdeveloped parts of Soviet territory however OMES acted as agencies for road construction on behalf of republican governments and local authorities; and such was the case in Central Asia where a general state of roadlessness prevailed.

Not until an inventory (kilometrazh) of state roads had been carried out between 1925 and 1928 was their total length, with types of surface, established with any degree of accuracy. An inventory of local roads was not carried out until 1933, and so statistics for them for the NEP and 1st 5-year Plan periods are to say the least incomplete(6). In general, local roads were in a very poor state outside the towns. The local population was supposed to provide the labour,

which however did not amount to much; and materials were in short supply, as were also engineers and craftsmen of every type. State roads were likewise affected by a poor material base and shortage of skilled labour, and at the end of the NEP period there was not much more machinery in existence than there had been before 1914 (7).

TsUMT drew up a nine-year plan (1923-32) of road works which according to A.S. Kudryavtsev amounted to little more than their restoration to pre-war conditions, with very little new construction envisaged, and few improvements to benefit motor traffic (8). There is little point in attempting to assess quantitatively the scale of road works carried out during the NEP period, for apart from the vagaries of categorisation by administrative authority and type of surface there is the impossibility of distinguishing between ordinary maintenance and rehabilitation on the one hand and major reconstruction or new works on the other.

In October 1928 there were approximately 50,000 km. of road under the jurisdiction of TsUMT, of which almost 20,000 km. were classed as hard surfaced. The total length of hard surfaced road under all authorities was 32,000 km., in addition to which there were 9,000 km. of improved unmetalled roads (9).

The motor vehicle industry of Russia was not entirely a Soviet creation. Between 1908 and 1915 a total of 450 vehicles had been produced in Riga, albeit mainly out of parts manufactured abroad - other plants, including two in St. Petersburg, had been assembly centres pure and simple.

Furthermore the plans of the 1920's were largely adapted from ones conceived during the first world war, but which in view of events never came to fruition (10).

In 1924 AMO, the first plant to open during the Soviet period, began to produce 1½-ton Fiat-type lorries, output of which reached 407 vehicles in 1927; while in 1925 production of 3-ton lorries commenced at Yaroslavl (11).

In the table below are given details of production over the few years before the First 5-year Plan:-

	ALL VEHICLES	LORRY	BUS/COACH	CAR/TAXI
1924	10	10	-	-
1925	116	116	-	-
1926	366	366	-	-
1927	478	475	-	3
1928	841	740	51	50

Source: Promyshlennost' SSSR (M. 1964), p.278

The considerable increase in output in 1928 over that of 1927 was mainly the result of the expansion and resquipment of the AMO plant during 1927-28.

To attempt to assess the numbers of vehicles in existence during the early Soviet period is somewhat hazardous. However out of scraps of information from a number of different sources the following picture emerges (12).

There were just under 9000 vehicles in 1913, but the number rose rapidly during the European war to roughly 40,000 at the beginning of 1917. During the Civil War imports ceased, and vehicles were repeatedly captured and recaptured. Exports during 1921-25 numbered only 750 per annum on average (13), and so apart from equipment and spare parts obtained from abroad the stock of vehicles must have largely "lived on itself". At any rate it was in a very poor state by the time home manufacture began and imports increased in the mid-1920s.

The stock was approximately 18,000 over the period 1925-28 (14). Imports over the three financial years 1925-28 were 5200 (15), and 1700 vehicles were constructed during the calendar years 1926-28. The average number of vehicles added to stock per annum was therefore approximately 2300, or about 13% - not very different from the 15-17% stated to have been necessary for maintenance of numbers (16). Usable vehicles were however much fewer than stocks, to judge by the report that in the one year 1925 35% of vehicles were "under repair" (17).

From 1921 TsUMT was the regulating authority for road transport. It was required to maintain contact with importing agencies, keep statistics, and lay down operating norms. The principal road transport operator of the NEP period was Avtopromtorg, set up in 1923, which ran buses and lorries over both inter-urban and short-distance routes; and also, as its name implies, acted as a marketing agency for vehicles, together with their spare parts and other supplies (18). In 1923-24 300 vehicles were engaged on 52 scheduled routes of aggregate length

3325 km., whilst in 1928 the corresponding figures were 1300 vehicles and 265 routes of length 14,600 km. (19). The longer of the routes served areas not accessible by rail; the shorter linked towns with stations.

The data given in the following table indicates the very small scale of motor transport at the end of the NEP period in relation to other carriers.

	TONS CARRIED (million)			TON-KMS.(milliard)		
	TOTAL (all media)	ROAD (total)	ROAD (motor)	RAIL	ROAD (total)	ROAD (motor)
1928	765			93		0.2
1929		580	18		7	0.3

Sources: Narodnoe khozyaistvo SSSR v 1965 g., p.457
Avtomobil'nyi transport, 10/67, p.2
Kudryavtsev, op. cit., pp.127-8

Footnotes to Section A

(1) Lesser known abbreviations and portmanteau words are given in full in the appended list.

(2) In respect of transport of the early Soviet period there was little incongruity in using the word "local" to mean both "under the control of local authorities" and "road as opposed to other transport media". To save confusion however the word will be used only in the former sense.

(3) See footnote (2) above.

(4) Razvitie narodnogo khozyaistva Kirgizii (Frunze, 1966), p.507. A long account is given of transport development in the territory of the present republic (pp.501-66).

(5) A.S.Kudryavtsev, Ocherkii istorii dorozhnogo stroitel'stva v SSSR, (Posleoktyabrskii period), (M. 1957), p.61

(6) Notwithstanding this circumstance some contemporary statistics for local roads are given to the nearest kilometre.

(7) Kudryavtsev, op. cit., p.119

(8) Ibid., p.57

(9) Ibid., p.112, Table 20 and Summary of Fulfilment of First Five-year Plan, (M.1933), pp.175-6.

(10) BSE, 1st edition, Vol.1, pp.356-60

(11) Kudryavtsev, op. cit., p.58

(12) Main sources: BSE, MSE (all editions)
Soviet Union Yearbooks, 1926-29
Kudryavtsev, op. cit., p.14 (and footnote 17 thereof).

(13) Vneshnyaya torgovlya SSSR za 1918-1940 gg. (M.1960), pp.243, 275

(14) Sov. Union Ybk, 1926, p.198; 1929, p.207

(15) Vnesh. torg., op. cit., p.275

(16) Sov. Union Ybk., 1926, p.198

(17) Ibid.

(18) Avto. transport, 8/67, pp.3 - 4

(19) Sov. Union Ybk., 1929, p.208 (contains misprint: 1926, instead of 1928)

Ekonomicheskaya geografiya SSSR (Sotsekgiz., 1934), p.315

Section B

At the end of 1928 there commenced a reorganisation of the structure of Soviet road administration and road transport which stemmed from the report of a government commission.(20)

The changes as they affected the roads themselves will be considered in detail. First, however, some general observations. Roadlessness is relative; economically it means an evident disproportion between the state of development of the roads and that of the country they are intended to serve. In the late 1920s it was recognised that such a disproportion existed, and that under a regime of planning there should be some considered approach to it. Very broadly there were two possible policies: to concentrate resources on certain types of road for particular purposes, or to attempt to raise the general standard. There was a bias towards the latter policy during the periods of the 1st and 2nd Five-year Plans reflected in the organisational structure introduced in 1928, which will now be described.

Under a decree of November, 1928 the OMMS were abolished and TsUMT itself was reorganised to become Tsudortrans -- still within the NKPS system.(21) At all levels of government dortransy were set up, those at republican level being named glavdortransy. These (glav)dortransy acted as agencies for the construction and maintenance of roads, for which they received grants out of the various budgets.(22) Compulsory labour service was required of

local populations (as indeed it always had been), but as will be seen it was some two years before it began to be used on any significant scale. For all these diffuse bodies Tsudortrans was to be the co-ordinating authority, formally responsible for the state of all roads, except those under productive organisations.(23) Thus the clear-cut distinction between state and local roads which had existed, at least formally, under the TsUMT/OMS regime became blurred.

Various changes were inaugurated in 1930. In regard to the roads, as in other branches of the Soviet economy, the original objectives of the 5-year plan deemed to have come into operation in October, 1928 were considered too modest. The road plan as it had been drawn up by TsUMT was replaced by one of Tsudortrans under which 300,000 km. of main and subsidiary road were required to be constructed. In 1932 the roads were reclassified into six groups for administrative purposes, viz: all-union, republican, oblast and equivalent, raion, rural and vedomstvennye.(24) Roads in the first three of these categories (those of state rank) were to be kept in repair by road maintenance sections (dorozhno-ekspluatatsionnye uchastki), with norms of length according to terrain, etc., whilst the fourth and fifth classes were to be the responsibility of local road detachments (raionnye dorozhnye otdely). The distinction between rural roads and the vedomstvennye (those under productive organisations) was a

formal and budgetary one; it is doubtful whether in practical terms -- in particular in respect of the obligation of the peasants to provide labour service -- the difference amounted to much, especially after collectivisation. In 1931 Tsudortrans was detached from the NKPS and became a free-standing body pri SNK SSSR.(25)

As a measure of the road works accomplished during the period of the First 5-year Plan there exist two main records: that of Tsudortrans, which appears in the statistical compendium for the USSR for 1936,(26) and that contained in the report on the results of the Plan, as published by Gosplan.(27) Both are set out below, the Gosplan figures being given in brackets.

(thousand km.)	HARD	UNMETALLED	TOTAL
Total construction	13.5 (11.8)	88.6 (81.2)	102.1 (93.0)
System of Tsudortrans (classes I-V)	12.7 (11.0)	66.5 (59.1)	79.2 (70.1)
Vedomstvennye (class VI)	0.8	22.1	22.9

According to the current statistical compendium for transport the net increase in length of hard surfaced roads in the USSR over the four calendar years 1929-32 was 12,500 km.(28) It is however idle to attach too much importance to these figures if the following observations of Kudryavtsev may be taken as being representative of

the situation as it was:-

"The definite achievements of the First 5-year Plan in (road) construction were offset by deficiencies in maintenance. A significant proportion of the network of roads of state rank was not systematically maintained, and where road maintenance sections existed their lengths were well above the norm. Local roads were still worse off, being subject to hardly any repair and maintenance at all. The result was that even roads built during the period of the Plan in the absence of proper care and attention quickly degenerated into a condition unsuitable for traffic. In fact under the Plan the standard of repair and maintenance of roads was no better than it had been during the period of reconstruction which preceded it".(29)

Deficiencies in material supply, both in building material and in road machinery, was the root cause of this situation. Very small local quarries were the usual source of stone, etc., whilst mechanisation was only in its early stages. It was not until 1930 that an organisation for the production of road machinery (Dormashtrest) was set up within the commissariat of heavy industry with four factories under its control. Throughout the period of the Plan, machinery such as was in use, both home produced and imported, was extremely variegated. The number of tractors employed in road works increased tenfold to just under 900 (lorries 15-fold to about 1400) but nevertheless in 1932 the ratio (peasant work days: horse days; tractor days) was 732:28:1.(30) About 80% of the road construction carried out during

the period of the Plan was done in 1931 and 1932.(31)

The greatest amount of experimentation with surfaces during this period was done in respect of unmetalled roads of the improved type. There was some experimentation with better-class surfaces, but with little tangible result.(32)

Resources were used to better advantage in some areas than others. When there existed important economic or military reasons for road construction -- for example, in the Caucasus, Siberia and Central Asia, areas in which railways either did not exist, were impossible to construct or at any rate not considered justifiable at the time -- then work was done which on the whole was above the general standard, as is indicated by the fact that of the roads constructed during the period of the Plan 12.8% were hard-surfaced in the USSR as a whole, but 30% in Tadzhikistan and 50% in Uzbekistan.(33)

Work was carried out on certain trade routes to China and Mongolia to make them suitable for motor traffic, and in Central Asia where the foundations of a road system were laid. The road from the Amur to Yakutia was completed.(34)

It is however very difficult to chronicle the construction and subsequent improvement of particular roads as a whole or in part without a careful perusal of a large number of reports, and it is only rarely that work when "completed" can with assurance be attributed to a particular planning period; for construction, improvement and maintenance cannot easily be differentiated one from another, partic-

ularly in a political climate where the most has, or had, always to be made of every achievement.

The mass production of motor vehicles[35] commenced under the First 5-year Plan, and was based on two major projects:-

(a) The Gorky plant (GAZ)

Construction commenced in the spring of 1930 and was completed in less than 18 months. Production commenced early in 1932. Its planned capacity appears to have been between 100,000 and 140,000 vehicles per annum, depending on hours worked and the shift system employed, but only a proportion of it was in service by the end of 1932.[36] At first the greater part of output consisted of 1½-ton lorries and 5-seater open cars, though buses and special commercial and municipal vehicles were produced also, for it was intended as a general plant for all types of vehicle.

(b) The Moscow (Stalin) plant (ZIS)

This was a reconstruction (1929-31) of AMO, radical enough to merit its being called a new works. It went into service in October, 1931 with a capacity of 15,000 vehicles per annum. It took over production of the AMO 3-ton lorry, which was modified after about a year to become to ZIS 5 (also 3-ton), produced in great numbers. Although the AMO plant had produced a variety of vehicles, including cars, ZIS turned out no cars until 1936. The maximum capacity of the plant (on continuous production) was stated to be 25,000 vehicles per annum.

The Yaroslavl plant continued to specialise in the heavier type of lorry. In 1929 it commenced production of a 5-ton vehicle, and also buses. The capacity of the works appears to have been about 2000 in 1932, with provision for 4000 later.

Aggregate output during the period of the First 5-year Plan is set out in the table below along with figures for imports. The effect of the reconstruction of AMO will be apparent, especially in bringing the manufacture of cars to an end for a short time.

	ALL VEHICLES		LORRY		BUS/COACH		CAR/TAXI	
	USSR	Foreign	USSR	Foreign	USSR	Foreign	USSR	Foreign
1929	1712	5159	1471	2352	85	129	156	2669
1930	4226	6671	4019	4737	47	15	160	1917
1931	4005	2892	3915	2551	90	1	-	328
1932	23879	977	23748	364	97	-	34	602
1933	49710	448	39101	80	350	2	10279	349

Sources: Promyshlennost' SSSR (M. 1964), p.278

Vneshnyaya torgovlya SSSR za 1918-40 gg., op.cit., pp.307, 340-341.

Stocks of vehicles over the period of the First 5-year Plan are tabulated overleaf. 70% of vehicles in existence at the end of 1932 were reported to have been of Soviet manufacture.(37)

(thousand units)	ALL VEHICLES	LORRY	CAR/TAXI
1/1/28	18.0		
1/10/29	21.4	8.9	8.8
1/1/31	28.3	15.3	9.1
1/1/32	53.5	36.0	12.6
1/1/33	75.4	54.6	13.8

Sources: Soviet Union Yearbook, 1929, p.207

Narodnoe khozyaistvo SSSR (M. 1932), p.282

Vtoroi pyatiletnii plan, Chast' I (M. 1934), p.482

At the beginning of 1930 a new common-user transport organisation was set up in company form (Soyuztrans) with branches in republics, oblasts, etc.(38) Towards the end of 1932 it had under its control about 6000 motor vehicles, over 22,000 horses, and transported 38 million tons of goods (motor transport 18 m.).(39) Other general purpose transport organisations existed, which were under the control of local bodies, but they used horses in the main.

The increase in the scale of transport -- and motor transport in particular -- during the period of the First 5-year Plan is indicated in the following table:-

	TONS (million)		TON-KMS. (milliard)		
	ROAD (total)	ROAD (motor)	RAIL	ROAD (total)	ROAD (motor)
1928			93		
1929	580	18		7	0.3
1932			169		1.1
1933	1470	235		11	1.8

Sources: Nar. khoz. SSSR v 1965 g., p.457

Avto. transport 10/67, p.2.

Kudryevtsev, op.cit., pp.127-8.

Transport i svyaz' SSSR (M, 1967), p.25.

The small proportion of goods transport by motor vehicle performed by Soyuztrans is evident.

Footnotes to Section B.

(20) Kudryavtsev, op.cit., p.128, footnotes (thereof) 4 and 5.

(21) Tsudortrans took over from TsUPT the general planning of road transport.

(22) Which budget assisted which class of road depended on circumstance; republican and local funds were to be formed.

(23) For certain overall planning purposes the responsibility extended to the vedomstvennye roads, which however were for statistical purposes not counted as part of the Tsudortrans system (at least during the period of the First 5-year Plan).

(24) Note that:

(a) A classification into five groups had been made in 1924 (Kudryavtsev, op.cit., p.54).

(b) "Roads" meant only recognised ones, which accounted for only about half the 3 million miles (approx.) which existed (see Planovoe khozyaistvo № 4/38, pp.39-40)

(c) Attempts were made from time to time to reconcile administrative class with engineering standards (see Part 3, Section A).

(25) In the same year water transport was removed from the jurisdiction of the NKPS (see Istoriya Sovetskoi konstitutsii (M. 1957), p.308), which was thenceforward responsible for rail transport only.

(26) Sotsialisticheskoe stroitel'stvo SSSR (M. 1936), p.500.

(27) Summary of Fulfilment of First Five-year Plan, loc. cit., (see footnote 9).
See also Ekon. geografiya SSSR, op.cit., p.314.

(28) Trans i svyaz' SSSR, op.cit., p.272.

(29) Kudryavtsev, op.cit., p.143.

(30) Ibid, pp.132, 149.

(31) See footnote 26, loc. cit.

(32) Kudryavtsev, op.cit., pp.140-1.

(33) Ekon. geografiya SSSR, op.cit., p.314.

(34) Not mentioned in Second 5-year Plan.

(35) BSE, 2nd edition, Vol. 1, pp.258 ff.

(36) E. Lokshin, Promyshlennost' SSSR v pervoi pyatiletke (M. 1934), pp.68-69.
See also Vtoroi pyatiletnii plan razvitiya narodnogo khozyaistva SSSR, Tom 1 (M. 1934), p.269.

(37) Summary of Fulfilment ..... loc. cit., (see footnote 9).

(38) Avto.transport 10/67, p.6.

(39) Kudryavtsev, op.cit., p.128.

SECTION C

The adoption of the Second 5-year Plan was not marked by any change in the administrative structure for roads and road haulage, and Tsudortrans survived until 1936.

The Plan called for an eightfold increase in the country's stock of motor vehicles, and a sixteenfold increase in goods traffic measured in ton-kilometres (40). To complement this growth something required to be done about the state of the roads themselves; as already mentioned the planners had two choices - either to attempt an all-round improvement or else to concentrate resources on particular projects. It will be seen that the former policy was favoured - at least at first.

Before however the policy is considered in all its aspects it is useful to consider the state of the major transport agency - the railways - at the time it was being drawn up. The planners had been attempting to run the railways on the cheap, and the well-known crisis of 1931-34 was the result, to which the following table bears witness.

	Millions of tons carried	Ratio of unforwarded to originated tonnage	Railways' % share of investment in whole economy
1928	156.2	(March) 0.22	17.9
1929	187.6	(Sept.) 0.62	14.8
1930	238.7		11.4
1931	258.3		12.2
1932	267.9	(Dec.) 0.91	12.8
1933	268.1		10.7 *
1934	317.1	(Dec.) 0.57	11.5
1935	388.5		14.6
1936	483.2		14.0

* Represents the only absolute decrease for any of years 1928-36

Source: Holland Hunter, Soviet Transportation Policy (Harvard, 1957) - tables on pp. 59, 331, 393

Hunter sees the decrease in investment in the railways in 1933 as a central factor in the crisis. This decrease may not unjustifiably be associated with a resolution of the 17th Party Conference (Jan.-Feb.1932) concerning the Second 5-year Plan; that "road construction and the introduction of motor transport should proceed at a greater rate then the development of other forms of transport" (41).

The measures adopted to overcome the railway crisis were: selective investment in the most important main lines to permit of their being used very intensively for through trains carrying certain categories of essential goods - the celebrated "marshroutisation" - but no big programme of new construction. Such measures implied an enhanced importance for road transport in its primary role of short-distance carrier.

Against this background must be seen the road programme under the Plan as first drawn up. The key statement was:-

"The increase in numbers of motor vehicles entails an increase in road construction. Under the Plan there are to be built and reconstructed 210,000 km. of road, including 30,000 km. with stone covering (in contrast to the 12,000 km. of hard-surfaced roads under the 1st Plan).

"Thus the great mass of the roads built during the period of the Plan will be of the inexpensive, unmetalled type, which will enable an extensive network to be constructed, and roadlessness as a general condition overcome in a short time at minimum cost, gradual conversion of the unmetalled roads to higher standards being undertaken to match increases in traffic" (42).

Under the Plan a total of 4 milliard roubles was assigned to Tsudortrans, to be distributed as follows:-

Roads (construction and reconstruction)	1.96
Roads (major repairs)	0.43
Mechanisation of road work	0.30
Surveying and other auxiliary work	0.27
Total for roads	2.96
Road haulage (Soyuztrans and local haulage trusts)	1.04
	4.00
Value imputed to labour to be contributed by population towards above programme	1.07

Source: Osnovnye ob'ekty kapital'nogo stroitel'stva vo vtorom pyatiletii (Moscow, 1934) pp.151-3.

The allocation to the NKPS under the Plan was 18.7 milliard roubles. Since however it is not possible to attach a value to road construction to be done entirely out of local resources (material and human), and much road and rail transport was performed by productive organisations, no reliable rail-road investment ratio can be given.

The 210,000 km. of road covered by the Plan were divided by surface and class as follows:-

	Unmetalled	Ordinary gravel	Gravel shosse &c	Total
Classes I-III (State)	8.8	15.0	24.2	48
Classes IV-VI (Local)	148.8	7.4	5.8	162

Figures are in thousands of km.

Source: Osnovnye ob"ekty .... op. cit., p.154

The state roads to be constructed were divided into three functional groups: main arteries, trakty [43], and other, shorter, roads - probably of oblast and equivalent standing. Their lengths and the amounts allocated to them were:-

	Unmetalled	Ordinary gravel	Gravel shosse &c.	Total	Budgetary allocation (milliard r.)
Main arteries	-	0.5	9.0	9.5	0.56
Trakty	0.3	2.3	0.7	3.3	0.18
Feeder roads, etc.	8.5	12.2	14.5	35.2	-
	8.8	15.0	24.2	48.0	0.74

Source: Osnovnye ob"ekty ..., pp.154-5
(where main arteries and trakty are itemised)

To what extent the five-year road plan was implemented may be judged by reference to the annual plans for 1935, 1936 and 1937 [44] on which the following commentary is based.

The first casualty was the grandiose plan for main arteries. Whereas the original intention had been that 560 milliard roubles should be spent on them over the five years, the 1935 plan provided for an expenditure of only 13 milliard. The trakty on the other hand were favoured: 33 milliard for 1935, measured against approximately 90 milliard planned for the five-year period [45]. Furthermore the 1935 plan required 29 milliard to be spent on improvements to the approach roads to principal cities - not referred to in the main plan. The same (1935) plan indicated a shift in the priorities for road construction, which now were (in order):-

(1) Trakty, important for industry and trade, and the only means of surface transport, in parts of Siberia and Central Asia

(2) Sections of principal main roads (Moscow-Gorky, Kiev-Odessa, Georgian Military Road, Black Sea Road, etc.).

(3) Approach roads to main industrial cities.

The prime importance of trakty was reasserted in the 1936 plan, which in addition envisaged a big increase in the construction of first class roads, with pride of place given to the Moscow-Minsk and Moscow-Kiev motorways, work on which had just commenced.

Very evident from a reading of the plans for 1935, 1936 and 1937 is the increasing pressure on local populations to provide labour service in road construction, the brunt of it being borne by the peasants of collective farms. Furthermore enterprises and state farms were required to construct out of their own resources those roads primarily intended to serve their needs (46).

An administrative change occurred in 1936 when Tsudortrans was abolished, its responsibilities for roads being taken over by Gushosdor of the NKVD (47).

In the official report on the results of the Second 5-year Plan it is stated that whereas 210,000 km. of road were to have been constructed and reconstructed, including 30,000 km. with stone surface, in fact the achievement was 348,000 km., of which 46,000 km. were of the stone surfaced and gravel type (48).

Two comments need to be made. First, to compare stone surfaced roads on their own with stone surfaced and gravel constitutes an attempt

to disguise an underfulfilment (in respect of the 52,000 km. of stone surfaced and gravel roads called for in the Plan) which lacks even the merit of subtlety (49). Secondly, it is extremely likely that the 348,000 km. takes into account a large amount of work undertaken out of local resources, such as was for the most part excluded from the reckoning in the Plan, and indeed was very largely carried out without formal specification (50). One may with justification suspect another underfulfilment, but in view of the considerable difficulty in drawing a line between new construction on the one hand and major repairs on the other it is not profitable to pursue the matter further (51).

For the same reason one cannot expect to effect a reconciliation between reports of work completed and aggregate lengths of road at given dates. What is more, there existed no reliable record of local roads (i.e. Classes IV-VI) at the beginning of the Plan period, for which reason an inventory of them was taken in 1933, revealing an aggregate length of 1,169,000 km. of which 1.5% were surfaced, 62.5% usable over the whole year and 61.4% suitable for motor vehicles (52). The current statistical compendium for transport shows the net increase in length of hard surfaced roads over the 5-year period 1933-37 to have been 39,400 km. (53).

Under the 5-year Plan mechanisation of road work was to have increased considerably; the existing works of Dormashtrest were to have been reconstructed, and new high-capacity factories for road machinery built. According to Kudryavtsev these plans were not fulfilled, and

indeed at the end of the Plan period Dormashtrest had a productive base inferior to that of 1930, when it was set up; and furthermore types of implements were many and various, and mostly old (54). Lengths of road with first-class surfacing (cement, concrete, asphalt) increased in total from 500 to 3200 km. (55), but they remained somewhat experimental. Bridges built during the Plan period were mostly of wood - except in regions deficient in timber; and fords were made to suffice for crossings wherever possible.

Pressure upon local populations to participate in road work assumed ever-increasing proportions, and in 1936 a government decree on the subject was issued (56). One of the principal aims of this decree was apparently of inter-kolkhoz brigades, so that local roads might be regularly repaired. Maintenance of roads of state rank was supposed to be ensured through the system of dorozhno-ekspluatatsionnye uchastki already referred to. Their lengths tended to get unduly great as a result, it was said, of shortage of craftsmen; though a more basic reason was probably the absence of effective organisation or incentives, for it was reported in 1938 that over 50% of those completing courses at road institutes and tekhnikums between 1931 and 1937 did not enter the service of Tsudortrans/Gushosdor (57).

The weaknesses of the Tsudotrans system (and that of Gushosdor between 1936 and 1938) led to radical changes which will be discussed in the next section. It remains first however to examine the production and use of motor vehicles during the Plan period.

Productive capacity of the motor industry in vehicles per annum

was to rise as follows:-

GAZ - maximum of 300,000 (all types)

ZIS - maximum of 80,000 (70,000 lorry, 10,000 car/taxi)

Yaroslavl - 25,000 (lorries of 5-ton and over)

In addition construction was to commence of two new plants, each capable of producing up to 100,000 3-ton lorries; and one to produce 25,000 lorries of 5-ton and over. (58)

No reliable evidence is available of what expansion was achieved. The three new plants did not open - not, at least, to perform the functions planned for them. According to one writer they were to have been situated in Ufa, Stalingrad and Samara (Kuibyshev) (59).

Actual production of motor vehicles under the Plan was to have risen from just under 24,000 per annum in 1932 to 200,000 in 1937 (140,000 heavy and 60,000 light) (60). Production in 1937 was in fact almost exactly 200,000, but the proportions were different (lorries and other heavy vehicles - 182,000; cars/taxis - 18,000) (61).

The shift in balance of numbers as between lorries and light vehicles is indicated clearly in the following table of stocks, actual and planned:-

(Table on following page)

(thousands)	ALL VEHICLES		LORRIES		CAR/TAXIS	
	Actual	Plan	Actual	Plan	Actual	Plan
1/1/33	75.4		54.6		33.8	
1/1/34	118		85.8		22.6	
1/1/35	181	180	133	131	37.2	37.5
1/1/36	265	275	201	199	51.4	57.0
1/1/37	386 *	398	316 *	272	55.0 *	91.0
1/1/38	570	580	- -	373	- -	147

Sources: Vtoroi pyatiletnii plan nar. khoz. SSSR 1933-1937 gg. - prilozhenie k tablitsam pervogo toma (M. 1934) p.32
Nar. khoz. plan SSSR na 1935 g., pp.632-3
Nar. khoz. plan SSSR na 1936 g., p.454
Nar. khoz. plan SSSR na 1937 g., pp.134-5
(* Provisional figures)
Kudryavtsev, op. cit., p.199

The above figures should be treated with considerable reserve for:

(a) throughout the Soviet period a high proportion of motor vehicles have been immobilised due to shortage of spare parts, and "cannibalisation" has probably been rife.

(b) it is unlikely that additions to, and subtractions from, stock could be kept track of anyway - probably figures were worked out on basis of production.

It is difficult to find out anything useful or reliable about the performance of motor transport during the period 1933-37. Goods traffic

was planned to increase from 1.07 milliard ton-km. in 1932 to 16 milliard in 1937 (62). Figures for the actual achievement in 1937 vary between 5.9 and 8.7 milliard (63). When one considers however the great variety of authorities and organisations which were responsible for road haulage, and therefore the small chance of achieving any uniformity in record taking - that is, when records were taken at all - the variations become quite understandable.

On the subject of common-user (obshchego pol'zovaniya) road transport the Plan document comments:-

"Of special significance during the second pyatiletie will be the role of common-user transport - that of Soyuztrans, of republican and oblast motor transport trusts, and also communal transport.

"The main function of common-user motor transport is to lessen congestion on the railways by doing local collection and delivery work, and haulage over short distances. By the end of the pyatiletie Soyuztrans will have up to 15,000 motor vehicles, including more than 12,000 lorries, with aggregate tonnage of 55,000, and 1500 buses, with total seating for 35,000.

"By the end of the pyatiletie the numbers of vehicles under the local haulage trusts should reach 15,000, with aggregate tonnage 45,000." (64)

The figure of 15,000 at the end of 1937 seems reasonable in comparison with the 6000 at the end of 1932 (65). Other available estimates of the vehicular stock of Soyuztrans cannot however be reconciled with these numbers. (66).

In 1937 the proportion of aggregate distance covered by all lorries for which there was a load was just over 50%, at which figure it has remained very steady over the years - indicating, it seems, a normal failure to carry return loads.

The coefficient of usage of the combined lorry fleet in 1937 was likewise just over 50%, which is better than that for any year up to the mid-1950's when a general improvement set in (67).

All in all however no statistics are available on which any useful analysis of pre-war road transport can be based.

Footnotes for Section C

(40) Vtoroi 5-letnii plan, loc. cit. (see footnote 36)

(41) KPSS v rezolyutsiyakh i resheniyakh, Chast' III (M., 1954), p.152

(42) Vtoroi 5-letnii plan, op. cit., p.271
The resolution of the 17th Party Congress on the subject of road construction excludes from the 210,000 km. "significant construction undertaken out of local resources." (KPSS v rez, op. cit., p.211)
According to Kudryavtsev (op. cit., p.158, footnote 44 thereof) only a small proportion of the 210,000 km. were to be constructed out of local resources, and total local construction was to amount to about 180,000 km.

(43) Trakty were roads in underdeveloped areas without railways. Some followed ancient trade routes linking Russia with neighbouring countries.

(44) Narodno-khozyaistvennyi plan SSSR na 1935 g., pp. 288-291; 882-5
Nar. khoz plan SSSR na 1936g., p.258
Nar. khoz. plan SSSR na 1937 g., pp.30-31

(45) This is what remains of the 181 m. roubles scheduled for trakty under the 2nd 5-year Plan after deletion of the item for the Komsomolsk trakt. A rail link to Komsomolsk was opened in 1940.

(46) The distinction between the first five classes of road (referred to as "the system of Tsudortrans" in records concerning the period of the First 5-year Plan) and the sixth class (the vedomstvennye) seems to have been abandoned after 1932.

(47) Soyuztrans presumably remained a separate organization until its units were assembled under republican ministries of motor transport in 1939. A much more radical change in road administration occurred in 1938 (see Section D).

(48) Itogi vypolneniya vtorogo pyatiletnego plana razvitii narodnogo khozyaistva SSSR (M, 1939), p. 36

(49) The comment is purely statistical. It is extremely doubtful whether the distinction between "stone surfaced" and "gravel" roads was realistic.

(50) See footnote 42

(51) Of course is one takes into account the fact that the total length of roads and tracks (classified and unclassified) was about 3 million km., then practically all work becomes "reconstruction". (see footnote 24).

(52) Sotsialisticheskoe stroitel'stvo SSSR (M. 1935), p.451.

(53) Trans.i svyaz' SSSR, op. cit., p.272

(54) Kudryavtsev, op. cit., p.167

(55) See footnote 53

(56) Kudryavtsev, op. cit., p.165

(57) Plan. khoz., 4/38, p.53

(58) Vtoroi 5-letnii plan, loc. cit. (see footnote 36)

(59) Ekon. geog. SSSR, op. cit., p.315

(60) Vtoroi 5-letnii plan, op. cit., p.457

(61) For complete production figures see Promyshlennost' SSSR, op. cit., p.278, from which it is apparent that production of the open 5-seater car at GAZ ceased before replacement models went into production - a circumstance which was to a large extent responsible for the reduction in output of cars and taxis for the 5-year period.

(62) Vtoroi 5-letnii plan, op. cit., p.476

(63) Itogi vypolneniya, loc. cit., (see footnote 48). See also Trans.i svyaz' SSSR, op. cit., p.25, and objectives of 3rd 5-year Plan.

(64) Vtoroi 5-letnii plan, op. cit., p.270

(65) See footnote 59

(66) e.g. (a) from Sots. stroi-vo (1936), p.497: average no. of vehicles 1722 in 1934, and 1830 in 1935.
(b) from Nar. khoz. plan na 1935 g., p.289: to rise to 3100 vehicles by the end of the year (inc. 2580 lorries of aggregate capacity 8900 tons).

(67) Trans. i svyaz' SSSR, op. cit., p.227

Section D

The period of the Third 5-year Plan opened with recriminations about the inadequacies in the condition and rate of development of the road system. Certainly it will be evident from the account of road works carried out during 1933-37 that the achievements were minimal in terms of quality, whatever view one takes of the supposed overfulfilment of the quantitative plan.

In an article which appeared early in 1938[68] it is asserted that: "only at the end of the period of the Second 5-year Plan did we begin to transform our road system in accordance with the needs of rapidly developing transport. - - - - - - Even a significant proportion of the roads of state rank are in such bad condition that to effect their complete rehabilitation would necessitate the expenditure of a considerable amount of resources".[69]

The "wreckers of Tsudortrans" were accused of conspiring with the main objects of contemporary Soviet obloquy, home and foreign, to undermine the work of road construction in frontier areas, especially in Belorussia, with the object of hindering army movements in the event of war.[70] They were further castigated for having concentrated on the construction of low-grade unmetalled roads.

In the context of the times, fairness to superseded policies, institutions and persons was hardly to be expected. Nevertheless a brief reappraisal is called for.

At the time the Second 5-year Plan was conceived, the external threat was not immediate and obvious, and so transport policy was formulated in relation to the general needs of rapid industrialisation: the broad policy for roads was deemed to be the extensive construction of inexpensive, unmetalled ones, the standards of which needed only to be raised when increasing traffic made improvement necessary. For the policy itself Tsudortrans could not reasonably be held to account. Regarding its implementation, the accusation that "Tsudortrans in concentrating attention on unmetalled roads - - - completely ignored the principle of progressive improvement which alone could justify the great expenditure on their widespread construction"(71) had some plausibility, but factors which must be taken into account are: restrictions on budgetary allocations to Tsudortrans during the Second 5-year Plan period (at least at its beginning), deficiencies in material supply and in mechanisation, and the rather loose structure of Tsudortrans itself. One other accusation made against Tsudortrans deserves mention: that it "propagated the notion that hard-surfaced roads -- in particular the better quality ones -- could not be built under the system of labour participation by local populations".(72) To this it can be said that higher authority did not begin to lend its full support to the organisation of such labour participation until 1936, when the government decree on the subject was issued.(73) Indeed the system did not attain its full state of development until 1940 when some notable feats of

narodnaya stroika took place (to be discussed later in this section).

The abolition of Tsudortrans in 1936 and the commencement of the construction of high class roads from Moscow to Minsk and Kiev were the main indicators of changes in road policy. The new authority, Gushosdor NKVD, like its predecessor had however responsibility for all classes of road, and so was not well suited to paying special attention to any of them. It was therefore reconstituted in March 1938 so that it concerned itself thenceforward exclusively with roads of all-union rank. In each union republic there was set up a glavdorupr responsible along with subordinate bodies at all levels of government for roads not in the all-union class. The pattern of control is indicated in a schematic diagram provided at the end of this section.

According to contemporary press reports(74) only 66,000 km. of road passed from the control of Gushosdor to direct management by the glavdorupry and their subordinate dorupry and otdely, along with entitlements to budgetary funds and material supplies.(75) In respect of all other roads the responsibility of the glavdorupry, etc. was limited to ensuring that local authorities got the peasants properly organised for the work of construction and maintenance.

After this preamble on policy it is now appropriate to set out the principal objectives of the Third 5-year Plan in regard to roads and road transport.

The roads: "Build and reconstruct 210,000 km., significantly increasing in comparison with the Second 5-year Plan

the proportion of first-class tar, asphalt-concrete and concrete roads, at the same time paying special attention to the preservation in proper order of existing roads through timely general maintenance as well as rehabilitation.(76)

Road freight: "Increase from 8 to 36-37 milliard ton-km. (4.6 times) - - - - - Operation to be organised on a regular basis over main arteries, trakty and heavily used approach roads to cities, etc."(77)

Motor vehicles: Output to increase from 200,000 (1937) to 400,000 (1942) - -.(78) Numbers to increase from 570,000 to 2,000,000 - - - - -.(79)

(No allowance appears to have been made for wastage)

As in the case of the Second 5-year Plan the total amount of road construction expected to be undertaken exceeded that given in the form of a definite figure. One estimate given for total construction during 1938-42 was 400-450 thousand km., of which 300-350 was for local roads.(80)

The two main aims of road policy during the period of the Third 5-year Plan were stated to be: first, the provision of an adequate strategic network; and secondly, the matching of the requirements of increasing numbers of road vehicles.(81)

The two requirements could only be reconciled completely in territories of economic growth, not far from the USSR frontier, where the

terrain rendered railway construction very difficult. Tadzhikistan and Kirghizia were -- and still are -- good examples. Ignoring such special cases however, the only factor which before the war could get the planners really concerned with roads was sheer military necessity. The following was written in an atmosphere of such concern:-

"Of especial economic and military importance is the construction of main motor roads - - - The great advantages of such roads are flexibility, relative indestructibility, and ease of passage for tanks and motorised units ---- of which there is now no dispute. On a rough estimate it is necessary to build not less than 60,000 km. of main route."(82)

It was not till the period of the 7-year Plan of 1959-65 that a significant improvement in the roads was to take place primarily to meet the needs of the domestic economy expressed through the wisespread use of road vehicles over all distances. In the pre-war period road transport was not, except in special cases, a long-distance carrier at all.(83)

One of the aims of the Third 5-year Plan was the mechanisation of the basic processes of road construction, but such was not achieved until after the war. Again, although much more was done under the Plan to develop the use of first class road surfacing than had been done before 1938, real progress belonged to the post-war period.

The use of abundant labour resources remained the key to success in road development. Forced labour and local peasant labour were in use on

a large scale; and stakhanovism, first evident in road works during the period of the Second 5-year Plan, continued to play its part. In a way akin to stakhanovism was narodnaya stroika, though it was a form of mass, not individual, effort. Under it peasants, and workers in local enterprises, using mainly local resources, built certain roads and canals in record time.(84) It was not forced labour in the normal sense of the term, but of the fact that it became a well-institutionalised activity the following report leaves one in no doubt:-

"In the 1940 Plan the Soviet government for the first time, and at the behest of Gosplan, provided for road construction to be undertaken in all republics by popular participation...

"On the basis of this plan road construction by narodnaya stroika was widely developed. In 1940 6000 km. of road were constructed in the USSR by that means - - -

"The road from Gorky to Murom and Kulebaki was constructed on the initiative of collective farmers and party and soviet organisations of Gorky oblast with the approval of Sovnarkom SSSR and the Party Central Committee".(85)

In 1938 technical standards for roads were drawn up by Gushosdor. They concerned the maximum curvature, minimum width and number of carriageways, maximum gradients, etc. to be used in construction. Similar standards had been issued by Tsudortrans, but those of Gushosdor were the first to take account specifically of the needs of motor transport. Standards were also worked out by the RSFSR glavdorupr -- and

presumably by the glavdorupry of other republics.(86)

Changes in the western boundaries of the USSR in 1939 and 1940 make it difficult to assess the scale of road construction during the three years 1938-40. Nevertheless it is possible with the use of standard data, and making certain not unreasonable assumptions, to calculate that within the 1938 boundaries of the USSR aggregate length of hard-surfaced road increased as follows:-

1/1/38	83,900 km.
1/1/39	92,900
1/1/40	102,900
1/1/41	114,000

The calculation is set out in the Annex to this section. If its validity is accepted it follows that the total increase (in length of hard-surfaced road) over three years was approximately 30,000 km., in comparison with 39,400 km. over the period of the Second 5-year Plan, and if the same rate of increase had been sustained for the next two years then the 5-year increase 1938-42 would have been 42% above the 39,400 km. of 1933-37.

It is unfortunately not possible to assess the increase in length of roads with first-class surfacing within the 1938 boundaries, if only because it was not until after the war that there was any generally agreed definition of the category.(87)

An extension of the calculation for hard-surfaced roads (in Annex) indicates that the mean density of such roads in the Ukraine and Belorussia

together, within their boundaries of 1938, was approximately 44 km. per thousand sq. km., and, in the areas of Poland taken over in the autumn of 1939, approx. 67 km. per sq. km.

To conclude this appraisal of Soviet roads in the pre-war period, it is useful to quote from a report, necessarily bound to be fairly objective, contained in a confidential document issued by the German military authorities in 1941.(88)

"The road system is poorly developed in comparison with the railways, and in general there is no continuous network. Some roads will come to an end as abruptly as they start -- quite often near large settlements. Most are unprotected, and therefore much dependent on the weather. The programme of new construction, only recently put in hand, is geared to military requirements. The system of classification employed is quite unlike any used in western or central Europe. Roads fall into the following three groups:-

"(a) Avtomagistrali

Only these roads, just in course of development, are likely to be of sound construction. To some extent the German Autobahnen are the model, but the Russian in no way measure up to them in traffic capacity, on account of the somewhat weak foundations and restricted width. The Moscow-Minsk road, 12-15 metres in width, is complete apart from the surfacing between Smolensk and Minsk. A broad route from Moscow

to Kiev is under construction.

"(b) Shosseinye dorogi

In general these have firm foundations and hard surfacing. Types of surface are: cement-concrete, asphalt-concrete, cobblestone, varieties of tar and asphalt fixative, and also clinker and broken stone.

"(c) Gruntovye dorogi

These are not amenable to detailed classification. They have no prepared base, and -- except in the case of the uluchshennye ("improved") -- are generally without any firm surface. Some are covered with broken stone, which however under the action of heavy traffic is liable to sink through the weak foundations. Most of the main overland routes to the north and to Siberia are not surfaced in any way."

Under the Third 5-year Plan the motor vehicle industry was required to: complete the construction of the Gorky and Moscow plants, and build one for small-capacity vehicles; provide for the manufacture of lorries in Siberia, and the assembly of vehicles in a number of places, including the Far East.(89)

Probably the "completion" of the Gorky and Moscow plants had reference to the expansions projected under the Second 5-year Plan. In other respects to directives are difficult to reconcile with particular earlier or later projects.

Before the war the staple products of the Soviet motor vehicle industry were three basic types of lorry (1½, 3 and 5 ton), two types of 3-axle lorry, two types of bus, and three types of car (4, 5 and 6 seat).(90) Under the Third 5-year Plan specialisation was to increase, and lorries of five tons and over were to become diesel powered.(91)

In 1944 the manufacture of 3-ton lorries began at Miass in the Urals, but no other plants opened until after the war.

The following figures for the production of vehicles (in thousands) indicate that the industry began to be re-equipped for war purposes at about the end of 1938:-

	ALL	HEAVY	LIGHT	BUSES
1937	200	180	18.3	1.3
1938	211	182	27.0	1.8
1939	202	179	19.6	3.3
1940	145	136	5.5	3.9
1945	75	69	5.0	1.1

Source: Promyshlennost' SSSR (M. 1964), p.278.

Publication of information regarding stocks of vehicles soon ceased. The latest generally available figure is that of 1st January, 1939, which was 700,000 (all vehicles).(92)

Republican commissariats of motor transport were set up in May 1939 on the basis, it would seem, of Soyuztrans and the local haulage trusts.(93)

A note on the war years(94)

With the outbreak of war a high proportion of the skilled workers of Gushosdor NKVD were called up to serve as specialists in the armed forces. Within the body which remained there was formed an administration for military road works, which however was transferred to the defence commissariat (N K oborony) in 1942. The rump civilian Gushosdor and what remained of the republican glavdorupry continued the work of road construction and essential maintenance in areas well removed from the fighting lines, including the eastern territories.

Within the territory liberated up to the beginning of April, 1944, 4000 km. of hard-surfaced road incurred serious damage. This however was mainly to structures, important bridges being destroyed almost without exception; surfaces remained intact, or suffered only superficial damage.

During the first three years of war military units built or rehabilitated over 140,000 km. of road: 4300 km. with stone surface, 7300 km. with wood covering -- especially in the north-western war areas -- and over 60,000 km. of "improved" and cambered non-metalled roads.

Over the three years 1941-43 Gushosdor built and reconstructed 8000 km. of road, including 380 km. with hard surface, whilst the RSFSR glavdorupr "built" 11,400 km.

Of true new construction there was not a great deal. Total length of hard-surfaced road increased by only 11,900 km. over the five years 1941-45 -- in contrast to 9000 km. in 1938 alone.(95)

A system of "military motor roads" (voenno-avtomobil'nye dorogi, or VAD) provided for a unified system of traffic control, refuelling and technical servicing, and also inspection of structures.

Footnotes for Section D

(68) Plan. khoz., 4/38

(69) Ibid., pp. 41-2

(70) Ibid., pp. 43-4

(71) Ibid., p.45

(72) Ibid., p.49

(73) See section C, footnote 56, loc. cit.

(74) ZASS 27/4/38

(75) The figure indicates that only the republican (Class II) roads were involved, and that by 1938 Class III had ceased to be differentiated in practice from the lowest three classes. The contraction in size of the oblasti may have had something to do with the circumstance.

(76) KPSS v. rez., op. cit., p.353

(77) Ibid. and Kudryavtsev, op. cit., p.199

(78) KPSS v. rez., op. cit., p.343

(79) T.S.Khachaturov, Razmeshchenie transporta, (M.1939), p.693

(80) Plan. khoz., 4/38, p.47

(81) Ibid., p.44

(82) Plan. khoz., 5/40, pp.70-1

(83) Subject discussed in Khachaturov, op. cit., pp. 696-7

(84) P.Luknitsky, Soviet Tajikistan, (M.1954), p.90
A.Zamanov, Transport Tadzhikistana (Dushanbe, 1964), p.28

(85) Kudryavtsev, op. cit., pp.206-7

(86) See Part 3, Section A, for discussions

(87) It may with much justification be contended that "hard surfaced road" is not a precise category. The matter is discussed in Part 3, Section A.

(88) Militärische Angeben über das Europäische Russland: Allgemeiner Überblick (Generalstab des Heeres, Berlin, 1941), pp.41-2

(89) Tretii pyatiletnii plan razvitiya narodnogo khozyaistva SSSR (1938-42), (M., 1939), p.23

(90) Ekonomicheskaya entsiklopediya (promyshlennost' i stroitel'stvo) I, (M., 1962), p.31

(91) Khachaturov, op. cit., pp.692-3

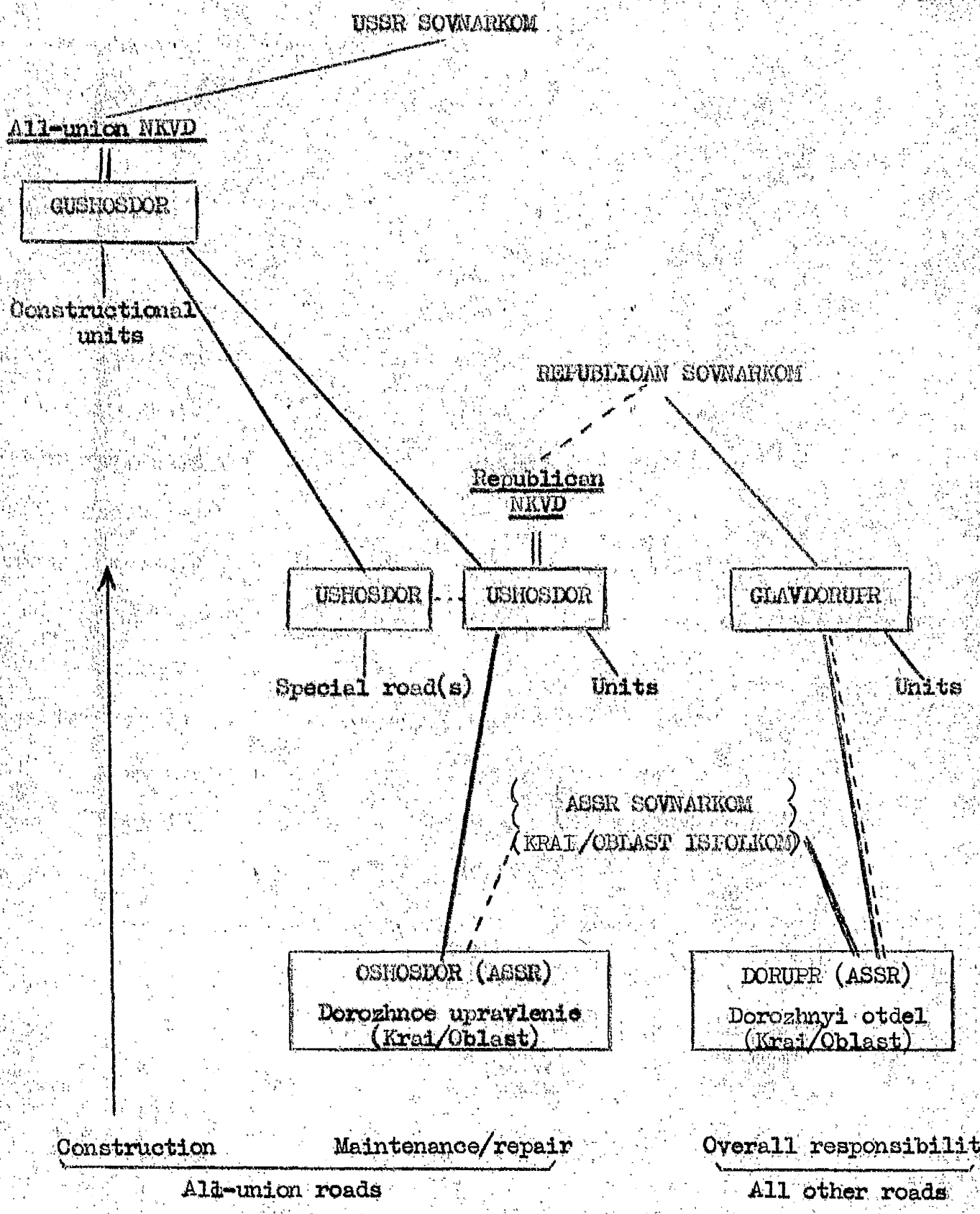
(92) Sots. stroitel'stvo v SSSR (1933-38) (M., 1939), p.109

(93) See footnote 1 to Part 2, Section A.

(94) Adapted in the main from Kudryavtsev, op. cit.

(95) Trans. i svyaz' SSSR, op. cit., p.272

Soviet roads: responsible authorities after changes of March, 1938



Annex to Section D - Estimating road development 1938-1941

The statistical compendium for transport, Transport i svyaz' SSSR (M. 1967) provides (pp. 272, 276) the following figures (all are thousands of kilometres):-

Hard-surfaced roads - USSR

1937 (end)	83.9	
1938 (")	92.9	(A)
1939 (")	118.2	(B)
1940 (")	143.4	(C)

Hard-surfaced roads: Western territories (end 1940)

Ukraine and Belorussia	40.5	(D)
Baltic States	11.9	(E)
Moldavia	1.1	(F)

General statistical sources show that in thousands of square kilometres the combined area of the Ukraine and Belorussia as at the end of 1938 was 579 (G) ; whilst between 1939 and 1941 it was 809 (H) , on the assumption that it was not significantly different to what it is today.

The capital letters are now used as representative symbols in the calculations which follow. (all lengths in 1000's of kms.)

Total length of hard-surfaced roads at end of 1940 in the territory of the USSR as it was at the end of 1939 equals:

C - (length of hard-surfaced roads at end of 1940 in Baltic States, Moldavia, N. Bukovina, S. Bessarabia and Ruthenia combined), equals:

C - (E plus 2F) ,(on the assumption that the last three territories may be taken as equiv. to Moldavia.

which equals 143.4 - 14.1, or 129.3

It follows that the increase in the course of 1940 of the aggregate length of hard-surfaced roads on the territory of the USSR as it was at the end of 1939 equals:

129.3 - B, or 11.1

Annex to Section D (continued)

Assuming this increase to have been attributable entirely to works within the pre-1939 territory of the USSR, then in respect of this territory we have that:

Increase in total length of hard-surfaced roads during 1938 was 9.0 (given) ; increase during 1940 was 11.1 (as just calculated) ; and so increase during 1939 may be taken as the mean value of the two (10.0).

Densities of hard-surfaced roads in Western territories in 1939

Total length of hard-surfaced roads acquired from Poland in 1939 (i.e. W. Ukraine and W. Belorussia) equals:

B - (A plus 10.0), equals:

118.2 - 102.9, or 15.3

Therefore density of hard-surfaced roads in territory acquired, in kilometres per square kilometre, equals:

$\frac{15.3}{H - G}$, equals:

15.3/230, or 0.067

Density of hard-surfaced roads in pre-1939 Soviet Ukraine and Belorussia combined, in kilometres per square kilometre, equals:

$\frac{D - 15.3}{579}$, equals:

25.2/579, or 0.044

PART 2

ROAD HAULAGE

Section	A	Administration
	B	Planning, Operation and Contract
	C	Performance, Cost and Incentives
	D	Coordination with other transport media

SECTION A

Road transport as a significant factor in the economy of the USSR as a whole - not just of particular regions - did not establish itself until the post-war period. The stage had however been set for that development with the formation in May, 1939 of commissariats of motor transport in all union republics then existing, which was followed by an overhaul of operational and statistical procedures (1).

Inter-city road haulage grew apace during the early post-war years, and by 1950 lorries were plying between Moscow and Leningrad, Yaroslavl, Gorky, Ryazan, Simferopol and Minsk (2), whilst ton-kilometres had increased to 20.1 milliard, which was 2.3 times the 1940 figure.

During the period of the 5th 5-year Plan (1951-55) attempts were made to increase the degree of utilisation and standard of performance of vehicles, especially by increasing the proportion of them in common-user (CU) fleets (3). The Plan called for an 80-85% increase in ton-kilometres for all goods vehicles (the achievement was 110%). The increase in respect of CU vehicles separately was a tenfold one (from 4½% of ton-kilometres in 1950 to 22% in 1955).

Administrative changes occurred in the March and August of 1953. For the brief intervening five months CU road transport came under the MPS before becoming the responsibility of a newly-formed Ministry of Motor Transport and Main Roads (MATShD SSSR) - a union-republican body - which survived until 1956, when its functions were taken over by republican ministries of motor transport (and main roads).

In 1955 the drive to concentrate vehicles in large CU fleets began to be intensified. Its first important result was the formation in Moscow (in 1955) of a unified authority for road haulage (Glavmosavtotrans) under the gorispolkom, and within a year a large proportion of the lorries operating in and from the capital had been absorbed. Regular, scheduled inter-city services from Moscow commenced in 1957. Outside Moscow the real drive for consolidation of fleets began in 1958.

Legal framework

The Fundamentals of Civil Legislation of the USSR (1961) includes a section on the transport of goods, though without specific reference to road haulage, which subject is however covered in the Civil Code and Civil Procedure of the RSFSR (1964) (4).

For road transport as a whole there is no comprehensive code of regulations to match the Ustav zheleznykh dorog (5). Instead there exist decrees and regulations which have been issued by councils of ministers and road transport ministries of the union republics at various dates from the mid-nineteen fifties onwards (6).

In the case of the RSFSR a basic document is the polozhenie setting out the responsibilities of its Ministry of Motor Transport and Main Roads (MATShD RSFSR).(7) Like many such Soviet documents it is evidently intended not only to convey factual information and lay down responsibilities, but also through hortatory passages to indicate the Party's desires, and campaigns in progress, at the time of its issue. The main operational functions of the ministry and its subordinate bodies will be considered later, but certain points of a general nature are worth making now.

In the absence of a road transport ministry for the whole of the USSR, the RSFSR body performs certain functions appropriate to a central authority, such as important research projects, and it sets the pattern of many developments. It also publishes the monthly Avtomobil'nyi transport, which covers events in the field of road transport throughout the USSR. In the polozhenie the RSFSR ministry is enjoined to "foster the amalgamation of small transport and repair bodies within (its) system", and to "make proposals for the enlarging of the common-user element in road transport"; and also - this no doubt a written relic of some once-active campaign - to make arrangements for "the loading, without regard to status, of vehicles moving unloaded along main roads".

Other decrees and regulations will be referred to in the context of particular subjects - in this and later sections.

Oversight of the roadworthiness of vehicles, and regulation of their movement along all roads, is performed by the state automobile inspectorates (GAI) which, together with local militia, come under the control of ministries for the defence of public order of the union republics (8). Registration of vehicles is a responsibility of local authorities.

Basic rules are however only an imperfect guide to what happens in practice. For one thing, many matters are regulated at local soviet level on the basis of "temporary" rules - for example, the centralised planning of freight movements in the city of Moscow; and again, certain questions relating to the drawing up of contracts for haulage are either not covered in the formal regulations, or only partly so (9). Further-

more, special committees are set up from time to time under Party auspices to act in a "coordinating" capacity, with scant regard for standard procedures - in short, to run a campaign (see Section D). Such activities however cannot pay off in anything but the short term. With regard to "normal" practices, it is the extent to which senior officials use Party contacts to get jobs done quickly - the moving of important consignments, say - which is difficult to assess in relation to the total scale of given operations, even with the existence of much circumstantial information.

Common-user road haulage: Ministerial system

MATShD exist in all union republics except Belorussia, Kazakhstan, Georgia, Armenia and Azerbaidzhan, in each of which the ministry (MAT) concerns itself only with motor transport, and there is a separate authority for roads directly responsible to the republican council of ministers(10).

The organisation of CU road transport services under a ministry is essentially three-tiered. First there is the central apparat, then the territorial administration, and finally the operational units.

In an article on the RSFSR ministry written early in 1964 (11) it was stated that motor transport upravleniya existed in all oblasts, krais and ASSRs of the RSFSR, and under them came the main operational units (goods, passenger, taxi, mixed, etc.); workshops for the overhaul of vehicles; service and filling stations; forwarding-cartage units to serve railway stations, ports and quays; and training schools for drivers and mechanics. Large-scale repairs, and the production of equipment for garages, came under a separate trust GARO directly subordinate to the ministry. The upravleniya were grouped territorially

under ministerial glavki.

With the advent of economic reform, and increasing specialisation of transport services, there have been some structural changes within the RSFSR ministry - and no doubt within other MAPSHD too. First, upravleniya and operational units have been regrouped for reasons of financial solvency, though the former are still in the main based on oblasts. Secondly, territorial "associations" (ob"edineniya) were set up in 1967, coincidentally with the large-scale introduction of the new system of planning, on a basis of khozraschet, to act as links between the ministerial glavki and the upravleniya (12).

At least three glavki exist to cater for special types of service, viz:-

Glavlenavtotrans for road haulage in Leningrad

Glavmezhavtotrans for inter-city transport

Glavsel'khoztrans to ensure adequate road transport in rural areas, especially at harvest time.

The territorial upravleniya, in addition to administering the operational and service units under them and ensuring adequate material supply, also act as judicial persons, for it is they that are the contracting parties in respect of centralised haulage (13).

In most countries whose economies are based on private enterprise two types of road freight services may be distinguished: those carried out by firms on "own account", and those provided by hauliers plying "for hire" (to use the terms current in Britain). In the USSR the basic distinction is that between the OU, as already defined, and the

road services provided by industrial ministries, cooperative organisations, etc. for their own purposes. The distinction is however unsatisfactory, giving rise to confusion between form and function: in many Soviet articles CU road transport is credited with all the advantages of scale, specialisation and efficiency at the same time as the vedomstvennye fleets are attacked for being "dwarf-like" and grossly under-utilised; yet the latter may be large and provide a general service. Yu. I. Koldomasov writing in the middle of the sovnarkhoz period stated that "the change to the territorial system of management of industry and building had an important part to play in the rationalisation of road transport ... Large units working on khozrashchet set up within the sovnarkhozy have 'acquired the character' of CU transport" (14).

Non-CU road transport

This falls into two categories:-

(a) Vedomstvennyi, which is that provided by the units under the control of industrial ministries and equivalent bodies (such as the former sovnarkhozy), building organisations, state agricultural bodies (including sovkhozy), and trading organisations.

(b) That provided by cooperatives, collective farms and communal organisations.

A significant point is that, provided the various plans as laid down are fulfilled, all vehicles, no matter under what authority they may come - CU or non-CU - can quite legally be employed on any casual work which may arise.

Road Haulage for industry, construction and agriculture

In spite of the claims made by Koldomasov in 1961 (see above) the road transport services provided under the sovnarkhozy were shown in an article which appeared some three years later (19) to have many defects. Those mentioned included:-

(a) The absence of a standard system of norms, planning procedures and record keeping. Variations often occurred within individual sovnarkhozy.

(b) Facilities for major overhauls only adequate for about half of the total number of vehicles; remainder overhauled in small workshops, or else sent to distant localities - even, in some cases, when nearby repair plants under CU road transport organisations had spare capacity.

(c) No specialist repair centres for diesel vehicles (widely employed in mining enterprises); and an inadequate supply of spare parts for them, since Soyuzsel'khoztekhnika, the organisation responsible - and mainly concerned with the supply of agricultural machinery - had little interest in diesel vehicles.

(d) Due to restrictions being placed upon the supply of new motor vehicles to industrial organisations in 1963-64, only two thirds of the needs for replacements were met, and there was an increased demand for spare parts.

The writer added that in a great deal of economic planning transport was only separately itemised when provided by CU bodies, expenditure on the transport provided by industry itself remaining unidentified under other accounting heads. Furthermore rail transport was by long-standing custom regarded as "normal" for the haulage of materials between

industrial enterprises - to the neglect of road transport in general [16].

The road transport units of the sovnarkhozy were brought within the CU system at the end of 1965[17].

Road haulage for building and constructional organisations is provided either by specialist CU units (e.g. in Moscow and Leningrad), or else by the bodies themselves.

Regarding the road haulage of agricultural products, mention has already been made of Glavsel'khoztrans under MATSHD RSFSR. This and bodies of the same name under MATSHD of other republics were set up in 1963 at the same time as the territorial production administrations (TPAs). [18] Through the sel'khoztransy under them they provide bulk centralised haulage for the products of kolkhozy and sovkhozy.

An important reason for the setting up of special CU road transport administrations for agriculture was to enable the acute problems posed by seasonality to be overcome with smaller total stocks of vehicles for the economy as a whole. To this end:

(a) the vehicles under sel'khoztransy may when agricultural activity is slack be placed at the disposal of industry, etc.

(b) at harvest time glavsel'khoztransy become agencies for the temporary acquisition of the large numbers of extra vehicles required.

On the subject of (b) I. Kushchinsky, head of Glavsel'khoztrans RSFSR, has described the arrangements made for the 1966 harvest, giving many facts and figures [19]. He refers to a high incidence of breakdowns among the

specially drafted vehicles, due to an absence of suitable servicing facilities. He also complains of the practice, apparently widespread, of using these vehicles with little formality in terms of haulage contracts or proper accounting procedures.

The transport of freight in Moscow and Leningrad

MOSCOW

By 1964 Glavmosavtotrans controlled a fleet of over 100,000 vehicles (20). According to a recent report it has over 20,000 lorries specialising in certain types of haul - for example, liquids, prefabricated building sections, etc. - and about 12,000 trailers or semi-trailers (21). 117 million tons of goods were carried in 1966, or 3½% of the common-user total for the USSR, and over 90% of the contracts were centrally drawn up (22).

Of the eleven divisions of Glavmosavtotrans the following are concerned with direct hauls (consignor to consignee) by road:-

(a) Mosstroitrans

Vehicular movements are geared to building operations, materials being carried in tractive unit-cum-trailer sets, including sometimes one or two tippers (23). In 1965 Avtokombinat No.1 (of Mosstroitrans) had a fleet of more than a thousand vehicles (24).

(b) Mostorgtrans

A large proportion of the vehicles are of special construction. The organisation caters for the needs of trading bodies in the city, none of which have any vehicles of their own (25). In 1965 Avtobaza No.5 with its fleet of 600 vehicles was specialising in the movement of

liquids, industrial soaps and clothing for trading and catering establishments (26).

(c) Mospromtrans

This serves industrial enterprises.

(d) Mosmezhtrans

Vehicles ply over distances of up to 300 km. from Moscow. Much use is said to be made of containers, there being points of transfer for them in a total of fifteen towns (27).

Cartage, forwarding and agency services are performed by:-

(a) Mostranseksped itsiya

Serves all enterprises in Moscow which use rail or water for the trunk haul. The MPS does not have any road vehicles of its own (28).

(b) Mosformekhpogruz

Specialises in the mechanical handling of goods.

(c) Mostransagentstvo

Provides agency services for both enterprises, etc. and the public.

Computerised planning of movements has been developed over the past few years by Glavmosavtotrans, but its practical use is at present limited (see Section D).

Although Glavmosavtotrans is essentially a freight organisation, it operates a fleet of 11,000 taxis (29). Road passenger services for the city of Moscow however come under a separate upravlenie.

For common-user road haulage originating outside the city of Moscow there exists the Moscow territorial upravlenie of MATShD RSFSR

with its subordinate enterprises.

LENINGRAD

Since 1964 all common-user road haulage for Leningrad city and oblast has been concentrated in Glavlenavtotrans, which comes under MATShD RSFSR. Principal constituent bodies were the haulage fleet of the Leningrad city sovnarkhoz; the building organisations Glavzapstroi and Glavleningradstroi; and the city's Glavnoe upravlenie torgovli (trade).(30) Within Glavlenavtotrans there are now upravleniya to provide road haulage for industrial, building, trading and agricultural bodies; and there are also ones for buses and taxis. Some use is made of mathematical techniques in arranging movements of vehicles.

Coal concentration in Moscow and Leningrad

By 1963 there existed a number of special coal concentration bases - three in the capital and two in Leningrad - under Rosglavuglesnabsbyt, the supply and sales organisation for coal in the RSFSR at that time. In the case of Moscow, deliveries were being made by centralised haulage to points within a radius of 30 km. Lorries employed numbered 350, as compared with 1500 before the introduction of the new system, and rail movements had been greatly simplified (31).

The growth of the common-user sector since 1958

Pressures to absorb departmental and other fleets of vehicles into the CU system were applied throughout the period of the 7-year Plan, and a study of the press of the period indicates a definite

correlation between campaign and statistical effect, republic by republic. Pressures generally were at their greatest in 1959 and 1964. The relevant figures are given in the following table (as percentages), and illustrated (as absolute measures) in the accompanying graphs.

Percentage of tonnage carried by common-user road transport

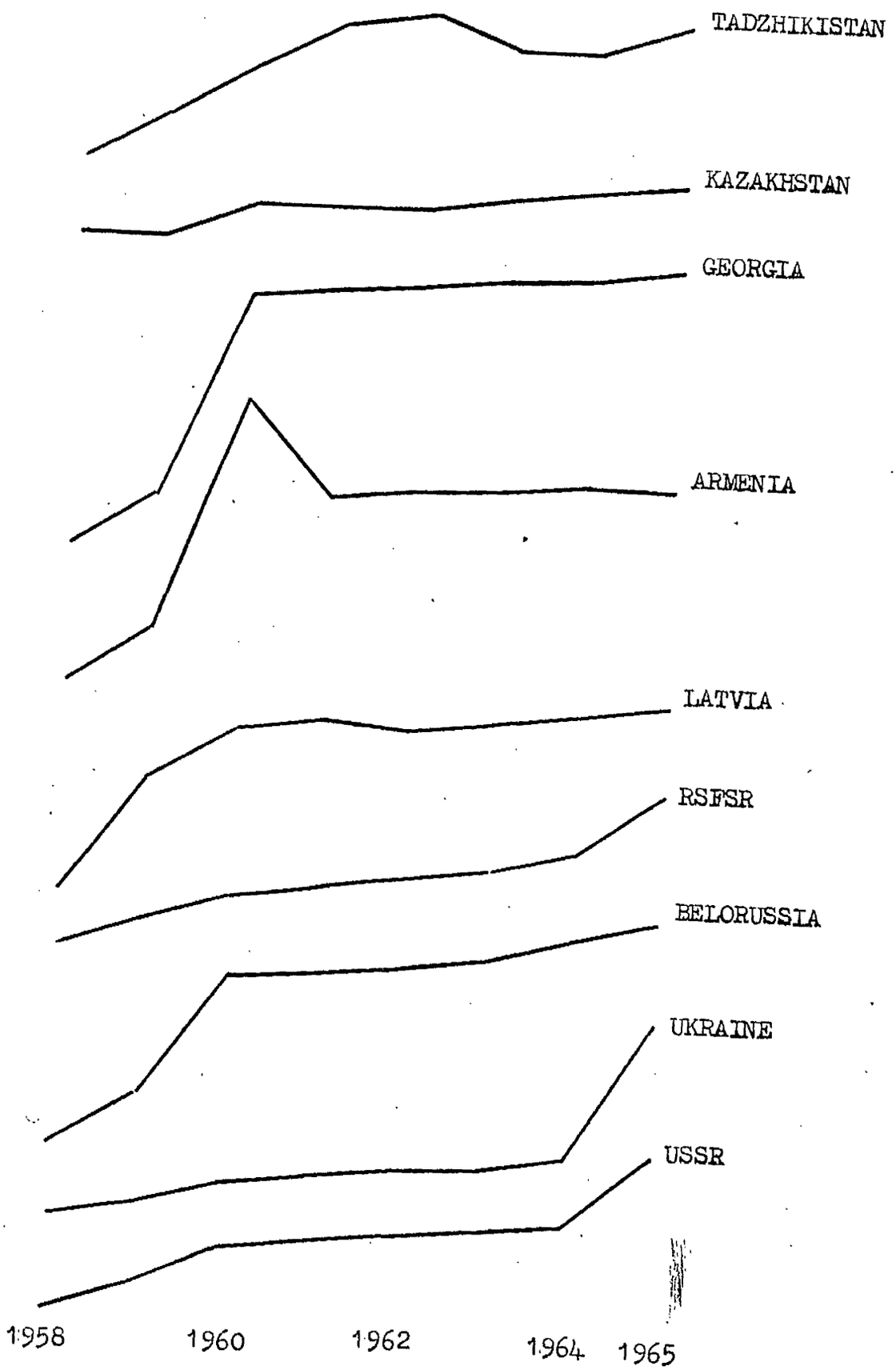
	1958	1959	1960	1961	1962	1963	1964	1965
USSR	18	18	20	21	21	21	22	31
RSFSR	17	18	18	19	20	20	21	30
UKRAINE	17	15	15	15	15	15	14	32
BELORUSSIA	18	21	40	40	38	43	43	49
MOLDAVIA	30	28	44	40	36	40	39	37
ESTHONIA	24	35	62	63	65	62	59	57
LATVIA	22	39	47	45	44	44	43	42
LITHUANIA	35	42	46	49	55	55	59	59
ARMENIA	10	11	41	19	20	18	16	15
AZERBAIDZHAN	12	12	13	15	15	15	16	18
GEORGIA	13	18	49	49	53	53	48	46
KAZAKHSTAN	22	20	20	19	19	21	19	21
UZBEKISTAN	29	26	26	27	29	21	23	28
TADZHIKISTAN	28	33	31	47	45	33	30	29
TURKMENISTAN	21	22	23	31	29	22	19	17
KIRGHIZIA	24	25	27	25	23	22	22	22

Source: Transport i svyaz' SSSR (M. 1967), pp.230-1, 256-7

It is evident that the 1959 campaign achieved notable results in many of the smaller republics, whereas that of 1964 mainly affected

TONNAGES CARRIED BY COMMON-USER ROAD TRANSPORT 1958-1965

(logarithmic scales)



the RSFSR and Ukraine - and therefore the figures for the USSR as a whole. Since the absorption of the road freight units of the former sovnarkhozy did not take place until the end of 1965 it can have had only small effect on the figures for that year.

One general conclusion which can be drawn from the statistics is that major reorganisations intended to build up the CU system are not normally undone, but that in the absence of special pressures it is the non-CU sector which expands at the greater rate.

Reliance on press reports of drives to expand the CU sector of Soviet road haulage, in advance of more substantial evidence, is hazardous, if only because reports of success are an essential part of any campaign - at least until such time as it or its promoter may have been discredited. Two reports, separated in time by three years, and difficult to reconcile one with the other, will serve to illustrate the point.

Koldomasov wrote in 1961:-

"Until 1959-60 87% of lorries were in organisations under ministerial or departmental control. Common-user motor transport accounted for only 13% of the heavy fleet and 5½% of the light. Every enterprise had motor vehicles. 85% of motor transport sections were minute - of up to ten vehicles. Commencing in 1959-60 the minute bodies were wound up, and the sphere of operations of road transport under the control of enterprises became restricted to inter-factory deliveries" (32).

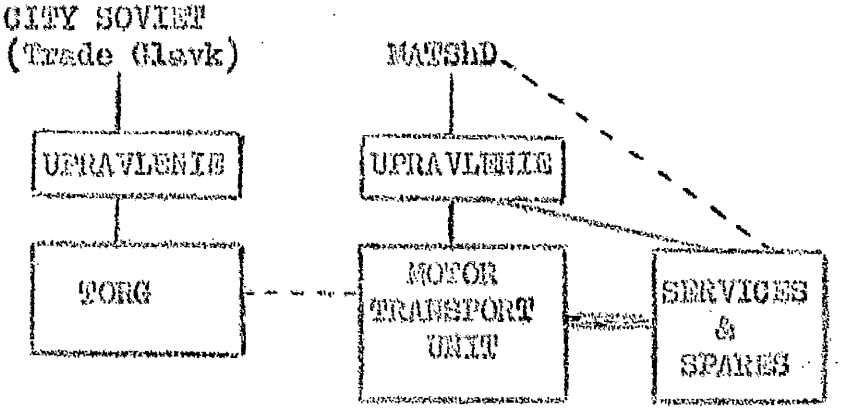
And now the statement made in an article on road transport organis-

ation in 1964:-

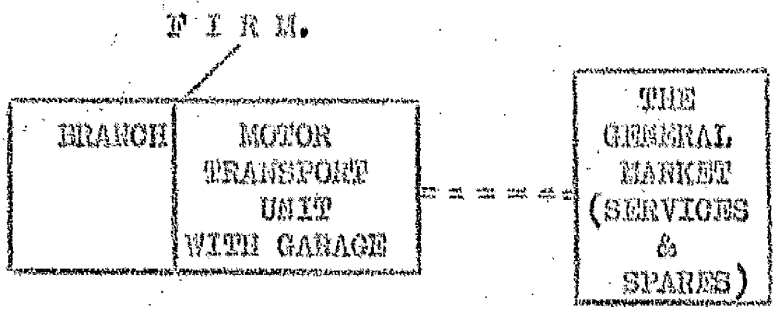
"Until recently road transport has been widely scattered among enterprises and departments. Now tens of thousands of small unprofitable motor concerns are being wound up. Centres with 400-500, and sometimes 100, vehicles are being established. In many large cities single common-user motor transport organisations are being set up to serve all branches of the economy" (33).

There are important institutional reasons for the non-CU sector growing faster than the CU in the absence of special pressures, not the least of which is the precariousness of supply of materials and equipment engendered by the system of centralised planning of it. In a knowledge of this situation one may strike a comparison between a certain type of road haulage service in the USSR and its probable nearest Western equivalent.

Below is shown in schematic form the relationship existing between a CU road haulage unit, with its supporting technical services, and the organisation for which transport is provided - assuming for the sake of simplicity that it is a single one, a city retail trading unit (torg) (34).



The next diagram shows what might be the road transport scheme of a Western equivalent to the Soviet torg - an urban branch of say a large grocery firm engaged in distributing supplies to a chain of shops.



In terms of work done the cases are not greatly different; vehicles are operated for the exclusive needs of the trading unit. In the Soviet case although the vehicular fleet comes administratively under the MAPShD of the republic concerned (Glavmosavtotrans in Moscow) it will probably be based not far from the loading area of the distributing torg. In the Western case the vehicles will belong to the firm, but as a unit they will have something of a separate identity; and the drivers and mechanics will tend to share common interests and outlook with drivers and mechanics employed by other firms rather than with members of the same firm employed in the marketing process - the tendency increasing with the size of the vehicular fleet. The difference between the Western and Soviet arrangements which the diagram brings out is the way in which those services are catered for which are beyond the capacity of the vehicles' garage.

Under the Soviet system, if the motor vehicle unit were to be transferred to direct control by the torg the immediate effect would probably

be small. Before long however maintenance standards would almost certainly fall, as the MATSHD would no longer have much incentive to make its workshops and equipment available for the torg's vehicles (35), and there would be no commercial market to fall back upon. Furthermore, under-utilisation of vehicles would be likely to increase with the tendency on the part of the torg under the new arrangements to acquire by way of a safety margin rather more vehicles than would be required if there were certainty about availability of spare parts.

Notes on the administrative structures of other transport agencies

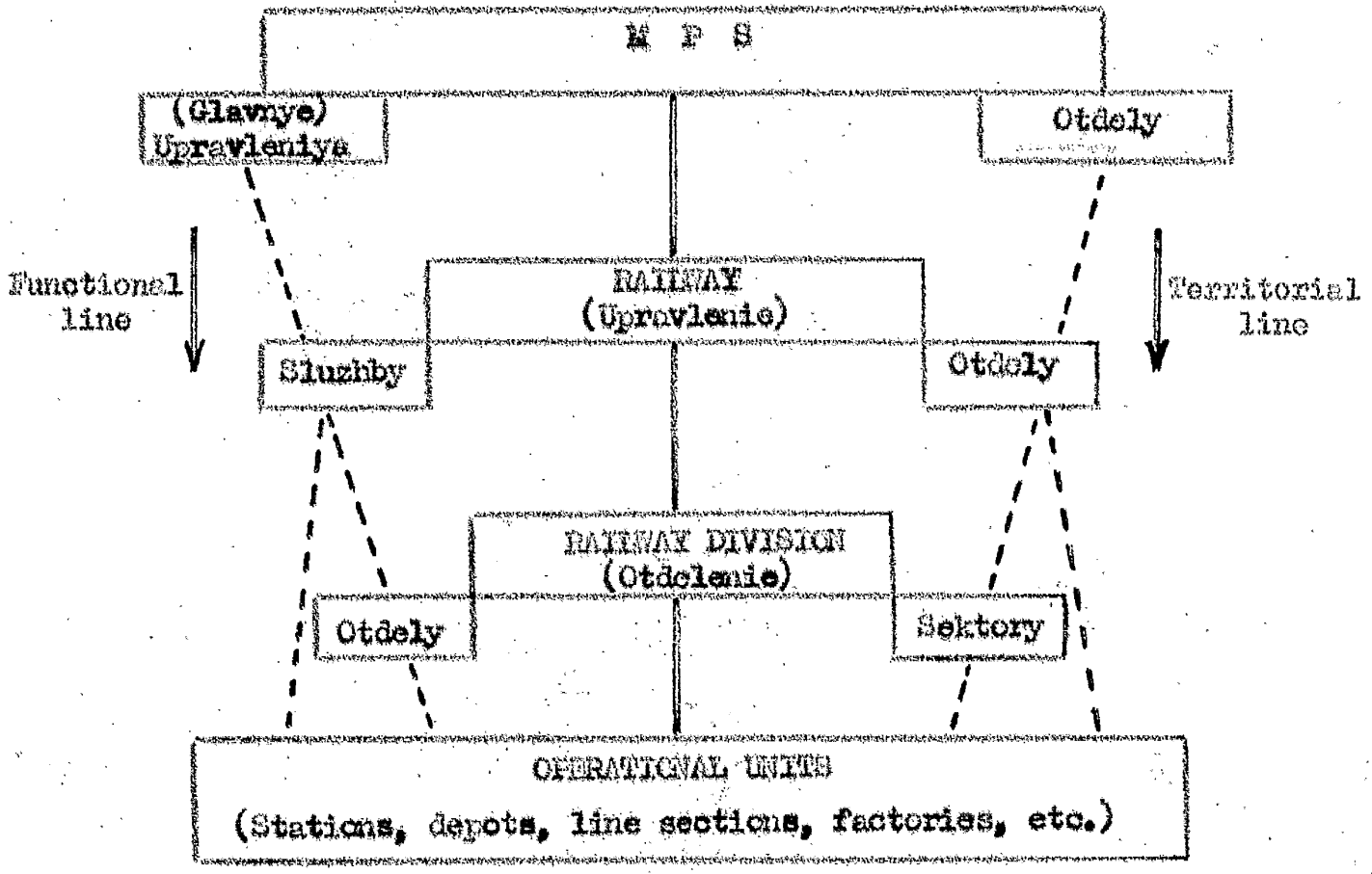
RAIL (MPS)

The administrative scheme is a highly centralised one. Such devolution as exists is related to operational needs, not to any express desire that republics and lower territorial governmental bodies should have a direct say in management.

The structure embraces the branch and the territorial principle - the former applied to engineering, planning and financial matters, and the latter to day-to-day operation. A schematic diagram appears below:

[See following page]

Organisational pattern of the main (MPS) railway system of the USSR



At present there are 26 Railways within the system of the MPS

Sources: P.L. Saranteev, Geografiya putei soobshcheniya SSSR, (M.1962), p.98
Ekonomika zheleznodorozhnogo transporta (M. 1965), p.43
Gudok (1968 issues)

The system of the MPS accounts for not much more than half the total route length of USSR railways; in 1965 there were 131,000 km. under the control of the MPS (36), whilst according to a recent report the aggregate length of feeder and service lines under productive ministries, etc. is 114,000 km. (37).

INLAND WATERWAYS

River and canal traffic (CU system) came under a USSR ministry until its abolition in 1956. Now the responsible authority within the RSFSR is the Ministry for the River Fleet (MRF RSFSR), whereas in the other republics the organisations concerned do not rank as ministries. The system of MRF RSFSR accounts for well over 90% of the CU ton-kilometres (USSR waterways).(38) There are three main categories of traffic: timber floated in rafts, oil by tanker, and goods in the holds of vessels ("dry goods").

The principal operational divisions of MRF RSFSR are the "steamship authorities" (parokhodstva). In the European part of the RSFSR is carried by far the greater proportion of the traffic, principally in the Volga-Kama basin, which forms part of the "unified deep-water system" (from which only a few of the smaller north European rivers, etc. are excluded). One specialist parokhodstvo (Volgotanker) has charge of oil tankers. In the Asiatic part of the RSFSR, where about 15% of the traffic in ton-kilometres of MRF RSFSR is carried, the parokhodstva exist in general on a basis of one per main river basin.(39)

OTHER CARRIERS

As the activities of transport operators other than road are only referred to by way of assistance to the later discussion about inter-carrier relationships, in which railways and inland waterways are the ones mainly concerned (especially the former), the other carriers (sea, pipeline, etc.) are excluded from the present study.

Footnotes to Section A

(1) E.P.Lebedev: Transportnaya statistika (M. 1964), pp.316-8

(2) A.S.Kudryavtsev: Ocherki istorii dorozhnogo stroitel'stvo v SSSR (M. 1957), p. 257 (map)

(3) The CU (obshchego pol'zovaniya) element of road transport is that performed by organisations under ministries of motor transport (and main roads), and by individual ispolkomy

(4) The relevant articles of the former (nos. 72-76) are included in Sbornik zakonodatel'stva po avtomobil'nomu transportu (M. 1964), pp.200-1. The latter is printed in English as No.11 of the series Law in Eastern Europe (Sijthoff, Leyden, 1966), and the relevant articles are contained in Chapter 23, pp.100 ff.

(5) Kommentarii k ustavu zheleznykh dorog SSSR (M. 1966)

(6) For comprehensive list (in respect of USSR and RSFSR) see see Kh. I. Shvarts, Pravovoe regulirovanie perevozok na avtomobil'nom transporte (M. 1966), Ch.2.

(7) Ibid., pp.9 ff. For organisational chart see Ekonomicheskaya gazeta 14/3/64, p.34

(8) Administrativnoe pravo (M. 1967), p.343

(9) Shvarts, op. cit., pp.20-21

(10) In Tadzhikistan there is a Ministeratvo avtomobil'nogo transporta i dorozhnogo khozyaistva. See also Part 3, Section B, footnote 13

(11) Ekon. gaz. 14/3/64, p.34

(12) Article by the Minister of Motor Transport and Main Roads of the RSFSR in Avtomobil'nyi transport, 1/68, pp.1-3

(13) Article 3 of Ustav for the Moscow territorial motor transport upravlenie, reproduced in Sbornik zakonodatel'stva..., op. cit., p.14, and Article 9 of polozhenie on operation of a road transport enterprise (Sbornik, p.38). Centralised haulage will be fully described in Section B.

(14) Kompleksnoe razvitie transporta SSSR (M. 1961), p.109.

(15) Plan. khoz., 12/64, pp.10 ff.

(16) A change to road transport may involve the substitution of fob (transport cost not included) for cif (transport inc.) pricing, with attendant difficulties (see Section D, footnote 120)

(17) Avto.trans. 1/66, p.1

(18) Postanovlenie of CC of KPSS and USSR C of M, 11/4/63 (Sbornik, op. cit., pp.114-5). For polozhenie on RSFSR organisation see Sbornik, pp.115 ff.

(19) Avto. trans. 4/67, pp.1-2

(20) Times (London), 6/10/64

(21) Avto. trans. 11/67, pp.1-4

(22) Ibid.

(23) Ibid.

(24) Article on experimental introduction of new system of planning in Ekon. gaz. 48/65.

(25) See Lesov and Itkind, Avtomobil'nye perevozki prodovol'stvennykh tovarov (M. 1964), pp.121 ff.

(26) Ekon. gaz. 48/65

(27) Avto. trans. 11/67, pp.1-4

(28) Koordinatsiya raboty razlichnykh vidov transporta (M. 1964), pp.160-6. It is difficult to establish when precisely road vehicles passed out of the direct control of the MPS, which still had its fleets in 1949 (see BSE, 2nd edition, Vol.I, p.272).

(29) Avto. trans. 11/67, p.3

(30) Ekon. gaz., 48/65

(31) Yu. I. Koldomasov, Ekonomicheskie svyazy v narodnom khozyaistve SSSR, (M.1963), p.211.

(32) Koldomasov, loc. cit. (see footnote 31)

(33) Pravda, 6/10/64

(34) For further particulars see Lesov and Itkind, op. cit., p.12

(35) See above under Road haulage for industry, construction and agriculture

(36) Trans. i svyaz' SSSR, op. cit., p.95

(37) Gudok 19/3/68

(38) Trans. i svyaz' SSSR, op. cit., pp.178-9

(39) Rechnoi transport 3/68, p.13
The 15% is an approximate value obtained from V.P.Petrov, "Electric Power", Part IV B of Geography of the Soviet Union, (Washington, DC, 1959), p.7.

SECTION B

Soviet transport plans are complementary to those for material supply and for final products. Categorised by time scale they are:-

(a) Perspective - for five or seven years, or even more. They are usually drawn up by extrapolatory methods, though with a taking into account of technological changes, changes in the location of industry, etc. Thus they are connected with the main investment programme.

(b) Current (annual) - usually worked out on the basis of zayavki of consignors by the method of balances. They are subdivided by quarter.

(c) Operational (quarterly) - take account of the factor of seasonality and, as the name implies, are the plans of most concern to the transport authorities in their operating capacities. There is subdivision by month.

In all cases the word "plan" stands for a collection of sub-plans, of which that for movements (perevozki) - haulage in the case of goods - is only one, others being for labour and wages, finance, etc.

Little is written in Soviet books, etc. on road transport concerning the perspective planning of freight movements; which is understandable, for in road transport as a sector of the economy it is the roads themselves which present the major problems in long-term planning and investment. In the case of the railways track and traffic exist in

close relationship, and therefore the perspective planning of freight consignments becomes a matter of much greater moment.

There now follows an account of the annual and quarterly haulage plans for a CU road transport enterprise.(40)

With regard to the annual plan, the first step is the sending by prospective consignors of zayavki to the haulage enterprises.

In the zayavki are shown: type of goods, points of despatch and destination (or district of transit), and a measure of the volume of the consignments in both tons and ton-kilometres, with sub-division by quarter. Sometimes the measurement is made directly through the use of coefficients derived from the consignor's tekhpromfinplan. Figures relating to centralised haulage are shown separately. There is also subdivision by main sector of the economy: industry, building, trade, agriculture, etc. A number of key materials and products are identified in the plan, viz: coal, oil/oil products, ferrous metals, timber, cement, (ferro-) concrete building sections, certain other building materials, sugar beet, potatoes, vegetables, and some other manufactures and provisions.

The draft plans of the haulage enterprises are passed to the avtoupravleniya, which consolidate them into documents for transmission to the republican MATShD, which in its turn produces a composite annual plan for approval by the (republican) council of ministers. There appears to be no scrutiny by republican gosplan, so approval is probably a formality.

Quarterly haulage plans (with subdivision by month) are built up in the same way as the annual on the basis of zayavki of consignors, but only aggregate tons and ton-kilometres are indicated, and approval is entrusted to the MATShD.

Annual and quarterly plans for road haulage outside the CU system are constructed in ways similar to those just described, but the upward flow of information is via departmental and republican gosplan channels.

The question immediately arises: what degree of correspondence exists between prescription and reality? Managerial and rank-and-file workers' behaviour will be both predictable and unpredictable in the face of plans and orders only imperfectly reconcilable one with another. Much circumstancial evidence will soon be provided of practices which at times approach the chaotic, but are nevertheless difficult to assess in relation to total scales of operation. Full discussion must however be postponed.

Legitimate arrangements made outside the planning system - i.e. ones which do not prejudice plan fulfilment - usually concern:-

(a) haulage done at short notice, including that on call.

(b) return loads obtained by drivers.

Next to be described is the actual organisation of haulage once the plans have been drawn up. The account is adapted from the polozhenie concerning operations within the system of MATShD RSFSR.(41)

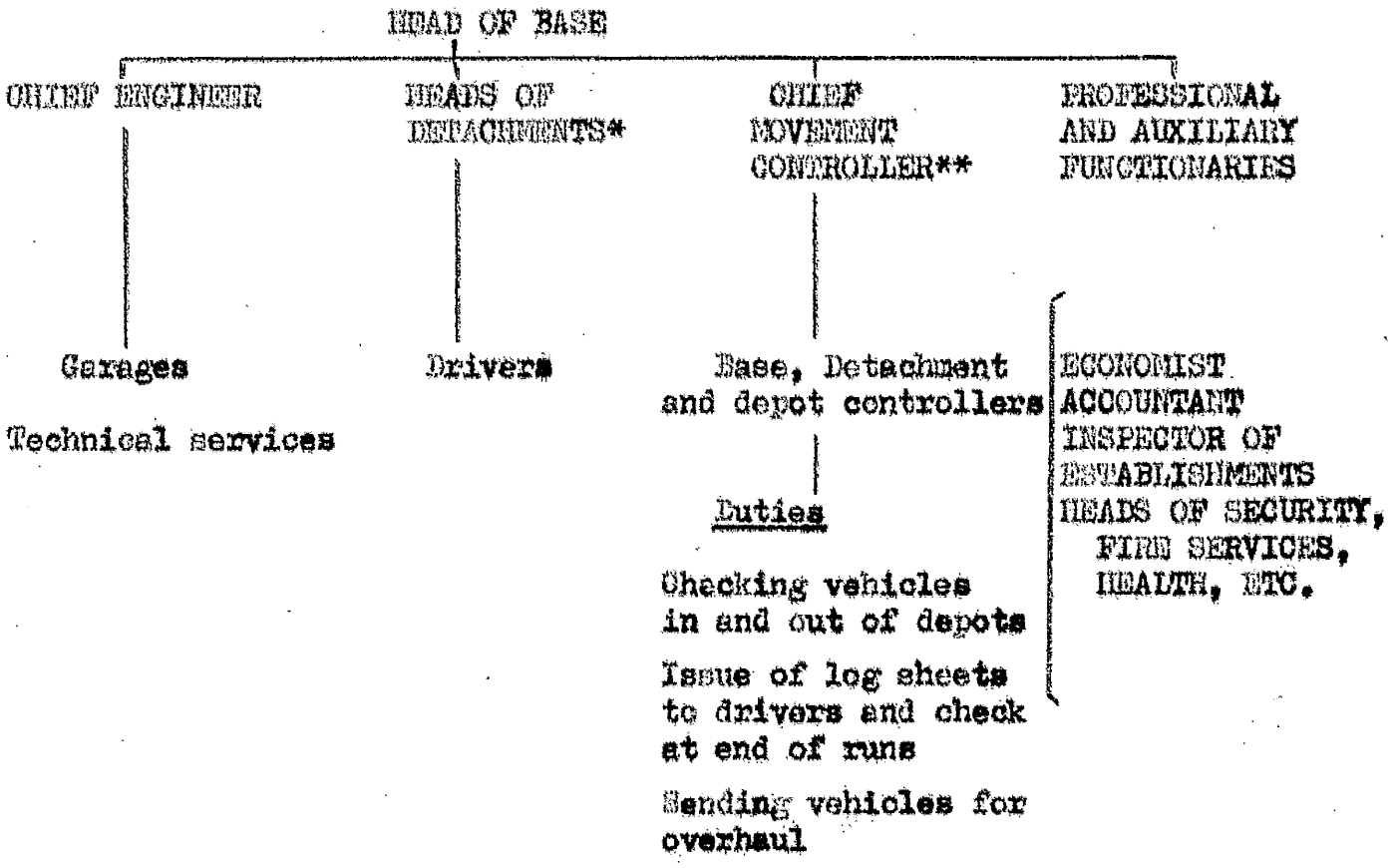
Centralised haulage

Under this the whole process of handling consignments is organised and controlled by the upravlenie, which through its planning department translates the haulage plan into detailed flows of goods, and in the role of judicial person negotiates contracts with the industrial and other enterprises concerned.

The upravlenie arranges documentation, storage, and sometimes loading/unloading. It works out daily movement schedules for vehicles, prepares drivers' log sheets on the basis of them, and sends the sheets to the operational enterprises (to be referred to in this context as "bases"). It controls the movements of vehicles and sees to their servicing during runs, at the end of which it receives the log sheets from the bases, and prices the hauls in accordance with standard tariffs.

The bases have minimal organisational responsibility under the centralised system. Drivers do such on-the-spot documentation as is necessary. Their names, and the registration numbers of vehicles used, appear on the log sheets which, after the completion of hauls, are sent to the upravlenie for processing. The functions of bases under the centralised system may therefore be summarised as care of vehicles and staff control of drivers.

An organisational diagram for a base with 150-250 vehicles under the centralised system is set out below.(42)



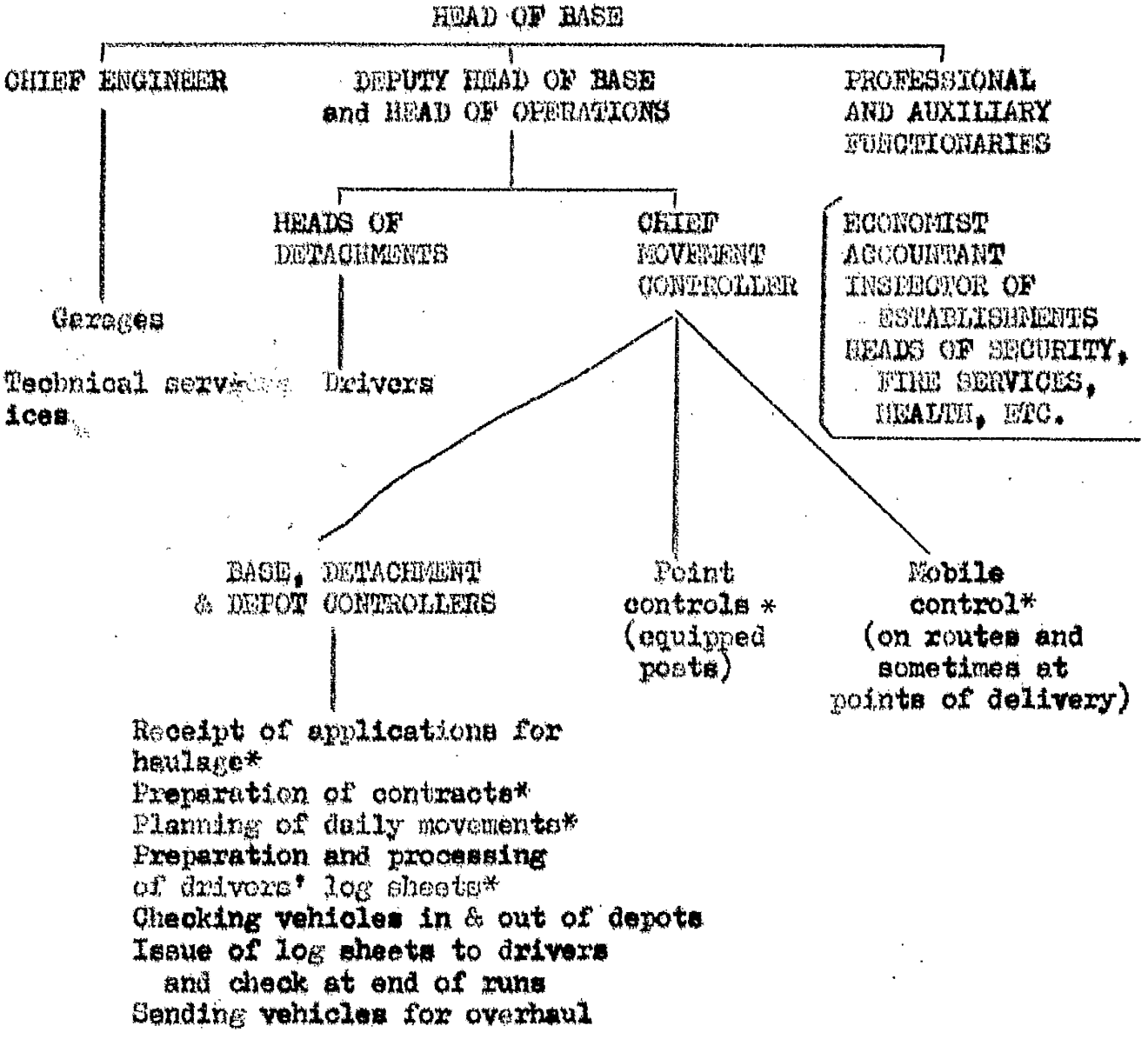
* A rendering of the Russian kolonny, sub-units into which vehicles are supposed to be grouped (whether at base or in actual detached locations) by type and purpose - e.g. for transporting building materials, for trade, for small consignments carried on a time basis, etc.

** "Movement controller" is used for the Russian dispetcher.

Decentralised haulage

Under this the upravlenie through its planning department translates the haulage plan into flows of consignments between one industrial enterprise, etc. and another; but it leaves the detailed organisation, including the negotiation of contracts, to the bases.

Below is given a typical organisational diagram for a base with over 150 vehicles working under the decentralised system.(43) Functions proper to the upravlenie under the centralised system are indicated by asterisks.



The role of contract (44)

The state plan is the basic legal act governing haulage. In conformity with it hauliers enter into contractual relations with their clientele, the consignors.

In the contract the parties agree on the type, weight and exact tariff category (see Section C) of the consignment; the route to be taken, the date and time of movement, the type of vehicle to be used and method of loading, responsibilities for safety, responsibilities for loading and unloading, the type of packaging, manner of payment, point of delivery and designation of consignee.

Contracts are either single-occasion or long-term (annual). Only when loads are carried on isolated occasions may annual contracts be dispensed with.

All CU hauliers are obliged to accept such consignments as are presented to them in accordance with haulage plans. By haulier is meant in this context the body which acts as judicial person for the purposes of carrying a particular consignment. In the majority of cases the operational unit (base) is the judicial person, but attendant circumstances are supposed to be the deciding factor. When haulage is fully centralised the upravlenie is the contracting party; and it may also act in this capacity in the special case where what amounts to a single job is shared among several bases, each doing its own route planning and movement control. Not infrequently, apparently, the centralised movement control (tsentral'naya dispetcherskaya sluzhba) of an

upravlenie acts as contracting party.

Consignors, whether the haulage be for industry, building, agriculture, trade, etc, may be enterprises or higher organisational bodies - including the recently-established ob"edineniya. The consignee must provide facilities for unloading. He is not a contracting party however, and so the consignor is required to pay any fines which may result from delays in unloading, afterwards (if he wishes to rectify the matter) seeking indemnity from the consignee. It has been suggested that the freedom of the latter from contractual responsibility is a major reason for delays in unloading being so rife. His only responsibility is a general one to the state - to accept goods sent to him under properly constituted plans; he is a means to fulfilment of a contract.

In legal theory at least, contract plays a bigger part in road haulage, where so many special conditions have to be agreed, than in movements by rail, where the conditions are largely standardised, and all that has to be specified is category and quantity of goods to be carried, address of consignee, and distant station - or railway, if different from the one of the territory in which the haul commences.

The form of contract has to be written - without exception in the case of consignments passing between state and other public organisations; but as between individual citizens the written form may be dispensed with, provided the value of the consignment does not exceed 100 roubles.

Annual contracts between economic organisations (khozdogovory) must be concluded within 60 days of the confirmation of the state plan. In the case of other contracts (including the single-occasion ones based on the annual) the limit is one calendar month from the confirmation of the relevant plan.

Such is the legal background to road haulage. The correspondence it bears to reality can as usual only be inferred from reports in the press, etc. of what happens in the field. These are two kinds: first, reports of formal disputes and arbitrash; and secondly, accounts, which are innumerable, of the behaviour of institutions and individuals presented with numerous, and often conflicting, demands and opportunities. It is the formal disputes which will now be examined. These, as in all sectors of the Soviet economy, may be of the pre-contractual or post-contractual type. The former disputes proceed as follows:-

A client of a road haulier on receiving a draft contract, some items of which he disagrees with, andbeing unable to get the haulier to amend them, is supposed to record them in a memorandum, without however holding up the signature of the contract. He must transmit both signed contract and memorandum within ten days of receipt of the former to the haulier who, in his turn, must attend to the disputed items within a further period of ten days. If the parties cannot come to agreement, the haulier must refer the matter to gosarbitrash - or departmental arbitrash if the haulage enterprise comes under the same ministry, etc.

as the consignor. The judgment eventually made is binding on both parties.

The main subjects of dispute under pre-contractual arbitrazh are: hours of day or night when haulage is to be done and staff made available to handle goods; type of vehicle and associated equipment to be used; tariff scales and supplementary payments to apply; and responsibility for actual loading and unloading. The last item is a never-ending source of difficulty; in most general haulage it is simply left to the consignor and consignee to attend to, and as they do it at times which suit their own convenience best, considerable delays occur against which vigorous campaigns are mounted from time to time.(45)

Drivers are responsible for the safety of goods in transit except when valuable consignments are carried under special guard.

Inter-city haulage (46)

As mentioned in Section A, inter-city haulage on a scheduled basis commenced (from Moscow) in 1957. In 1958 MAPShD RSFSR and road transport authorities in other republics began gradually to introduce scheduled runs on all main roads affording good all-weather conditions of movement; and by the end of 1965 such operations covered 81 roads in the RSFSR, the responsible authority being Glavmezhavtotrans of MAPShD together with its inter-oblast upravleniya controlling a large number of depots.

The legal basis of inter-city centralised haulage is the decree of the council of ministers of the RSFSR issued in July, 1958.(47) Shvarts (in referring to it as a temporary polozhenie) states that it soon proved inadequate, having been produced without the benefit of much practical operational experience, yet it remained (1965) in force in unamended form.(48)

Shvarts adds that instead of the role of contract having, as it should, become enhanced in inter-city haulage there exists in many cases a form of "legal nihilism": with poor liaison among the organisations concerned, ineffectual movement control, and the ever-present pressures to fulfil plans expressed in ton-kilometres, the practice arises among lorry drivers of operating an unofficial tramp service (avtobrodyazhnichestvo). For example, a driver takes a load from Leningrad to Minsk where, in the absence of a return load he agrees, in order to avoid an empty run, to take a consignment to Kiev; and there, still not managing to find a load for Leningrad, he takes one instead to Rostov-on-Don. Thereafter the process takes him to Lugansk, then to Dnepropetrovsk, and so on.(49)

Shvarts advances as another reason for such anarchic conditions the inordinate delays in the operation of the planning mechanism. For example, directors of enterprises may be asked as late as May in a given year to submit zayavki in respect of that year's plan, with the result that haulage proceeds unplanned, and it may happen that consignments

which on the ground of distance, cost, etc. ought to go by road are eventually sent by rail.(50) To give another example of breakdown in the planning mechanism: in November, 1963 enterprises in Moscow received an instruction requiring them to present within a month zayavki for inter-city haulage in 1964; but a check made in April, 1964 showed that 25% of the enterprises concerned had not yet obeyed the instruction.(51)

Modern aids to planning and accounting(52)

Two types of mechanical and electronic aid have been applied to the organisation of road haulage over the past few years: first, machines required simply to reduce the drudgery of certain routine processes in planning and accounting; and secondly, computers for the optimal planning of movements.

The former are not of particular present interest. They are used for the working out of operational indicators and norms, for processing drivers' log sheets, calculating wages and drawing up customers' accounts. A number of road transport units may be served by one MSS (mashinoschetnaya stantsiya) or MSB (mashinoschetnoe byuro). For example, within the Sochi avtotrest one MSB serves seven operational bases; one manufacturing unit; a supply depot; and a consignment, cartage and handling (transportno-ekspeditsionnoe) bureau - all within a radius of 60 km.

With regard to optimal planning, programmes have been devised for:-

(a) Distribution of fleets among operational units with a view to a high

degree of vehicle utilisation.

(b) Devising of rational patterns of movements on trunk hauls.

(c) Attachment of suppliers to consumers in such a way as to reduce aggregate lengths of haul.

(d) Working out of schedules of maintenance and overhaul for operational units.

Road transport units make use of computing centres (vychislitel'nye tsentry - VTs) equipped with various types of computers. The first VTs used in road haulage planning was that set up in the scientific research institute for motor trgnsport (NIIAT) in Moscow in 1962. Last year (1967) Glavmosavtotrans acquired one of its own. VTs have also been set up in Leningrad, Kiev and other cities.

Teleprinters are used for the transmission of material to and from VTs.

The nature of the role of optimising techniques in Soviet transport planning will be discussed in Section D.

Notes on the planning of rail and river transport

RAIL(53)

(a) Perspective

The plan is expressed in aggregate tons and ton-kilometres, but figures are also supplied in respect of certain classes of bulk goods individually, viz: coal/coke, oil/oil products, ores, ferrous metals, timber, grain/flour, cement and fertilisers. The MPS, USSR Gosplan and the republican gosplans are the main bodies concerned.

(b) Current

Enterprises submit zayavki (showing required loadings in tons and wagons by 24-hour periods) to the planning departments of their ministries, which correlate the information and pass it on to the Railway upravlenie. (In the case of enterprises subordinated directly to all-union or union-republican ministries, etc. the information sometimes passes direct to the Railway). After scrutiny the particulars are forwarded to the MPS.

In the case of the bulky major classes of goods (as identified in the perspective plan) ministries, snabsbyty and republican gosplans work out draft plans with subdivision by quarter. The method of balances is used as necessary to determine flows. Final approval is given by the MPS and USSR Gosplan.

The main indicators used in the current plan are: despatch of goods in tons (in aggregate and by major class), ton-kilometres aggregate,

24-hour wagon loadings, and wagon turn-round times.

(a) Operational

With reference to the annual plan consignors are required to submit zayavki six weeks before the commencement of the quarter.

35 categories of goods are planned for individually.

Centrally planned by the MPS, and agreed with USSR Gosplan, are the categories identified in the annual plan, augmented by motor vehicles, agricultural machinery, certain agricultural and dairy products, and fish; and with them are included mixed rail-water consignments, and imports. Altogether about 60% of loadings are centrally planned. The balance of the 35 listed categories are planned by the Railway upravleniya in agreement with ministries and planning authorities. Consignments of goods not included among the basic 35 are planned locally, and details forwarded to the Railway upravleniya. The plans as passed to the railway operating sections show description and class of goods and loading details, station of despatch and - but only if the goods are intended for a destination within the territory of the forwarding Railway - station of delivery.

Before reconstitution of the ministerial system of industrial management in 1965 by far the greater proportion of consignments were planned by Railway upravleniya and at lower level, the sovnarkhozy playing an important role. With the abolition of the latter the main contacts were at first between enterprises and Railways direct, and there was much

resulting administrative congestion. To an increasing degree therefore enterprises are required to submit their plans through ministries, snabsbyty (and, in the RSFSR, ob"edineniya), and there has been a considerable swing to centralised planning (60% of loadings, as mentioned above). There is however no evidence of changes in local planning procedures, and it may be supposed that enterprises whose loadings amount to less than ten wagons per month are still free of the obligation to submit quarterly zayavki; and that it continues to be permissible for potatoes, vegetables and fruit to be transported without resort to the normal planning procedures, provided five days' notice is given.

WATERWAYS(54)

Annual plans are worked out, by the Ministry for the River Fleet in the RSFSR and by corresponding organisations in the other republics, on the basis of zayavki submitted. According to Shafirkin however "there are also selected from the zayavki of consignors those loads which, although capable of being conveyed by a number of different means of transport, can nevertheless be served well by river, taking account of capacity of ports, route conditions, loading of vessels and direction of river flow". Evidently there is a certain amount of direction, but the precise form it takes it not clear, and the matter will be discussed further in Section D.

The quarterly plans are the ones of the greater practical importance. With subdivision by month they indicate, apart from loadings, the port/landing stage of departure and arrival, class of commodity and speed of

transit. Mixed (rail-water) movements, and those involving more than one parakhodstvo, are separately indicated.

Within the system of MRF RSFSR coal, oil/oil products, ferrous metals, ores, timber (floated in rafts, or in the holds of ships) are planned centrally, other goods being the responsibility of the parokhodstva.

Footnotes to Section B

(40) B. I. Shefirkin, Koordinatsiya transporta i planirovanie gruzovykh perevozok (M. 1966), p.80

(41) Sbornik zakonodatel'stva .... op. cit., pp.35 ff.

(42) Sbornik, op.cit., p.46

(43) Ibid, p.45

(44) The main sources of this account are:

Shvarts, op.cit., chapter 3.
Sbornik, op.cit., pp.52-54.

(45) See under Tariffs in Section C.

(46) Main source: Shvarts, op.cit., chapter 6.

(47) Sbornik, op.cit., p.106

(48) Shvarts, op.cit., p.132

(49) Ibid, pp.133-4.

(50) Ibid, p.134

(51) Ibid, pp.134-5

(52) Main references: Avto. trans. 11/67, pp.1-4
Lesov and Itkind, op.cit., pp.20 ff.

For full list of types of computer in use in USSR see "Characteristics of Some Contemporary Soviet Computers" in Mathematics and Computers in Soviet Economic Planning (Yale, 1967).

(53) Main references: Ekonomika zheleznodorozhnogo transporta (M.1965), pp.104-7.
Zheleznodorozhnyi transport 2/67, pp.80-82.

(54) Shefirkin, op.cit., pp.78-79.

SECTION C

The following indicators of the physical performance of road haulage fleets are widely used in planning and accountancy:-

(a) Coefficient of vehicle use

(b) Coefficient of loaded use

(c) Productivity per vehicle-ton of carrying capacity (tons or ton-kms.)

(d) Average carrying capacity per listed vehicle (tons)

(e) Coefficient of use of carrying capacity

(f) Average working day per vehicle (hours)

(g) Average commercial (operational) speed (kms./hr.)

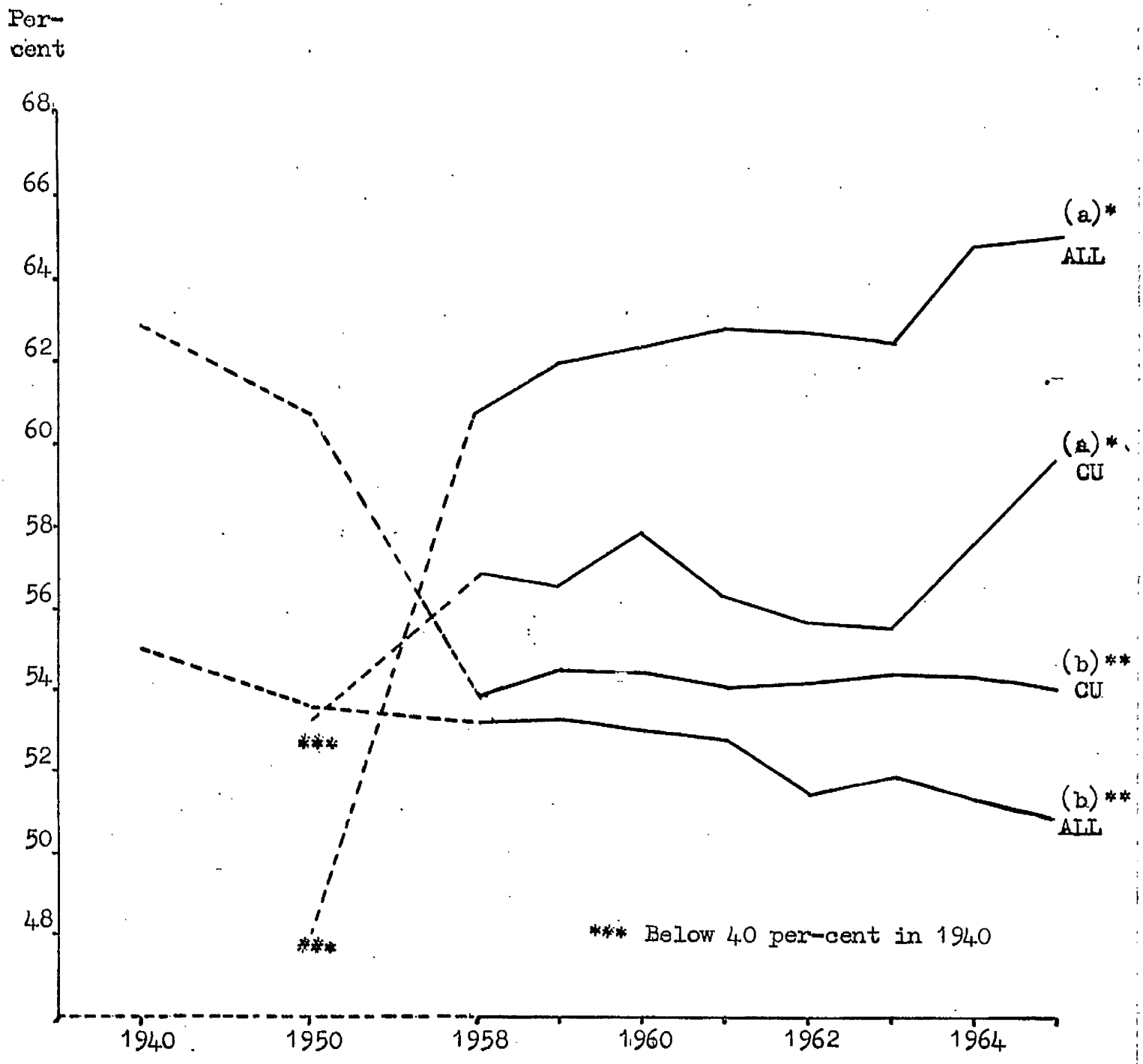
(h) Average daily run (kms.)

The original Russian terms, with definitions, are given in the Annex to this section. Either (b) or (e) may with justification be rendered more simply as "load factor", and so the term is avoided because of the possibility of confusion.

In the current statistical compendium on transport are tabulated indicators (a), (b) and (f) for a number of years for all road haulage, and all but (d) and (e) for the CU element.(55)

The graphs below show in percentage form how the values of indicators (a) and (b) in respect of the whole of the USSR varied over the period of the 7-year Plan, 1959-65 (the values for 1940 and 1950 are shown also, for the purposes of long-term comparison).

COEFFICIENTS OF VEHICLE USE* AND OF LOADED USE**



Source: Transport i svyaz' SSSR, op. cit., pp. 227, 233.

For most of the short-term changes there are no obvious explanations, and one can soon become involved in inconclusive speculation in attempting to establish some. It can however be asserted with a fair degree of assurance that the generally upward trend in the (a) graphs is attributable to improvements over the years in repair facilities and material supply. In the case of the (b) graphs the persistently low values may be taken to reflect enduring institutional factors; but, whereas in the case of non-CU haulage empty running has increased over the years as vehicles have become more numerous, for the CU sector it was held steady over the period of the 7-year Plan.

It would be very illuminating to have all four values for 1966, when there was a fairly extensive experimentation with reformed planning, and 1967, when a new standard system was introduced on a large scale (see sub-section on the road haulage enterprise below). The values of indicator (b) for 1966 and 1967 for MATShD RSFSR are however available: they increased (in percentage form) by 1.8 and 1.5 for the two years respectively.(56) For CU haulage as a whole indicator (b) increased in value during 1966 from 54.0% to 55.6%.(57) Thus preliminary returns show that the reforms have in respect of the reduction of empty running had a beneficial effect. For the purposes of comparison however it is worth noting that in Britain approximately 75% of the mileage of road goods vehicles is done under conditions of load.(58)

Cost

The operational indicators have a basic role to play in the working out of cost, in its Soviet connotation (sebestoimost') - planned and actual. Cost reduction is one of the indicators of performance of all Soviet enterprises, to the profits of which it contributes; and normed sebestoimosti are the basis of transport tariff scales.

Consider now the evaluation of sebestoimost' for a CU road haulage unit with a fleet of 200 lorries, for which the following indicators are laid down in the plan:-

(a) 0.90 (b) 0.55 (d) 4 tons (e) 0.90 (f) 12.5 hours

(g) 20 kms./hour[59] (see list at beginning of this section)

There is a plan for labour and wages, as well as norms for fuel usage, wear and tear, amortisation and overhead expenses.

On the basis of all these indicators and norms planned sebestoimost' is worked out for the enterprise, in kopecks per ton-kilometre. Its elements as percentages of total sebestoimost' are as follows:-

Drivers' wages, including social insurance**	25.7
Fuel consumption	16.6
Lubricants and other materials	0.8
Tyre costs	16.6
Technical maintenance and current repairs	20.3
Administrative expenses**	10.7
Amortisation of vehicles: replacement**	2.4
Amortisation of vehicles: capital repair	6.9

The absolute values of the majority of the above items (those not marked with an asterisk) vary with length of run; the others (with asterisk) are time based.(60)

Representing the former - the variable - costs as VC roubles per kilometre, and the latter - the fixed - as FC roubles per hour, one obtains the total cost in roubles per day of operation thus:-

$$TC = FC \times (f) + VC \times (h)$$

where (f) and (h) are standard indicators of performance. TC summated over a year of operation and divided by ton-kilometres gives sebestoimost'.

The distinction between FC and VC is of course the one so basic in transport economics, but ultimately very difficult to strike with precision in practical cases; and no attempt will be made at deeper analysis of the Soviet example.

Sebestoimosti for common-user enterprises (kopecks per ton-km.) in republican averages for 1965 were:-

USSR	6.11	Lithuania	5.59
RSFSR	6.41	Latvia	5.48
Ukraine	5.84	Esthonia	5.20
Belorussia	5.15	Kazakhstan	6.09
Moldavia	5.30	Uzbekistan	6.05
Georgia	6.37	Turkmenistan	6.13
Armenia	6.10	Tadzhikistan	5.71
Azerbaidzhan	4.75	Kirghizia	5.99

Source: Transport i svyaz' SSSR, op.cit., p.245

It is hardly possible to account for the variations in simple terms. Better roads reduce the costs of road transport enterprises operating in the West and Centre, but intensity of usage, size of carrying units, and degree of specialisation - itself influenced by type of industry, etc. served - are important factors. It has been estimated that when tractive units (tyagachi) and trailers of combined carrying capacity of 50-100 tons are fully utilised on first class roads sebestoimost' can be as low as 0.5 to 0.7 kopecks per ton-kilometre instead of the present average of 5 to 6.(61)

A point to be noted is that road (track) costs do not appear as an element of sebestoimost', except in so far as fuel oil is subject to turnover tax. Payments for roads out of enterprise accounts are of course another matter - to be referred to later in this section; and road finance in general will be considered in Part 3, Section D.

Another item not allowed for in sebestoimost' for road haulage is repair and replacement of garages and other base installations, including the wages of the mechanics employed in servicing the vehicles.

A similar situation exists with regard to the calculation of the costs of sea and river transport: no account is taken of the cost of upkeep of the main installations of sea and inland ports, and of sea and inland waterways themselves, though costs of upkeep of certain ancillary equipment such as lighting and telecommunications are minor items. In 1962 one sixth of sebestoimost' for river transport was accounted for by amortisation of vessels, and for sea transport it was of the same order.(62)

In the case of the railways (MPS), cost of the whole infrastructure is included in sebestoimost', of which it accounted for 22% in 1962.(63) In road haulage amortisation accounts for under 10% of sebestoimost', as a general rule.(64)

Thus the cost structures of the various transport media are not comparable one with another, and so could not be used as a sound basis for the coordination of transport - even if the Soviet price system were a reliable measure of economic cost.

For rail, sea and river transport it has long been the statistical practice to work out sebestoimost' both separately for goods and passenger movements and also in the form of a composite figure obtained by treating passenger-kilometres and ton-kilometres as of equal weight in combined privedennye ton-kilometres.

Thus for 1965:-

Sebestoimost' in kopecks (USSR)

	per ton-km.	per passenger-km.	per privedennyy ton-km
RAIL	0.240	0.598	0.274
SEA	0.138	3.565	0.148
RIVER	0.238	1.306	0.276

Source: Transport i svyaz' SSSR, op.cit., pp.117, 160, 199.

River transport costs in certain of the smaller republics are considerably above the USSR average.(65)

In the case of road transport *sebestoimost'* for goods and passenger operations together in terms of *privedennye* ton-kilometres appears to have been given for the first time in the 1967 issue of *Trans. i svyaz' SSSR*. Indeed as recently as 1964 Lebedev in his book on transport statistics explicitly stated that no such composite figure was produced for road transport.(66) Using the transport statistical compendium it seems impossible to check the *privedennye* figures against those given separately for road haulage and road passenger operations, because apparently, instead of there being a straightforward division between goods and passenger movements, complications arise in the former concerning costing by job and by time.

Sebestoimosti in kopecks for road transport (USSR averages) in 1965 were:-

	per ton-km.	per passenger-km.	per *privedennyy* ton-km.
ALL	7.1		
COMMON-USER	6.11	0.98	2.62

Source: *Transport i svyaz' SSSR*, op.cit., pp.232, 244.

It is difficult to see what purpose such broad averaging serves. It would be much more helpful if there were some disaggregation of the figures - in the case of freight by, say, type of haulage. Then the study of tariffs which follows would be more revealing.

Tariffs

In the USSR transport tariffs, like industrial prices, are set at such levels as will ensure some desired relationship between cost (sebestoimost') and revenue - or, under the recent economic reforms, between profit and capital - for given units of account, whether these be enterprises, upravleniya, ob"edineniya or even ministries. Tariffs play only a limited role in influencing enterprise managements in the making of day-to-day decisions. Above them looms the planning mechanism which is the real determinant of the main traffic flows, and is only to a limited extent affected by cost considerations, whether these be discerned by the planners themselves or influence enterprise managements when they make proposals.

In the circumstances one would expect the tariff structure to be simple and straightforward; in fact it is highly complex, and not easy to outline within the space merited by its real importance - but an attempt must be made.

In 1958 - two years after the abolition of MATShD USSR - formal responsibility for the fixing of tariff scales passed to republics.(67) In theory therefore there must be consultation between republics to fix the scales in all cases where trunk traffic crosses their borders. In actual fact MATShD RSFSR and the Committee for Prices of RSFSR Gosplan draw up the inter-republican scales, with such consultation with other republics as they consider necessary, under the auspices of the Committee for Prices of USSR Gosplan.(68)

Revised tariff scales were introduced in 1967 to replace those in force since 1962, though the changes made were for the most part not radical ones.(69)

There are three main tariff groups for goods:-

(i) General

(ii) Centralised inter-city

(iii) Exceptional (bulk short distance)

For each group there are five scales, the one applied to a particular consignment being determined by the coefficient of use of carrying capacity (loadability) (operational indicator (e)). If the coefficient is unity then the first class scale is used, whilst the second to fifth class scales are applied to consignments ensuring coefficients of 0.71 to 0.99, 0.51 to 0.70, 0.41 to 0.50 and 0.40 and less, respectively. Charges by scales 2 to 5 are obtained by multiplying those for the corresponding points in scale 1 by the coefficients 1.25, 1.67, 2.0 and 2.5 respectively.

The changes of 1967, which included the introduction of the fifth class (lowest loadability) scale, were intended to ensure a level of general (gross) profitability in all republics of 13-15% - that is, of profit in relation to capital.(70) However from a full exposition of the 1967 changes given by an official of the Committee for Prices of RSFSR Gosplan it is difficult to conclude that there was any overall rise in tariff levels.(71) The situation is understandable in that the current economic reforms are intended to operate in such a way as not

to cause any rise in retail prices and the cost of agricultural produce - and road transport is of importance in the retail trade and in agriculture.

The general scales do not cover loading and unloading; scale 1, for 1 ton, tapers from 25 kopecks (1 km.) to 340 kopecks (100 km.).

The inter-city scales only apply on routes with regular, scheduled services. They cover loading, unloading and documentation. The tariff levels were raised in 1967, but still remain below those of the corresponding general scales, like which they taper.

The bulk short distance scales, applicable to hauls of up to 10 kilometres, are only used if full mechanisation of loading and unloading is provided for. Consignments in vehicles of over 10 tons capacity are charged less - loadability remaining the same - than in ones of up to 10 tons.

As part of the tariff reform of 1967 there was a full review of the classification of goods according to the five classes of loadability.

There are separate systems of charging for the hire of vehicles by time or distance; and for documentation, cartage, handling and provision of information - the so-called transportno-ekspeditsionnye (TE) services.

A surcharge of 15-25% is applied for the use of special vans, tanker-lorries, temperature-controlled vehicles, etc., but no charge for tipping lorries if the length of haul is under 15 km.(72)

Territorial multipliers are applied to tariff scales to take account of costs imposed by movement over roads inferior to those in the populous regions of European Russia.(73)

And finally, there are charges (reduced in 1967) for delays caused by consignors and consignees at their premises; and rebates for high-speed handling.(74)

Delays of various kinds however are widespread and serious, and the standard penalty charges just referred to would appear to have next to no effect as a means of reducing them. At any rate, a campaign against such delays was launched at the end of 1967 to enforce the "Material responsibility of enterprises and organisations for the non-fulfilment of tasks and obligations" - to quote the rubric of the decree of the USSR Council of Ministers which came into force on 1st January, 1968.(75) The decree provides among other things for fines (as a percentage of value of goods carried) for "failure to fulfil haulage responsibilities", delays in rendering of goods (on part of consignor), and "irrational use of transport facilities".

The road haulage enterprise

The haulage enterprise as an administrative and legal entity, and its role in the planning and performance of freight movements have already been examined, and certain of its other plans - for labour and wages, use of materials, etc. - came into the study of haulage cost. It is therefore appropriate to consider now the composite planning and financial structure of the road enterprise, the tekhtransfinplan, which is in essential features not greatly different from the tekhpromfinplan of an industrial enterprise.

Since the new system of planning and incentives[76] had by the end of 1967 been introduced in about half the road transport enterprises of the USSR, and the changeover is due for completion by the end of the present year (1968), it is the tekhtransfinplan under the new regime which will be studied - after brief reference to the earlier experiments in reform.

Commencing in May, 1965 three Moscow and two Leningrad road haulage enterprises were made to operate under very liberal experimental arrangements[77] providing for a very restricted number of planning indicators, and big incentives to drivers (see sub-section below on drivers' wages). One of the Moscow trio - an enterprise concerned in transporting minerals on circular routes by means of tipping lorries assembled in trains - succeeded in raising its coefficient of loaded use from 0.53 to 0.65.[78] Further special experiments were begun before the end of 1965.

During 1966 there was a large-scale, and much more carefully controlled, experiment embracing selected enterprises in all union republics. Within the system of MAVShD RSFSR, the selection comprised all operational units of Glavlenavtotrans (including bus and taxi), and also lorries, buses and taxis in Taganrog, and concerned 8% of the Ministry's work force engaged in haulage. Outside the ministerial system Glavmosavtotrans transferred a representative selection of its enterprises, including the whole of its inter-city fleet, to the experimental working.[79]

The new standard system of planning introduced at the beginning of 1967 is set out in "methodological instructions",[80] from which is

derived the main body of the following description of the tekhtransfinplan of a road haulage enterprise.(81) By the end of 1967 52% of the work force of MATShD RSFSR was involved.(82)

The enterprise is presented with seven planning indicators, viz:-

(a) Gross revenue

(b) Goods to be carried, in tons, with "basic clientele".

(c) Wages fund

(d) Finance: gross profit, general profitability, accounting profitability, payments into budget, and allocations from budget

(e) Capital investment

(f) Introduction of new techniques

(g) Material technical supply

Other indicators - among which is included ton-kilometres - do not require approval by higher authority, being worked out by the enterprise itself, though they are to be available to planning and accounting organs for the purposes of plan formulation. The clear inference is that the reforms have not led to a diminution in the amount of planning work, but rather to its redistribution as between apparat and enterprises - which has been confirmed in the course of an elucidatory article written by a planning official of MATShD RSFSR.(83) In fact, as will be seen, ton-kilometres remain in the eyes of the apparat the most important planning indicator of all - just as they were before the inception of the new system of planning.

The financial indicators are now described.

(i) Gross profit (balansovaya pribyl') is the difference between revenue - from haulage (less a 2% levy for the purposes of road construction),[84] TE work, etc. - and expenditure incurred in the course of the same activities.

(ii) General profitability (obshchaya rentabel'nost') is equal to gross profit divided by the total value of fixed and working capital.

(iii) Payments into budget comprise first, payments in respect of fixed and working capital (6%);[85] secondly, "fixed payments" - intended as rents from enterprises operating under relatively favourable conditions, but in practice assessed as a percentage of total revenue; and thirdly, balance of profit after formation of incentive funds and payment of interest on bank loans.

(iv) Accounting profitability (raschetnaya rentabel'nost') is equal to gross profit (less payments in respect of fixed and working capital, "fixed payments" into budget, and interest on bank loans) divided by total value of fixed and working capital.

(v) Allocations from budget require no special explanation in their main function. They are still also required to balance the accounts of enterprises which incur losses (see sub-section below on the subject of such enterprises).

The three incentive funds are required to be formed out of profits on the following basis in the case of enterprises within the system of MATShD RSFSR, which as in other matters sets the pattern for the MATShD

of the smaller republics.(86)

The material incentive fund

(i) To all workers: payments equivalent to ten days' work (3.3% of wages fund)

(ii) "Once-for-all" payments, including premia for socialist competition: 2% of wages fund

(iii) To professional and administrative staff: 20% of salaries, and since these on average for the ministry account for 10% of the wages fund the approximate scale of payment is 2% of the wages fund.

Therefore the total average scale of payments is 7.3% of the wages fund.

The amenity fund(87)

Scale of payment into this fund: 4% of wages fund.

The fund for the development of production(88)

0.5% of value of fixed assets of enterprise.

The production fund exists for the purpose of investment in new techniques, mechanisation and automation, and the repair and overhaul of vehicles. In addition to the deductions from enterprise profits the fund receives that part of depreciation payments (about 30%) which is intended for the purposes just mentioned, and investment out of central funds (through the budget) is reduced by the same amount.

Calculation of incentive funds

Norms for payments out of enterprise profits into the three incentive funds are worked out as follows:-

80% of each of the funds is derived from the level of profitability, and 20% from the increase in profit. If the former is x% and the latter y%, then in the case of the material incentive fund since

$$7.3 = \frac{80}{100} \times 7.3 + \frac{20}{100} \times 7.3$$

$$5.84 + 1.46$$

the norms for payments out of profits are $\frac{5.84}{x}\%$ of wages fund for each percentage of profitability, and $\frac{1.46}{y}\%$ of wages fund for each percentage increase in the amount of profit.

The norms, which are then applied to actual levels of profitability and increase in profit, are presumably adhered to unless abnormal occurrences lead to intervention by higher authority.

The calculation in the case of the amenity fund is made in the same way, as it is also with theproduction fund (profit element) with the exception that norms are related to the enterprise's fixed assets and not to its wages fund. Enterprises are put into groups (according to function, locality, etc.) for the purposes of determination of incentive fund norms, and there are supposed to be at least three to a group. Norms as worked out require the approval of the republican gosplan, ministry of finance and trade union council.

The foregoing account is now illustrated by a numerical example. The figures, which are in thousands of roubles in respect of one year's operation, are broadly representative, being derived from press reports of the working of the new system.(89)

A road transport enterprise, concerned entirely with haulage, has a revenue of 1450, as compared with an expenditure of 1200. Its mean annual basic assets and working capital are 1450 and 50 respectively, and the wages fund is 600. There is an interest payment of 2 on bank credits, and a "fixed payment" into the budget which will be indicated as "x".

It follows that:

$$\underline{\text{Gross profit}} = (1450 - 29) - 1200 = \underline{221} \quad \text{(where 29 is the levy for road construction)}$$

$$\underline{\text{Incentive funds}} = \frac{7.3 \times 600}{100} + \frac{4 \times 600}{100} + \frac{0.5 \times 1450}{100}$$

$$= 44 \text{ (approx.)} + 24 + 7 \text{ (approx.)}$$

$$= \underline{75 \text{ (approx.)}}$$

Gross profit with its sub-divisions may be represented diagrammatically:

Bank int.

* Capital charge	* Fixed payt	Incentive funds			* Bal. of profit
90	x	44	24	7	54-x

Payments to budget thus: *

2

$$\text{Accounting profitability} = \frac{100\ (\text{Incentive funds} + \text{Balance of profit})}{1500}\ \% = \frac{129 - x}{15}\ \%$$

This should be a true measure of the working efficiency of the enterprise, but as already mentioned the "fixed payment" is more of a levy made by rule-of-thumb than a true rent. However, if it be arbitrarily assumed that "fixed payment" and balance of profit are equal (i.e., x=27), then accounting profitability = $\frac{102}{15}\% = 6.8\%$ (General profitability = $\frac{221}{15}\% = 14.7\%$).

The problem of loss-making enterprises

Individual road transport enterprises in a large number of oblasts (and equivalent) in the European part of the RSFSR have operated at a loss for a number of years.(90) With tariffs remaining on broad average more or less unchanged under the 1967 revision such loss makers will continue to exist. Solvency may be possible at the level of the newly-created ob"edineniya by judicious grouping, but nevertheless the existence of loss-making individual enterprises runs counter to the reforms in their theoretical conception and gives rise to certain accounting problems.

Evidence is so far lacking (mid 1968) of the transfer to the new system of road transport enterprises which normally make a planned loss, so reference must be made to experience elsewhere. The actual loss may be covered quite legitimately out of a budgetary grant, but since profits are the source of the incentive funds some contrivance is required - some basis of calculation - to form them if the profits are non-existent. In

one sector at least the contrivance has been the concept of "theoretical profitability" under which payments into incentive funds are based on the amount by which cost reduction as from one year to another is expressed as a percentage of fixed capital.(91)

Whether or not the foregoing considerations are of more than minor relevance will depend upon the shifting relations between ministries, glavki, etc. with their crude indices of performance by output and the enterprises which, other things being equal, will desire to increase profits. With regard to road haulage the traditional planners' approach is exemplified by the statement of E. Trubitsyn, Minister of Motor Transport and Main Roads of the RSFSR, to the effect that "glavki and ob"edineniya deserve serious reproach for not exercising day-to-day supervision over units transferred to the new planning system and the fulfilment by them of more ambitious plans". He called for a drive to increase tons carried, and ton-kilometres - the 1968 figure for the latter to be 6.9% over that for 1967.(92) Ironically enough, one of Trubitsyn's own deputies made a blunt statement of the conflict between planners and enterprises in the following terms:-

".... the maintenance of a system under which the interests of the workers in the enterprises are at variance with, and at times directly opposite to, those of the apparat is inimical to the successful implementation of the new reforms".(93)

The relative effects of plans, incentives to managements, and customers' requirements on the working of road transport enterprises are usefully brought out in the following two juxtaposed items:-

(a) Tariffs will acquire an enhanced importance (under the new system of planning). As distances decrease revenues will not decrease to the same extent, but on the other hand, as distances increase, revenues increase more slowly than ton-kilometres. As a result, the tendency of enterprise managements to undertake long-distance work to the neglect of the short (i.e., maximise ton-kms.) will be reduced.(94)

(b) Profit is planned on the basis of revenues obtainable if average length of haul remains the same as in the previous planning period. If as a result of the changing requirements of customers this average length rises then, due to the taper in the tariff scales, revenue can fall to such an extent that there is a loss on the haulage even though there may have been an improvement in vehicle usage, loaded usage, etc.(95)

A note on drivers' wages

The basic form of payment of drivers is by job - as measured in ton-kms.(96) The present system was described in an article written in 1967:(97)

Payment is made in full (in accordance with measured ton-kilometres) for the outward haul, but a reduction coefficient of between 0.5 and 1.0 (as agreed with the trade union group) is applied in respect of the return

run. Thus the practice introduced under the 1965 experiments of refraining from applying the coefficient in all cases where a return load was obtained was short-lived.(98)

The author of the 1967 article expressed the view that with the introduction of complex route planning the distinction between outward and return hauls had become unreal anyway. He suggested that reduction coefficients should be applied for all point-to-point runs, the size varying according to coefficient of use of carrying capacity.

A concluding note

However the Soviet planners may view the economic reforms in general, little has changed in basic conditions so far as road transport enterprises are concerned. These conditions may be summarised as: use of physical indicators in planning and in assessment of performance; desire for (and assumption of) comparability of conditions in the process of planning ahead; and stability of wages, with a suppression of all practices conducive to inflation.(99)

Section C : Annex

Indicators of physical performance of road haulage vehicles

(a) Koeffitsient ispol'zovaniya parka (avtomobilei)
OR koeffitsient vypuska (avtomobilei) na liniyu

$$= \frac{\text{vehicle working days}}{\text{listed vehicle-days}}$$

(b) Koeffitsient ispol'zovaniya probega (avtomobilei)

$$= \frac{\text{distance run by vehicles with load}}{\text{total distance run by vehicles}}$$

(c) Proizvoditel'nost' na odnu srednespisochnuyu avtomobile-tonnu

$$= \frac{\text{total tons OR total ton-kms.}}{\text{listed vehicle-tons}} \quad \text{(for a given time period)}$$

(d) Gruzopod"emnost' srednespisochnogo avtomobilya

$$= \frac{\text{vehicle ton-days}}{\text{listed vehicle-days}}$$

(e) Koeffitsient ispol'zovaniya gruzopod"emnosti (avtomobilya)

$$= \frac{\text{total ton-kms.}}{\text{distance run by vehicles with load X carrying capacity per listed wkg. veh.}}$$

(f) Srednyaya prodolzhitel'nost' raboty avtomobilya
OR vremya v naryade

$$= \frac{\text{vehicle working hours}}{\text{vehicle working days}}$$

(g) Srednyaya kommercheskaya/ekspluatatsionnaya skorost' (avtomobilya)

$$= \frac{\text{total distance covered}}{\text{time in motion + loading time + delays}} \quad \text{(for a given working period)}$$

(h) Srednesutochnyi probeg rabotavshego avtomobilya

$$= \frac{\text{total distance covered during working hours}}{\text{vehicle working days}}$$

Source: Lebedev, Transportnaya statistika, op.cit., pp. 177-85.

Footnotes to Section C

(55) Trans. i svyaz' SSSR, op.cit., pp.227, 233, 244.

(56) Ekon. gaz. 2/68, p.21, and Avto. trans. 9/68, p.1.

(57) Trans. i svyaz' SSSR, op.cit., p.233.

(58) Carriers' Licensing (London, HMSO, 1965), p.107.

(59) I.Z. Ioffe Sbornik zadach i uprazhnenii po ekonomike avtomobil'nykh perevozok, (Khar'kov, 1963), pp.90-93.

(60) Although in the given example drivers' wages are calculated on a time basis, it is uncertain whether the practice is general in the working out of sebestoimost'. As far as actual payment of drivers is concerned, job rates are normal (see later in this section).

(61) Shvarts, op.cit., p.131.

(62) Lebedev, op.cit., pp.260-1.

(63) Ibid.

(64) Ibid, p.262.

(65) Trans. i svyaz' SSSR, op.cit., pp.200-1.

(66) Lebedev, op.cit., p.261.

(67) Postanovleniya: USSR C. of M. 30/5/58 (Sbornik, op.cit., p.310) and RSFSR C. of M. 22/8/58 (Sbornik, pp.310-11).

(68) Avto. trans. 5/67, p.19.

(69) For 1962-7 scales see Postanovlenie of RSFSR C. of M. 5/5/61 (Sbornik, pp.311 ff.).
For 1967 scales see Avto. trans. 5/67, pp.19-22.

(70) Avto. trans. 5/67, p.19.

(71) Avto. trans. 5/67, pp.19-22.

(72) Sbornik, op.cit., p.315, article 4; Avto. trans. 5/67, p.21.

(73) Sbornik, p.321. For list see Part 3, Section C.

(74) Sbornik, p.315, articles 6 and 7, and Avto. trans. 5/67, p.21.

(75) Gudok 16/11/67 - and the Soviet press generally, at the same period.

(76) In relation to industrial enterprises, new system is codified in the polozhenie approved by the USSR C. of M. on 4/10/65.

(77) For full account see Ekon. gaz. 48/65.

(78) Ibid.

(79) For selection made republic by republic, with report on results, see Avto. trans. 1/66, p.2.
See also Ekon. gaz. 2/68, p.21.

(80) Ekon. gaz. 5/67. References to individual articles of the instructions will not normally be given.

(81) The plan for a passenger enterprise is not greatly different - principal difference from goods is that wages fund does not require approval by higher authority.

(82) Ekon. gaz. 2/68, p.21.

(83) Ekon. gaz. 18/68, p.21.

(84) Road finance is considered in Part 3.

(85) May be reduced to 3%, or even waived, in case of unfavourably placed enterprises, or those making planned losses.

(86) Ekon. gaz. 5/68, p.30.

(87) Fond sotsial'no - kul'turnykh meropriyatii i zhilishchnogo stroitel'stva.

(88) This is in fact not always regarded as one of the "incentive funds" in Soviet articles on the subject.

(89) Avto. trans. 1967 and 1968, passim.

(90) Avto. trans. 2/67, p.1.

(91) Example concerns the Ministry of Non-Ferrous Metallurgy. See Ekon. gaz. 25/67, p.13.

(92) Avto. trans. 1/68, pp.1-3.

(93) Ekon. gaz. 2/68, p.21.

(94) Avto. trans. 4/67, p.10.

(95) Ekon. gaz. 35/67, p.31.

(96) but see footnote (60).

(97) Avto. trans. 8/67, pp.15-16.

(98) Ekon. gaz. 46/65, pp.26-33.

(99) See "Methodological instructions" (Ekon. gaz. 5/67), articles 27 and 32.

SECTION D

The concept of the coordination of transport is essentially a simple one, appreciated in West and East alike: it is that the transport process on the scale necessary to meet the requirements of the national economy should be carried out with minimum call upon the use of scarce resources.

The notion that the absence of barriers resulting from the private ownership of the means of transport is especially conducive to the solution of problems of coordination finds expression in innumerable introductory chapters of works on Soviet transport. Typical is the following:

"Every means of transport has its appropriate sphere of operation, which is determined by the technical and economic characteristics of each.

"The complex use of the different means of transport in the form of basic links in a single transport network for the USSR as a whole stems from the requirements of the law of planned (proportional) development of the whole economy, which is fundamental to socialism" (100).

"The single transport network" is a phrase very frequently used; but the next passage to be quoted serves to indicate the formof circular reasoning which tends to arise out of attempts to lend actuality to the concept:-

"The choice of one or another form of coordination of road and rail operations must be made solely on the basis of technical-economic calculations. These calculations must be used first of all to

ascertain the principal spheres of employment of motor transport within the zone of operation of railway lines and their local branches. The determination of these spheres is linked to matters of effectiveness of capital investment, sebestoimost' of movements, and level of tariffs, fixed for transport with the object of regulating the prices of industrial products and agricultural output, and at the same time creating incentives for the rational use of the various means of transport" (101).

Many factors militating against transport coordination in the USSR have already been referred to directly or indirectly in the course of the present study, and it will now be useful to list some important ones:-

Institutional and economic

(i) The basic difficulty under a command economy in reconciling the motivations of managers and workers with the desires of the planning apparat.

(ii) The existence in respect of each transport medium of separate administrative patterns, methods of planning, assessing cost, fixing tariffs and judging performance.

(iii) The widespread practice of fixing the prices of products of state industry cif station of delivery in connection with the use of rail transport as the "normal" means of distribution of such products (102).

(iv) The separation of GU and non-GU haulage - the latter tending to be managed in accordance with the practices of the various parent ministries in matters of planning, and assessment of performance.

Seasonal

(i) For most practical purposes the railways operate all the year; road transport suffers badly at certain seasons - but in particular at the time of the spring thaw - because of the poor standard of local roads; whilst water transport has a definite navigational season.

(ii) The demand for peak capacity at the time of the harvest bears differently on the different means of transport.

It is now necessary to distinguish between two types of problem in transport coordination:-

The macro - the determination of the proper scales of investment in the infrastructures of the various media: railway track and lineside equipment; roads, with their lighting, patrolling, etc; port installations, canals and locks; and so on. This subject falls largely outside the scope of the present study - though in Part 3, Section D there will be a survey of the methods of financing road construction.

The micro - how day-to-day choices of transport medium are made; it is this which is the main subject of the rest of the present section. First there will be a survey of some Soviet essays in the optimal planning of movements, and then a study of the applicability of more conventional methods of rationalisation.

Optimal planning of movements

If an exercise in optimisation were to be carried out for the benefit of the community at large then factor costs, not tariffs, would have to be used. The manner of assessing costs would necessarily vary with

means of transport, and so be extremely complicated if more than one agency were employed - road and rail, say - over varying distances. The calculation would however not produce very useful results if carried out in rouble terms because of the nature of Soviet administered prices. Again, linearity would only apply to a limited degree, and so the use of the method of linear programming in the exercise would hardly be possible.

If the object of optimisation were to increase the profits of an enterprise, then prevailing tariffs would be used in the calculation, and the question of their relation to "true" cost would not be a matter of concern. The structure of the tariff scales would however exclude the possibility of employing any linear technique; for, in the case of road transport, rates vary according to use of carrying capacity and taper with distance, and rail charges are levied on the basis both of use of wagons and weight of consignment, and taper with distance too. It would probably be the case that some point-to-point hauls could be performed by road or rail, others by one medium only. And finally there is the complicating factor not to be overlooked that a nominally rail haul would very likely involve cartage at both ends.

All in all, optimisation of transport resources carried out in value terms would not be a practical proposition and could hardly lead to meaningful results.

There still remains the possibility of planning a complicated pattern of hauls in such a way as to reduce aggregate distance covered by vehicles, or else ton-kilometres. Two points at once arise: first, actual trans-

port medium would have no relevance to the exercise, assuming equality of length of haul between any two points; and secondly, as minimisation of ton-kilometres is not in general reconcilable with Soviet institutional realities, the case would have to be a rather special one in order to have practical significance. Such special cases do on the evidence of various reports (103) occur in urban areas when standardised commodities have to be delivered by road from a number of stores to various points of delivery, terminal and handling costs being more or less uniform. With regard to road trunk movements, however, reports of successful programming must be treated with a certain degree of scepticism, for long-distance haulage is an activity in which "storming" for ton-kilometres can produce rapid results at critical times in the planning cycle (104).

In spite of the caveat concerning institutional realities it is useful at this juncture to refer to certain academic investigations into the optimal planning of freight movements over wide areas which have been undertaken in the USSR (105). They are not directly relevant to the problem of coordination, concerning as they do only one transport medium (rail), but they nevertheless serve to put in a practical light certain points already made.

The first two studies concerned coal movements (a) in Siberia and the Far East, using a 10 x 30 matrix; and (b) over the USSR as a whole (30 x 98 matrix).

All coal was measured in conventional units; coking coal excluded from the calculation; oblast centres taken as demand points, and main centres of outgoing haulage as supply points; and movements other than

by rail not considered.

Three criteria were applied: minimisation of (i) ton-kilometres (ii) cost based on tariffs, and (iii) sebestoimost', including items for loading/unloading and empty wagon movements. Shadow prices were derived from the optimal plan, which compared favourably with the actual plan (data for 1960 used).

As trunk hauls were being considered, the exclusion from the reckoning of all but rail transport appears reasonable; but the possibility of the exercise being given practical application is seriously prejudiced by the peculiarities of the cost structure of the USSR's coal industry, and the activities of its snabsbyt system, which along with the planning mechanism in general serve to obscure the real facts of cost (106).

The third study concerned cement distribution in the Ukraine, and was based on data for 1961. Twelve supply points (including three import points) were "assigned", and naryady indicated that deliveries had to be made to just under a thousand stations (in the Ukraine), which were consolidated to about a fifth of that number. Uncertainty concerning the effects of the difference between the allocation procedures employed by the Ukrainian snabsbyt on the one hand and the inter-republican body on the other made it necessary to construct alternative matrices, respectively including and excluding the union-allocated cement (107). The two criteria of optimality employed were minimisation of ton-kilometres and minimisation of cost by tariff.

In the report on the project [108] a number of its shortcomings were mentioned, viz; failure to consider alternative methods of production and consumption; the probability that naryady were a representation more of a desire on the part of the MPS for consignments to move in predictable ways as between one year and another than of solicitude for customers' requirements; concentration on the ton-kilometre reduction criterion because of mistrust of official prices on the part of those carrying out the investigation; and the assumption of the existence of a linear relationship between cost of haul and amount carried.

Other methods of rationalisation

The possibilities of successfully employing programming techniques being very limited under existing Soviet conditions, it is now time to examine the possibilities of other methods of coordination. Something has to be done, for in the absence of a real economic basis to decision making at the enterprise level situations arise from time to time which are bound to appear irrational to almost any outside observer. Broadly three types of action may be identified:-

(a) To keep a watch on the operation of the system, and whenever planning procedures, norms, tariffs, etc. seem to require adjustment, to amend them without too much far-reaching disturbance. This approach is in favour at present, and the Kosygin reforms, for all the publicity accompanying them, are typical of the method.

(b) To maintain special regional commissions with power to "cut through red tape" whenever they consider such action to be desirable.

The method is typical of the Party, which provides the driving force.

(c) To reorganise the administrative framework *form* new specialist units, redefine responsibilities, etc. The approach is identified with Khrushchev, and at present adopted only cautiously.

The three types of action will now be discussed in some detail.

(a) A concept popular with the transport planners is that of "normal freight flows". These are conducive to the orderly planning of railway operations, and are intended to be complementary to the system of centralised material-technical supply, but they are inimical to any local initiative to meet changing circumstances, including ones of cost. Normal freight flows, to the extent that they go with railway-mindedness and transport conservatism, are not a concept likely to lead to the balanced development of all means of transport; indeed they imply a begging of the transport question. And again, if normal freight flows are an expression of arrangements made by the snabsbyt of the various branch ministries, and the MPS aggregates, but does not rationalise, the movements - which appears to be the case - then cross-hauls are hardly avoidable.

One possible approach not involving radical changes is to get the planning organs in the course of their scrutiny of proposed transport arrangements to apply cost criteria, and in so doing gradually increase cost-consciousness generally. Such was the thinking behind the issue in 1967 of temporary "methodological instructions" under the auspices of USSR Gosplan and the scientific research institutes for both road and rail (109). They were intended to give guidance on how to make a

proper choice as between road and rail through an examination of the costs of the elements of the complete haulage process (main haul, cartage, handling, etc.) for both media - cost being taken both as sebestoimost' and as tariff. What is not clear is what pressure or influence, if any, is supposed to be brought to bear on consignors of goods to use cost criteria; for their behaviour is a crucial factor according to Shafirkin whose observations merit direct quotation:-

"In the absence of a rational means of determining traffic flows, for every medium of transport separately hauls are planned on the zayavki of consignors. There is no universal document valid for all media which would permit of actual choice of one or another to be based on an assessment of relative advantage.

"An incorrect distribution of traffic is the result. Thus there is an unjustifiable growth of long-distance inter-city movements by road at the same time as a large volume of consignments are carried by rail which on economic grounds are proper to road." (110).

He supplies figures, reproduced in the table below, of the percentages of total consigned tonnage of various categories of goods which are hauled over distances of up to 200 km. (111) A point which ought to be added is that even for the shortest rail hauls cartage distance may be substantial both to station of despatch and from station of delivery.

	% Up to 50 KM	% 51-100 KM	% 101-200 KM
All goods	10.7	10.0	14.2
Hard coal	15.2	10.7	11.7
Ferrous metal scrap	14.1	10.1	12.6
Cement	7.9	10.6	16.6
Brick	11.7	17.8	31.8
Potatoes	3.3	9.3	7.5
Sugar beet	22.3	22.6	19.4

Particulars have also been provided of the considerable lengths of time taken for some very short rail hauls (including cartage element). For example, the scheduled time for the delivery of a container by rail from Taganrog to Rostov (about 50 miles) including cartage at each end is three days (five in practice), whereas by direct road haul from consignor to consignee the time is 24 hours. In both cases the time for the main haul is about three hours (112).

To return to the subject of cost, it appears that in so far as planning bodies take it into account at all when examining haulage plans it is tariff rather than sebestoimost' that influence them. In fact they are for the most part unaware of the latter anyway (113). Oddly, although the methodological instructions referred to were intended to provide criteria for choice between road and rail, they do not appear to have been referred to in the journal of the MPS (Zheleznodorozhnyi transport), which normally discusses planning in its various aspects.

The notion that if the planning procedures for haulage by the various transport media are made as far as possible uniform then coordination is more likely to be achieved would seem to be of

doubtful plausibility in view of the facts about Soviet transport planning as so far presented. However such was put forward as the main reason for the issue in 1967 of a new basic polozhenie on the planning of goods haulage, worked out by USSR Gosplan in cooperation with scientific research institutes, ministries, etc. for all forms of transport, and intended for universal application. A long article on it in the journal of the MPS is however devoted almost entirely to the planning of railway goods traffic (114). The polozhenie did not receive mention in the journal Avtomobil'nyi transport - just as the methodological instructions on cost criteria for choice as between road and rail was not published in the railway journal!

The modifications made by the polozhenie in the planning of railway goods traffic were taken account of in the description of this planning given at the end of Section B. In an article on the subject written early in 1968 (115), after a statement that the polozhenie - this time described as "temporary" - made transport coordination possible, there came the observation that "plans as drawn up are difficult to reconcile with the needs of production; they break down, and extensive adjustments are necessary".

(b) Intervention by special commission

Transport came in for special attention in December, 1962 when an all-union scientific-technical conference on the unification of operational practice of rail, water and road transport was held in Moscow. Participating in it were representatives from the MPS, MMF (116), MRF RSFSR,

MATShD RSFSR, including their research institutes; and also from the Institute of Complex Transport Problems (a body attached to USSR Gosplan). The conference decided upon the setting up of a standing Commission for the Coordination of Transport which in due course became attached to the Council of Ministers of the USSR. Gatherings corresponding to the all union conference took place subsequently within economic administrative regions (sovnarkhozy), and standing committees were formed in some of them. One of the most active of these was the Council for the Coordination of the Basic Means of Transport, based on Gorky, concerning the activities of which a detailed account has been published (117).

The Council consisted of nineteen persons: from the Party, the Gorky Railway, the Volga-Vyatka sovnarkhoz, the parokhodstva, the oblast avtotrest, from a number of large industrial enterprises, etc. The Council's work was carried out on the basis of quarterly and six-monthly plans, detailed investigations being performed by ad hoc committees. The following is an account of what happened after the main investigation by such a committee of a particular problem (118):

"Thus it was established as economically expedient that the short hauls in question should be transferred from rail to road, but action was beset by difficulties such as shortage of road vehicles and the marked difference between the tariffs for road and rail haulage.

"Upon further investigation the Council found that large numbers of road vehicles were being used for very long hauls, the GU and sovnarkhoz

fleets were being used for only nine hours out of 24, and that empty running amounted to 43.7%.

"After investigating a great mass of information concerning the size, direction and nature of short runs, and the economic effectiveness of various patterns of haulage, the Council ... decided to shorten the lengths of haul of bulk loads ... and transfer them to rail ... and that short hauls not originating on rail sidings should be transferred to road during 1963-65. A list of such hauls was drawn up.

"The consignors concerned were informed of the decisions, and the times within which they were to be implemented. They were also told that after the lapse of a certain period of time the short hauls would not be included in the rail plans, and therefore no rolling stock made available. At the same time enterprises and other organisations were forbidden to use road transport for long hauls.

" ... A number of sales and trading organisations resisted the measures, referring in particular to differences in tariff (119). Nevertheless the decisions were implemented and the Council applied itself with even more energy to further problems ..."

In an article published at the beginning of 1966 it was stated that commissions for the coordination of transport operated only in a limited number of regions, that they worked sporadically, their decisions were not binding on either the transport enterprises or their clients, and there was an absence of permanent staff to enforce them.(120) This statement may signify that the Gorky council (for transport coordination)

was exceptional all along in the intensity of its activity; or alternatively that with the eclipse of the institutions and policies of the Khrushchev era the day of the transport councils was almost over, and the writer of the article was simply joining in the kill. The councils do not appear to exist any longer; an improvement in the regular machinery is now the preferred method of approach to coordination.

(c) Structural improvements

In discussions among the transport experts the view is coming to be accepted that the organisations for consignment, cartage and handling (TE units) can have an important role to play in guiding goods consignments to the most appropriate transport medium. Even if joint TE organisations were not accorded the responsibility for choosing the agency for the trunk haul (as a result of consignors being obliged to submit zayavki through them) their institution would at least, it is suggested, serve to obviate the waste of separate TE services for road, rail, canal, etc. It is no occasion for surprise however that much of the discussion among the experts is taken up with each attempting to show that the right form of organisation can best be adapted from the existing TE services of the transport authority he represents or supports. An attempt is therefore now made at an impartial summary of the arguments used for and against one or another form of integrated TE service (121). The alternative systems presented are:-

(i) based on the MPS
(ii) organised by the road transport ministries
(iii) an independent network

(i) An inconvenience to be faced is that, since the MPS has no road vehicles of its own, cartage work would have as now to be performed by a road transport unit under sub-contract. The principal argument in favour of a rail-based TE service is that the MPS is the only carrier with all-union land coverage. This contention is however open to question in view of the rather small relative importance of the railways in the transport pattern of certain important parts of the USSR, including much of Central Asia.

(ii) The principal arguments in favour of a service under the road authorities are: that cartage is best performed by road organisations; that, except in the sphere of long-distance haulage, road transport is beginning to occupy a position of supremacy; and that small private rail sidings and feeder lines are steadily diminishing in number, so the railway authorities can no longer automatically regard as "theirs" the traffic emanating from the enterprises concerned. Against a road-administered TE service is advanced the argument that there exists no all-union road transport authority.

(iii) Independence of the principal carriers should at first sight prevent the possibility of the new TE bodies devoting their attention to the special interests of one or another of them. It is however difficult without information concerning the plans and indicators under which the TE units would operate to make any prediction of their possible pattern of behaviour; if the principal indicator remained ton-kilometres one might

expect a partiality towards selection of a rail haul. Again a newly formed independent TE organisation might well find it expedient to instal in the offices of the various transport authorities for which it acts as agent a number of "liaison detachments" which before long could perhaps be found to be functioning in more or less the same way as did the abolished TE sections of the separate carriers.

Containers

The use of containers is a matter which has, or should have, a direct relationship with that of the organisation of TE services.

Containers are widely used in the USSR. In a recent article (122) the total number was stated to be 700,000 - a third of them however being of wood; and repair facilities were a subject of complaint. Advantages to be gained from their use were enumerated: savings in use of packaging, greater facility in the handling of small articles, reduction in the need for temporary storage of goods in transit, and increased opportunities for the development of mechanised handling.

The Soviet writer then however went on to complain that only one quarter of the railway stations open for the receipt of small consignments had facilities for handling containers, adding that in the present year 77 more container-handling areas should be provided on stations, and 100 on feeder lines.

Such observations lead one to suspect that there is little appreciation by the Soviet transport planners of the advantages to be gained through the centralisation of terminal facilities, running of block trains, etc., though the need is admitted for greater standardisation of design of

containers and of the rolling stock used to move them, and also methods of handling, including transfer of goods from one means of transport to another. The writer then scouts the question of a "national container plan", though he is vague as to what that might mean in practice. The fact that the most suitable arrangements for handling containers might with advantage be considered along with the subject of how best to organise unified TE agencies for dealing with consignors of goods receives no recognition. Indicative of the compartmentalised thinking that goes on is the fact that in the methodological instructions of 1967 on cost criteria for choice between road and rail there is but one reference to containers - at the very end.

Mixed haulage

In this context arises the subject of "mixed" haulage, which occurs when two(or more) transport media are employed for the trunk haul - irrespective of the arrangements made for cartage at either end of it. A "temporary" polozhenie intended to govern mixed road-rail movements under a single document was issued in 1959 (123), but it is very doubtful whether it was ever really put into effect. In fact, to judge by references in the press and elsewhere, the only form of mixed haulage which is of any real importance is that involving a river, canal or sea link (124). There were during 1968 a number of reports of serious failures in co-ordination on mixed rail-water hauls: for example, of empty railway trucks moving away from ports at the very time - and in the same direction - that they were required for the further haulage of cargoes arriving in

river vessels (125).

A concluding note

The broad conclusion one finds onself brought to is that the only types of coordination which seem to take place at the operational level are cartage before and after the trunk hauls; a fair amount of planned rail-water movement; and sporadic activity by Party and other local watchdogs - if such can be regarded as a form of coordination. One further concludes that in normal course choice of transport medium is effectively made by consigning enterprises in the act of submitting zayavki - a choice which is however made more from habit and administrative circumstance than as a result of any study of relative costs.

(100) A. Zamanov, Transport Tadzhikistana (Dushanbe, 1964), p.7

(101) G.N. Buachidze, Koordinatsiya avtomobil'nogo transporta i zheleznykh dorog mestnogo znacheniya, (Tbilisi, 1964), p.24

(102) See footnote 120

(103) See Section B, footnote 52

(104) See ref. to avtobrodyazhnichestvo under Inter-city haulage in Sect.B.

(105) Mathematics & Computers in Soviet Economic Planning (Yale, 1967, pp.160 ff)

(106) Shafirkin, op. cit., pp.203 ff.

(107) Ibid., p.212

(108) Mathematics & Computers..., loc. cit. (footnote 105)

(109) Avto. trans. 6/67, pp.9-12

(110) Shafirkin, op. cit., p.86

(111) Ibid., p.87

(112) Avto. trans. 2/67, pp.19-22

(113) Voprosy sovershenstvovaniya kompleksnoi ekspluatatsii transporta (M. 1966), pp.33-34

(114) Zhel. trans. 2/67, pp.80-82

(115) Gudok 13/1/68

(116) Ministerstvo morskogo flota SSSR (the all-union merchant marine)

(117) I.P. Sivaev, Perevozki gruzov v ekonomicheskom raione (M. 1965)

(118) Ibid., pp.25-27

(119) Difficulties also arise when goods normally carried by rail, and priced cif station of delivery, are for some reason conveyed instead by road, for which pricing is normally fob. Subject to certain conditions a rebate is in such circs. granted. See Ekon. gaz. 43/64, p.38

(120) Article by A.V.Komarov in Voprosy sovershenstvovaniya.., op. cit., p.8

(121) Full discussion (though with bias towards rail) is provided in Koordinatsiya raboty razlichnykh vidov transporta (M. 1964), pp. 160-6, by V.V.Povorozhenko

(122) Gudok 14/3/68 (123) Sbornik, op. cit., pp. 154 ff.

(124) In the article referred to in footnote (114) there is a paragraph on mixed rail-water hauls, but no mention at all of rail-road.

(125) Pravda, 4/4/68, p.2

PART 5

THE ROADS

Section A Classification

B Administration

C Territorial distribution

D Finance and development

SECTION A

In what follows there is a certain amount of recapitulation of points already made in Part 1, which is however perhaps justifiable in view of the vagaries of Soviet road classification, and the terminology employed in it.

The word "road" is normally qualified in Russian texts on transport, unless it is quite clear from the context that it is definitely a road, and not a railway, to which reference is being made. Before the motor age "cart road" was the term used, then for a time during the inter-war period "motor-and-cart road" (avtoguzhevaya doroga); now "motor road" is in normal usage. In translations into English the use of "road" unqualified may be justified by the fact that no confusion with rail can result; but nevertheless the simple rendering conveys the impression of covering all routes along which motor vehicles or carts are capable of moving for at least part of the year - routes which in aggregate length amount to approximately three million kilometres, on the assumption that there has been little change in their extent since the pre-war period.(1) About half this total have over the years been accorded varying forms of recognition by state and local authorities, including coverage in statistical compendia.(2) For a period of about twelve years after 1950 the total length of roads classed as "motor" declined with the concentration of traffic on improved roads(3) - as may be seen from the graph of classified roads appended to this section.

Even after much checking and rechecking of Soviet road statistics with reference to definitions, and circumstantial reports in the press, a considerable amount of uncertainty surrounds the whole subject. It is hazardous to attempt to draw from these statistics conclusions of an economic-geographical nature concerning the role of the roads such as would be entirely reasonable in relation to the road statistics of a Western country such as Great Britain. The Western investigator of the present day would automatically regard a stable network of roads, main and local, as being a permanent feature of the economic life of a country in his part of the world. It has however to be accepted in the case of the USSR that

(a) a high proportion of rural roads are impassable at certain times of year. For example, "In Tambov Oblast (during the winter of 1963-64), due to motor vehicles not being able to reach railway stations, wagons containing fertiliser stood a month or more, and from some stations it had to be taken away on tractors; but even these were of no avail with the coming of the spring thaw".(4)

(b) the effect of lack of maintenance of roads may be such as to make them unsuitable for motor vehicles, which may in consequence suffer serious damage if driven along them. The majority of Soviet roads are in fact appropriate to a pattern of life not now followed by an increasingly urbanised society.

The remainder of this section will be taken up with an attempt to convey the essentials of Soviet road classification. In Section C the

will be a quantitative regional analysis, and important roads will be identified.

There are two main forms of road classification in any country: by economic and strategic importance (administrative classification); and by physical characteristics (technical classification).

In the USSR the most common way of representing roads statistically is by surface; and so, even though this is simply one among a number of physical characteristics, it is nevertheless convenient to regard it as a separate means of classification. The three methods in use to represent Soviet roads may therefore be taken as the administrative, that by surface, and the technical. Of these only the first two are normally covered by published statistics - the former less generally than the latter - whilst the third is only used by planners and administrators, and relevant particulars are hard to come by.

The administrative classification comprises two broad categories, which in order of importance are the STATE, subdivided into the all-union and the republican; and the LOCAL, subdivided into the oblast (and equivalent), the rural and the vedomstvennye (i.e., under the jurisdiction of ministries and other bodies with a departmental type of organisational structure).

The pattern of road management will be set out in detail in Section B. Suffice it for the present to say that state roads are characterised by subdivision into lengths (uchastki) for the purposes of regular

maintenance under the supervision of technically-qualified personnel, whilst the local are the responsibility of local authorities (the oblast category - where they exist - have an anomalous standing, as will be seen).

In the statistical tables of yearbooks, etc. roads are generally represented as being either "hard-surfaced" or _gruntovye_ (usually un-metalled). Of the former a proportion are classed as _usovershenstvovannye_ - a term which in this context is perhaps best rendered as "first class". In the statistical compendium for transport hard-surfaced roads are sub-categorised in greater detail.(5)

Graphs of all-union, republican and local roads in the hard-surfaced category are appended to this section.

The categorisation of roads by surface may be done not only in terms of appearance and of materials used but also by their abilities to withstand differing weights of vehicle and flows of traffic. In this latter case the categorisation by surface is hardly separable from the technical, of which it in fact forms a part. The technical classification of surfaces is set out immediately below, whilst a comprehensive table of characteristics of the five technical classes of road is provided at the end of the present section.

Main types of surface (technical classification)

Type	Vehicles per day	Description
1st class - heavy duty	3000 (two lanes)	Cement-concrete Tarmac Stone block or mosaic on concrete base
1st class - light duty	1500-3000	Stone/gravel with binding materials impervious to water
Intermediate	500-1000	Broken stone; natural surfaces with binding materials; loose stone; cobblestone
Inferior	100	Natural surface with spreading of local material

Source: Babkov and Zamakhayev, Highway Engineering (M.1964), p.204.

It is not easy to judge from the above table where the dividing line between hard-surfaced and non-hard-surfaced might be drawn; but drawn it must be somewhere, not only for statistical purposes, but also for the determination of norms for fuel usage by lorries. These norms are reduced when the vehicles operate over hard-surfaced roads - that is, the non-hard-surfaced are taken as standard!

To speak again in terms of only two broad methods of classifying roads - the administrative and the technical - one becomes involved in problems of cause and effect in attempting to determine which of them is of the greater basic importance. In general, importance as a traffic artery entails appropriate technical standards - though the time taken for such to be attained may be considerable, as witness the Great North

Road (A1) in Britain, which has only in recent years become a good traffic route throughout its length. On the other hand, road development often takes place ahead of usage.

That the technical class into which a Soviet road is put stems only partly from its physical characteristics is indicated by the statement that: "(technical class) is determined according to the present importance of the road for the national economy; the potential traffic; and the physical characteristics of curvature, gradient, etc.".(6)

Furthermore, it is difficult to ascertain how widely recognised is the table of technical classes appended to this section. The table would appear to be in the main a legacy of the pre-1956 all-union Gushosdor, which has been adopted by the present Gushosdor RSFSR and the bodies responsible for all-union roads in other republics. It is very likely used also by administrations responsible for roads in the republican class, but doubtful whether it has much practical relevance to roads of lower administrative category.

To conclude: the more one ponders over systems of Soviet road classification the less justifiable begins to appear the existence of more than one of them. A single administrative-cum-traffic system of classification with recommended physical standards - including ones for surface - would appear to be the desirable arrangement.

Footnotes to Section A

(1) See Part 1, Section D, footnote (24).

(2) In certain publications - including the recently reissued Transport i svyaz' SSSR (M. 1967) - only the hard-surfaced roads are shown.

(3) See note at foot of pp.492-3 of Narodnoe khozyaistvo SSSR v 1965g.

(4) Pravda 6/10/64.

(5) Trans. i svyaz' SSSR, op.cit., p.273.

(6) Babkov and Zamakhayev, Highway Engineering (M. 1967), p.20.

SOVIET ROADS : TECHNICAL CLASSES

	I	II	III	IV	V
* ANNUAL MEAN DAILY FLOW (vehicles)	Over 6000	3000-6000	1000-3000	200-1000	Under 200
*DESIGN SPEED (kms. per hour on the level)	150	120	100	80	60
*TYPE OF SURFACE	1st class - heavy duty	1st class - heavy duty	1st class - light duty	Intermediate	Inferior
**NO. OF TRAFFIC LANES	4	2***	2	2	2
**WIDTH OF EACH LANE (metres)	3.5	3.5***	3.5	3.0	2.75
**MAXIMUM GRADIENT (with degrees in brackets)	1 in 14.3 (4)	1 in 11.5 (5)	1 in 9.6 (6)	1 in 8.2 (7)	1 in 6.4 (9)

Sources:

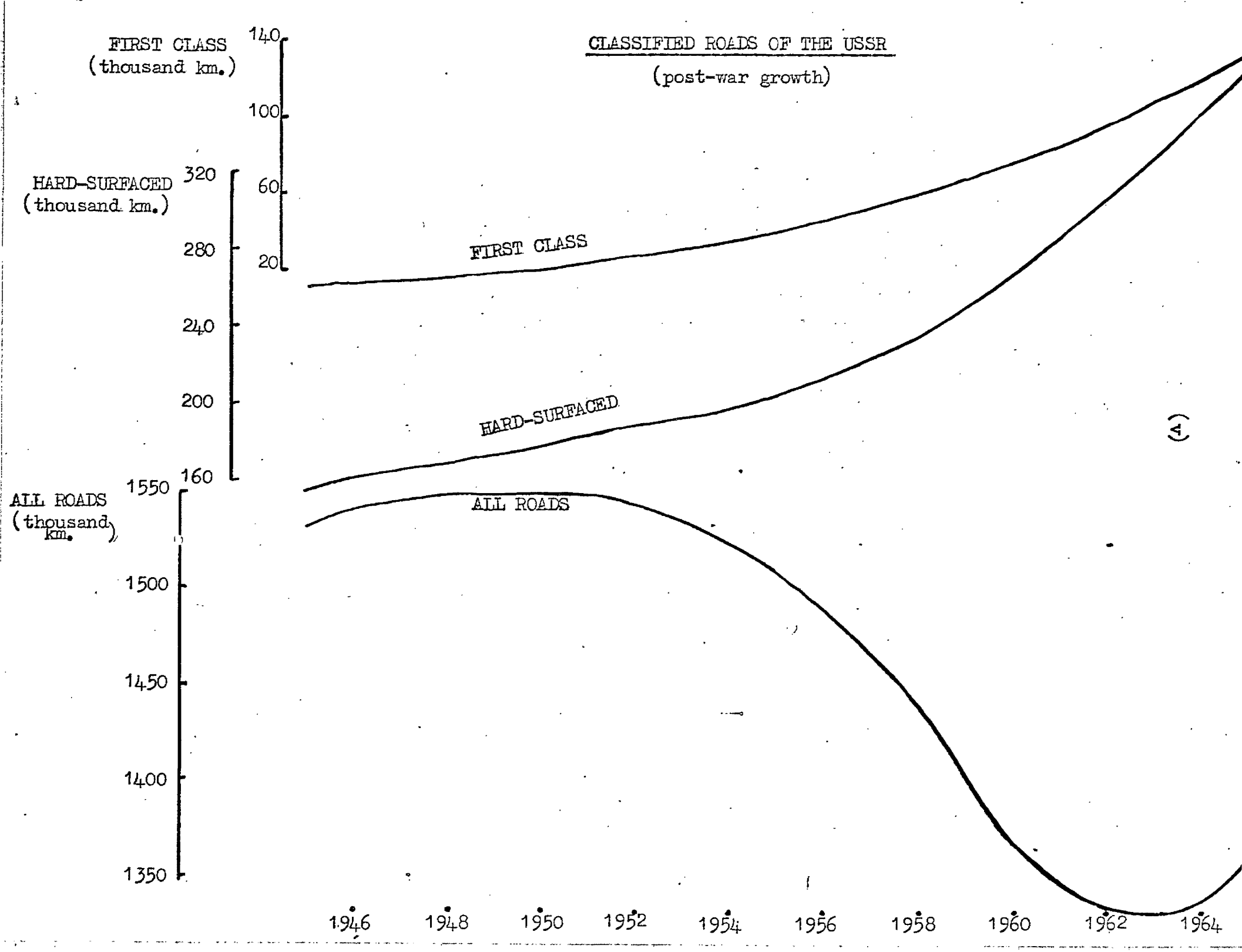
*Babkov and Zamakhayev, Highway Engineering, op.cit., pp.27-29, 204-5.

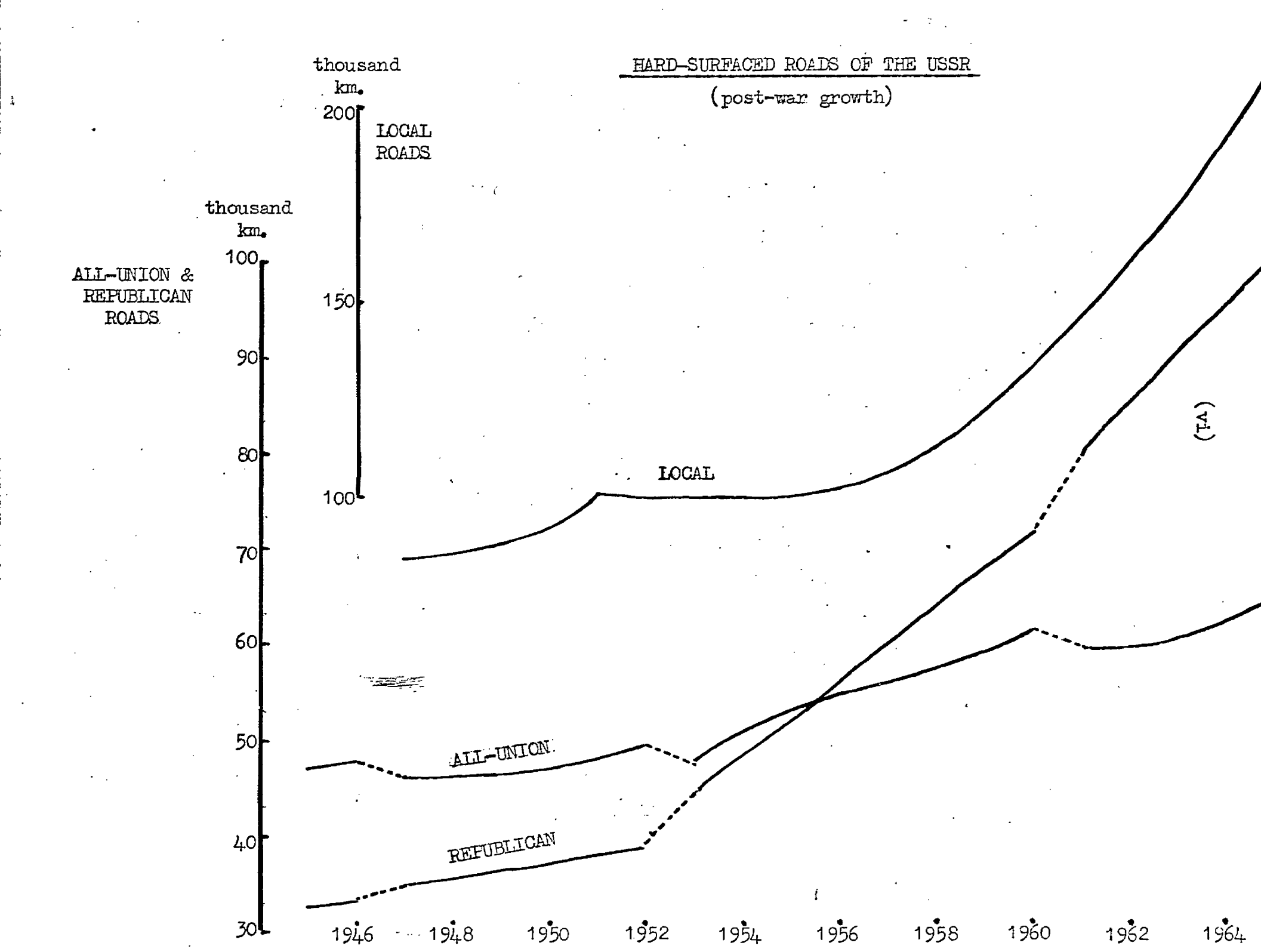
**BSE (2nd edn.), Vol. 1, p.267.

Notes:

***Under the present operational norms of Gushosdor RSFSR, for a vehicular flow of approaching 6000 veh./day the road width should be 7-10 metres. (Pravda, 13/11/66).

Maximum axle loads are prescribed also (e.g. 6 tons for Cl.III and Cl.IV (Avto. trans. 4/65, p.4)


CLASSIFIED ROADS OF THE USSR
(post-war growth)
FIRST CLASS
(thousand km.)
140
100
60
20
HARD-SURFACED
(thousand km.)
320
280
240
200
160
ALL ROADS
(thousand km.)
1550
1500
1450
1400
1350
FIRST CLASS
HARD-SURFACED
ALL ROADS
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964


HARD-SURFACED ROADS OF THE USSR
(post-war growth)
thousand km.
200
150
100
LOCAL ROADS
thousand km.
100
90
80
70
60
50
40
30
ALL-UNION & REPUBLICAN ROADS
LOCAL
ALL-UNION
REPUBLICAN
(Fig. 1)
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964

SECTION B

The pattern of administration established in 1938 remained essentially unchanged until 1953.(7) Centrally allocated resources were very largely concentrated on the all-union category of roads; and the NKVD/MVD, which was in charge of them, had at its disposal all the country's enormous reserves of forced labour, and could also mobilise local communities for feats of narodnaya stroika.(8) Abundant labour was available as well for work on roads below all-union rank, but in the absence of a centralised organisation for them, and with almost complete dependence on local materials, they remained in very poor condition. To improve standards of mechanisation of the work on the main arteries, which was put in hand immediately after the war, there was set up in 1946 an all-union Ministry of Building- and Road- Machine Building.

With the reorganisation of the MVD which followed the death of Stalin in March, 1953 Gushosdor became a glavk of the same name under the MVD, but in the following August it was transferred to the newly-formed MATShD SSSR.(9) Another change which occurred in 1953 was the setting up of Glavdorstroi, which took over from Gushosdor the work of construction and major reconstruction of all-union roads, and has been responsible for it ever since.(10)

The last general administrative reorganisation occurred in 1956 with the abolition of MATShD SSSR. The present pattern of road management, which is on an entirely republican basis, will now be described.(11)

Gushosdor RSFSR, which is a glavk under MAShD RSFSR, is responsible for the maintenance and overhaul of all-union roads within the major republic. Sections of the former all-union Gushosdor existing outside the RSFSR were reformed in 1956 as gushosdory under the MAShD of the republics concerned - except in the cases of five republics where the gushosdory are in direct subordination to the respective councils of ministers.(12)

Gushosdor of MAShD RSFSR has under it:-

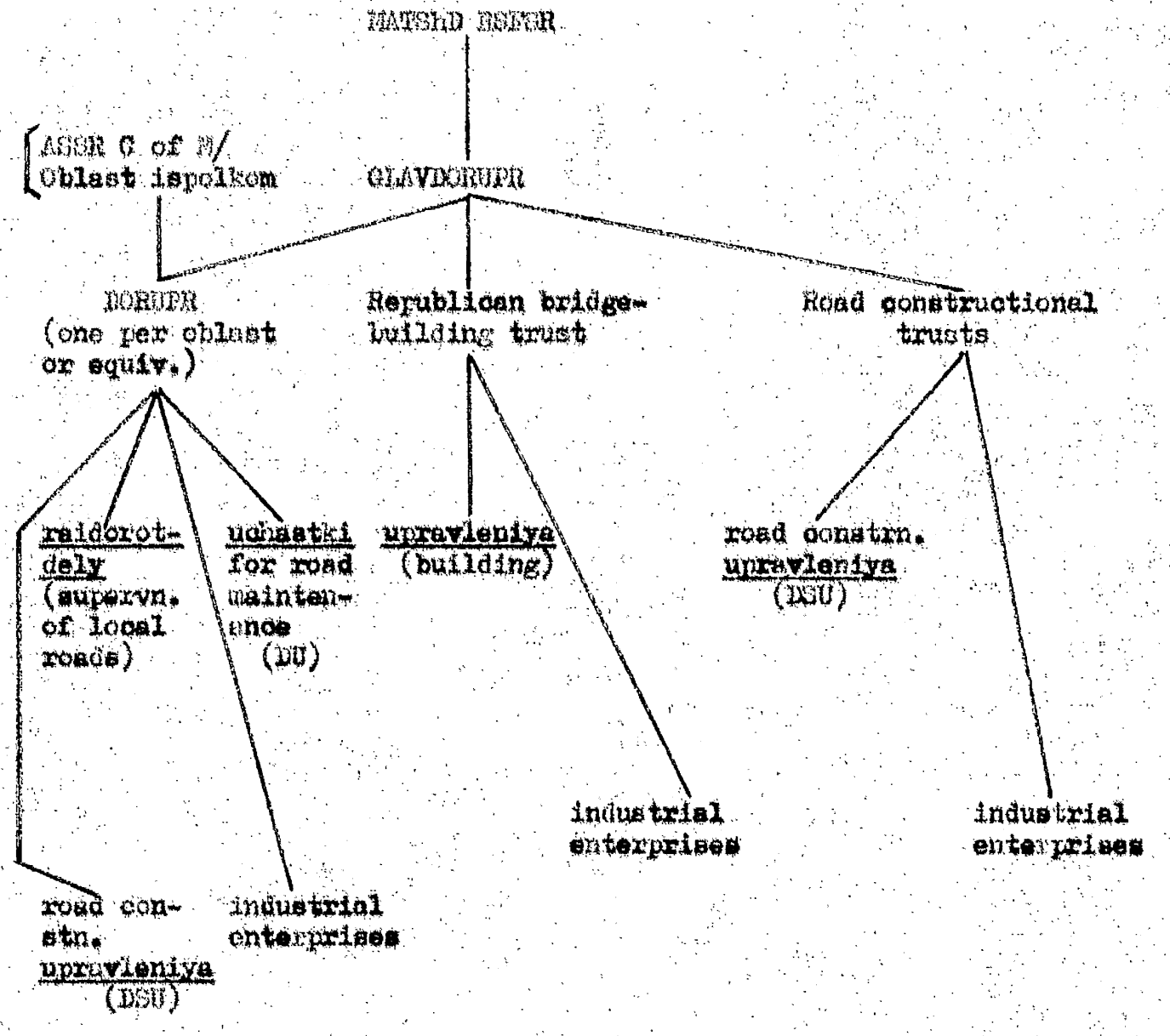
(a) Upravleniya (uprodory) for each of the principal roads (e.g. Moscow-Leningrad), which in turn have under them: (i) dorozhno-ekspluatatsionnye uchastki (DEU) for the maintenance of road lengths, (ii) district constructional units - dorozhno-stroitel'nye raiony (DSR) - and (iii) various industrial enterprises. There are also dorozhno-lineinye slushby, which operate mobile vans.

(b) An upravlenie for construction.

(c) A central laboratory (TsKIL) which works out new methods of surfacing roads, and experiments with new materials.(13)

Glavdorupr RSFSR, which is responsible for roads in the republican class, has the following structure:-

(See next page)



Source: Ekon. gaz., 14/3/64, p.34.

The organisational pattern of Glavdorupr RSFSR just described came into being in 1959 when the bridge building trust and the road construction trusts were set up. Also in 1959 rules were introduced[14] governing the supervision and maintenance of state roads, which were intended to apply as well to roads of oblast rank, upon the regular maintenance

of which "a start" was to be made. It is difficult to assess how far assimilation of the oblast-rank roads with the state system has progressed, for evidence is not readily available; but since in the 1967 edition of the compendium Transport i svyaz' SSSR the oblast roads are still associated with the local one has some justification in suspecting that that link represents the true situation.

The administration of state roads in other republics is similar to that for the RSFSR as just described: gushosdory are responsible for the upkeep of all-union roads, and glavdorupry for the republican[15] - again with some doubt concerning the treatment of oblast-rank roads, which however do not exist at all in the smaller republics.

To return to the case of the RSFSR: one does not need to scrutinise the organisational arrangements of Gushosdor and Glavdorupr very closely to suspect the existence of a fair amount of administrative overlapping, and first-hand evidence of such in one area of the RSFSR is provided in an article[16] of five years ago. Both Gushosdor and Glavdorupr had set up organisations in Petrozavodsk for the purposes of creating a proper road system for the Karelian ASSR, and each dealt with construction and maintenance. In the town of Olonets there were located administrative units for both a DEU (Gushosdor system) and a DU (Glavdorupr system). In other localities DEU and DU existed side by side, often with raidorotdely as well. Staffing standards were a subject of criticism in the article. For each engineer and technician in Glavdorupr there were ten

times as many kilometres of road as there were in the case of Gushosdor, yet nevertheless pay rates under the latter organisation were about twice those of persons in the dorupry. Lastly the point was made that although Glavdorupr is intended to be concerned much more with construction than is Gushosdor, the latter is far better equipped with excavators.

Local roads do not come under the direct control of organs of republican MAPShD (and equivalent bodies) such as have technically-qualified staff and regular means of access to sources of material supply;(17) instead they are "attached" to kolkhozy and sovkhozy, productive enterprises, etc., which are supposed to keep them in a usable state by means of levies of labour or materials.(18) The raidorotdely are supposed to keep an oversight of local roads on behalf of the glavdorupry, but it would seem that the former have to make do without properly qualified staffs.

It is useful at this point to examine the graphs of hard-surfaced roads by administrative category (see Section A) in relation to the foregoing account.

Immediately after the war about 30% of all hard-surfaced roads were in the all-union category. Thereafter the percentage decreased and it was down to 17% by 1965. The change was partly the result of straight reclassifications (from all-union to republican in 1947, 1953 and 1961; and from local to state in the early 1950s), but these were themselves made possible by the increasing relative importance of finance through the strengthened republican organs. The most marked changes in the relative

growth rates (as between all-union and republican roads) may be seen from the graphs to have taken place after the administrative changes of 1953 and 1959.

Footnotes to Section B

(7) See organizational diagram in Part 1, Section D.

(8) Described in Part 1, Section D.

(9) See Part 2, Section A.

(10) Over the years this body has been subordinated in turn to several different higher authorities. At present it comes under the all-union Ministry of Transport Construction.

(11) Main sources: Ekon. gaz. 14/3/64, p.34, and V. A. Bochin, Perspektivy razvitiya i uluchsheniya seti avtomobil'nykh dorog (M. 1960), pp.9-10.

(12) The five exceptional cases are: all three Transcaucasian republics, Belorussia and Kazakhstan. Defence considerations are, one may suppose, the reason for the anomaly.

(13) There is also an all-union road research institute (SOYUZDORNII).

(14) Polozhenie o poryadke pol'zovaniya avtomobil'nymi dorogami and Pravila po okhrane avtomobil'nykh dorog i sooruzhenii, both dated 1/8/59 (see Bochin, op.cit., p.37).

(15) Although gushosdory in five republics are known to exist in direct subordination to councils of ministers (see footnote 12) the position regarding oblavtodory in those republics appears uncertain.

(16) Ekon. gaz., 38/63, p.41.

(17) Once again the uncertainty concerning the pattern of management of oblast-rank roads requires passing mention.

(18) For full account see Section D.

SECTION C

The most recent comprehensive set of figures in respect of hard-surfaced roads in the USSR (i.e. as at 1st Jan. 1966) is given (in thousands of kilometres) in the following table:-

	ALL	ALL - % increase over 1/1/59	STATE	STATE as % of ALL	1st CLASS (STATE & OTHER)	1st CLASS as % of ALL
USSR	379.0	61	164.8	43.5	132.3	34.9
RSFSR	168.1	58	66.8	39.7	51.6	30.7
Ukraine	67.2	62	24.6	36.6	23.6	35.1
Moldavia	5.4	80	2.3	43.2	1.9	35.2
Belorussia	18.6	34	9.3	50.0	5.4	29.0
Baltic States:	36.1	40	21.2	58.7	10.2	28.3
Lithuania	11.9	17	8.8	73.9	4.0	33.6
Latvia	8.1	62	5.9	72.8	2.8	34.6
Esthonia	16.1	52	6.5	40.4	3.4	21.1
Transcaucasia:	29.2	24	11.6	38.8	12.2	40.8
Georgia	14.7	17	4.8	32.7	5.0	34.0
Azerbaidzhan	10.3	39	4.6	44.7	4.9	47.6
Armenia	4.9	17	2.2	44.9	2.3	46.9
Central Asia:	29.7	103	14.7	49.5	18.3	61.6
Uzbekistan	14.1	74	4.2	29.8	11.2	79.4
Kirghizia	8.4	163	5.8	69.0	2.7	32.1
Tadzhikistan	4.8	118	2.7	56.3	2.8	58.3
Turkmenistan	2.4	118	2.0	83.3	1.6	66.7
Kazakhstan	24.0	258	14.3	59.3	9.1	37.9

Source: Trans. i svyaz' SSSR, op.cit., pp.276-7.

Very evident is the absence of any complete set of figures for the RSFSR on a regional basis; all that is available normally is what appears in the irregularly-published statistical compendia for oblasts, krais and ASSRS - and in books and articles. By way of a rare exception there were however published in 1960 figures for major regions of the RSFSR - probably extracts from the detailed 7-year Plan which the author had been allowed to reproduce.(19) It was shown that the Centre Region on 1st January 1959 (then comprising the present Centre, Central Chernozem and Volga Vyatka Regions, and Penza Oblast) had 14,400 km. of all-union and republican hard-surfaced roads - planned to increase by 70% to 24,500 km. on 1st January 1966.

Comparisons between British and Soviet roads

Taking the basic system of main roads in the USSR to be the all-union and republican hard-surfaced categories, and in Britain the Trunk and Class I, an attempt is now made to compare densities in terms of areas and populations - England and Wales with the RSFSR "Centre" (to be defined) and with the Ukraine; and Scotland with Georgia. The comparisons are set out in the following table:-

	Basic main roads (1000 km.)	Area (1000 sq.km.)	Population (million)	DENSITIES	
				km. per 1000 sq.km.	km. per million inh.
"Centre" RSFSR	24.5 (20.0)	754	41.1	33 (27)	596 (487)
England & Wales	35.1	151	47.8	232	734
Ukraine	24.6	601	45.5	52	681
Georgia	4.8	70	4.5	69	1067
Scotland	10.8	77	5.2	140	2077

Notes

"Centre" RSFSR: the road length of 24,500 km. represents the 70% increase over 1959 (in respect of the territory of the Centre Region as defined in that year) already referred to; the road length in brackets (20,000 km.) was obtained by applying the actual 1959-65 growth factor for the RSFSR (66.8/40.0) to the 1959 figure for the Centre.(20) In view of the very small length of basic main roads existing in Kirov and Kostroma Oblasts and Mari ASSR, the population and area shown (which are as at 1/1/66) are exclusive of their territories.

Ukraine and Georgia: road lengths, area and populations are as on 1st January, 1966.

England & Wales: population of 1965; roads as at 1st April 1965 (Highway Statistics).

Scotland: population of 1965; roads as at 15th May 1965 (Scottish Road Report).

Road maps

The dichotomy between the classifications by surface and by administrative category bedevils any attempts at trustworthy representation of Soviet roads. The recently reissued, and well-produced, road atlas(21) uses administrative classification only, and so do the large-scale maps of oblasts and equivalent. Maps giving a reasonable indication of qualities

of surface have necessarily to be the result of wide search for information, or else be based on special evidence.

Four maps are provided at the end of this section:-

No.1 shows the most important arteries radiating from Moscow and Leningrad and a few other important roads.

No.2 is designed to give a pictorial representation of the linked network of main roads of the European part of the USSR and the Urals by relating the network of scheduled inter-city bus routes[22] to both the line of the Volga river and the 25 persons per square mile population "contour".[23] To the east of the Leningrad-Moscow-Kharkov-Rostov-Tiflis-Baku line the bus routes referred to are indicated in full; to the west only the principal centres of inter-city bus travel are marked. The map provides clear evidence of the fact that broadly speaking the USSR east of the Volga is roadless in the sense of being without a linked network of adequately-surfaced roads - with a limited part of the Ural Region standing as an exception. Central Asia, which is not shown, is exceptional also. According to one report, even in Volgograd Oblast only 4% of roads are hard-surfaced, and in Saratov Oblast only 6.5%.[24]

No.3 provides reasonable evidence of which roads radiating from Moscow had good surfaces in 1960.

No.4 shows in slightly simplified form the all-union roads of Siberia and North Kazakhstan.

Some indication of the general state of the roads in various parts of the RSFSR is provided by the tariff multipliers, a full list of which appears below.(25)

Standard tariffs (multiplier of unity) apply throughout the Centre Region (except in the city of Moscow, where the multiplier is 0.95) and the Central Chernozem Region. In other regions the multiplier is unity unless the particular oblast/krai/ASSR appears with its multiplier below.

North West:	Archangel Obl.	1.35	
	Karelian ASSR	1.1	
	Komi ASSR	1.35	
	Murmansk Obl.	1.5	
Volga Vyatka:	Kirov Obl.	1.1	
	Mari ASSR	1.25	
Volga:	Kalmyk ASSR	1.1	
North Caucasus:	Dagestan ASSR	1.25	
Ural:	Kurgan Obl.	1.1	
	Tyumen Obl.	1.2	
West Siberia:	Tomsk Obl.	1.25	elsewhere 1.1
East Siberia:	Tuva ASSR	1.25	elsewhere 1.2
Far East:	Amur Obl.	1.25	elsewhere 2.0
	Khabarovsk Krai	1.25	
	Maritime Krai	1.2	

Note

In parts of the Far North coefficients of up to 3.0 apply, irrespective of what oblast, etc. the locality may be situated in.

Footnotes to Section C

(19) Bochin, op.cit., p.14.

(20) Ibid., and USSR road statistics as at 1st January 1966 (see given table).

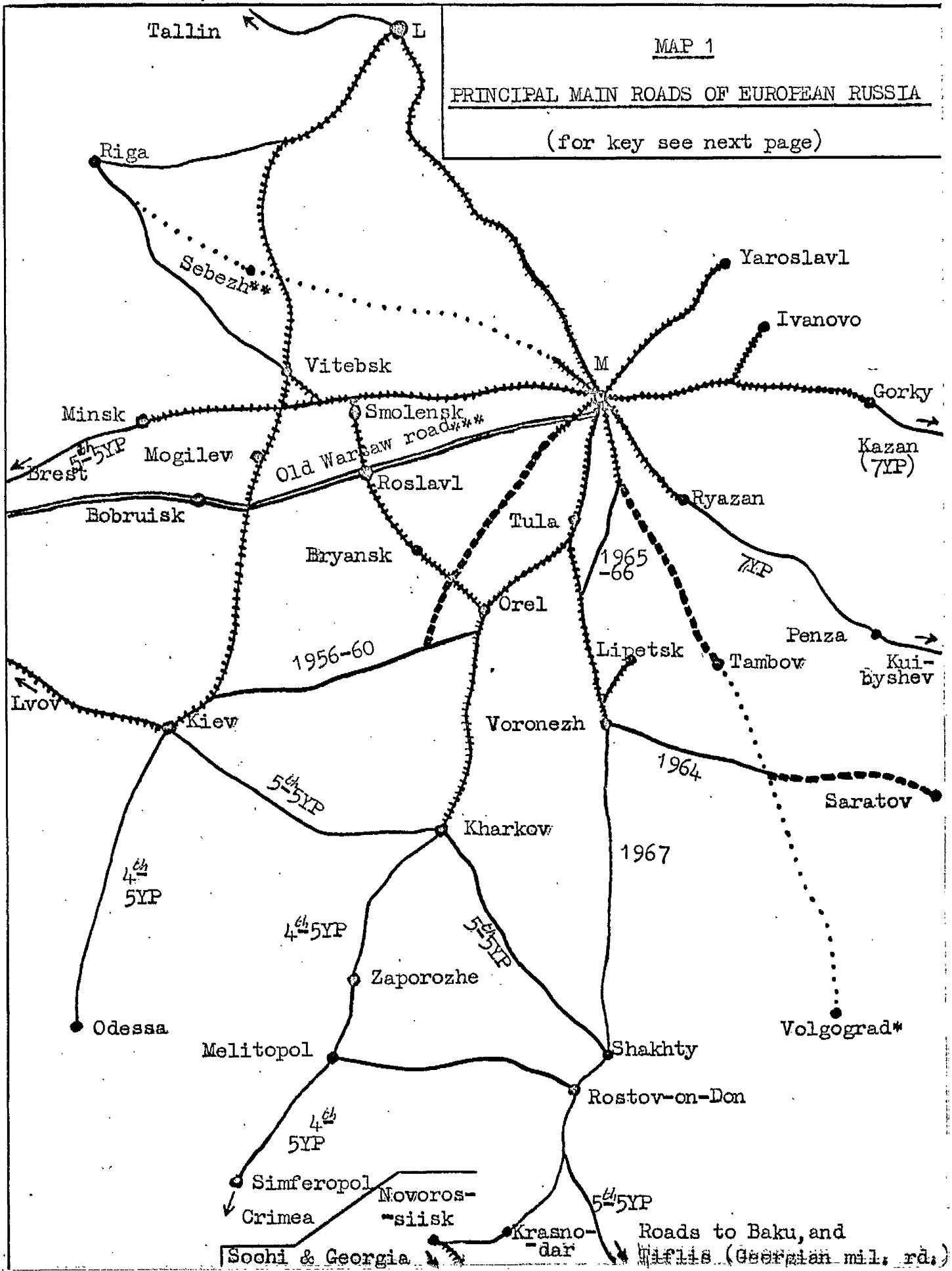
(21) Atlas avtomobil'nykh dorog (M. 1967)

(22) Spravochnik passazhira (M. 1965), pp.336-361. It should be noted that practically every town of any importance in the permanently settled parts of the USSR has its bus station and radiating services (Spravochnik, op.cit., pp.11-29), but in a high proportion of cases no journey times are given. Very likely local needs in such instances are too changeable for anything but local publicity to be justified - apart from which the very poor quality of the unsurfaced roads prevalent in many regions is probably not conducive to timetabling.

(23) R.E.H. Mellor, Geography of the USSR (Macmillan, 1964), p.118.

(24) Izvestiya, 26/10/66.

(25) See Part 2, Section C, footnote 73, and corresponding text.


MAP 1
PRINCIPAL MAIN ROADS OF EUROPEAN RUSSIA
(for key see next page)
Tallin
L
Riga
Sebezh***
Yaroslavl
Ivanovo
Vitebsk
M
Gorky
Minsk
Smolensk
Old Warsaw road***
Kazan (7YP)
Brest
5th 5YP
Mogilev
Roslavl
Ryazan
Bobruisk
Tula
Bryansk
1965-66
7YP
Orel
Penza
Lipetsk
Tambov
Kuibyshev
1956-60
Lvov
Kiev
Voronezh
1964
Saratov
5th 5YP
Kharkov
4th 5YP
1967
4th 5YP
5th 5YP
Zaporozhe
Odessa
Volgograd*
Melitopol
Shakhty
Rostov-on-Don
4th 5YP
Simferopol
Novoros-siisk
Crimea
5th 5YP
Krasno-dar
Roads to Baku, and Tiflis (Georgian mil. rd.)
Sochi & Georgia

MAP 1: key and references

———————— surfaced main roads, pre-war

———————— post-war additions to good-surfaced network

- - - - - - - - - - - - under construction, or due for completion by end of 1970

. . . . . plans exist

* Whole Moscow-Volgograd motorway was a 7-year Plan project.

** A Moscow-Sebezh link was one of the projects of the 2nd 5-year Plan. A Moscow-Riga motorway was included in the 7-year Plan.

*** The old Moscow-Warsaw road was built early in the 19th Century. Its quality is doubtful.

The map is based on the following sources:-

Ekonomicheskaya geografiya SSSR, I (M. 1934): appended map

A.S.Kudryavtsev, Ocherki istorii dorozhnogo stroitel'stva v SSSR (M. 1957): sections on post-war period

Rudoi & Lazarenko, The Soviet Seven-year Plan (Transport & Communications)

Bochin, op. cit., pp. 6-11

I.V. Nikol'skii, Geografiya transporta SSSR (M. 1960), p. 233

Ob itogakh vypolneniya pyatogo pyatiletnego plana razvitiya SSSR i soyuznykh respublik na 1951-1955 gody (M. 1956), pp. 27, 53, 81

Ekon. gaz. 17/64, p.7

Ekon. gaz. 6/65, p. 19

Avto. trans. 10/67, p. 2

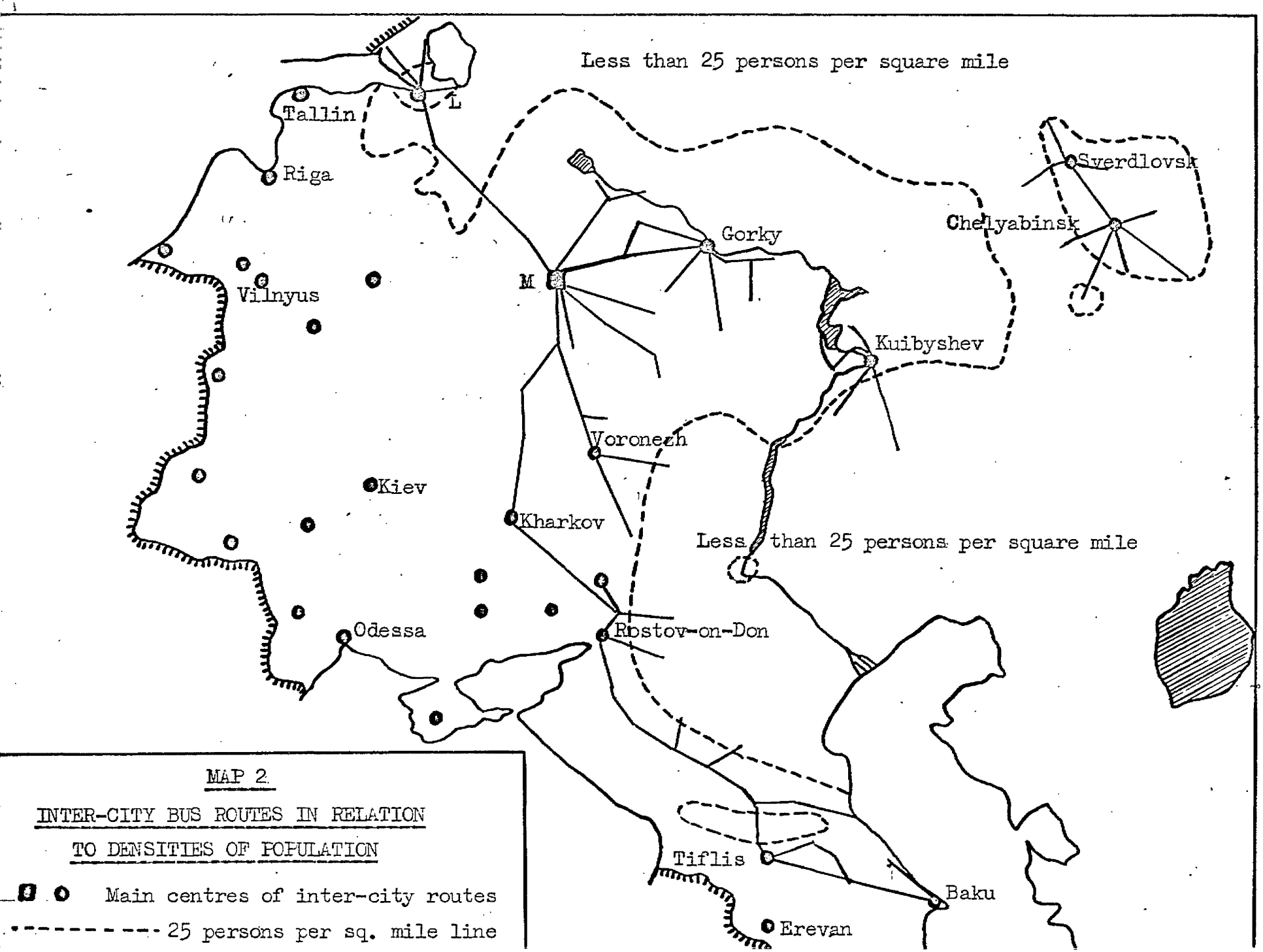
- and with special reference to the Moscow-Kiev motorway, the following:-

Ukrainskaya SSSR, I (M. 1957), p. 522

Pravda 13/11/66

Ekon. gaz. 37/62, pp. 39-40

Sovetskaya Rossiya 1/11/64

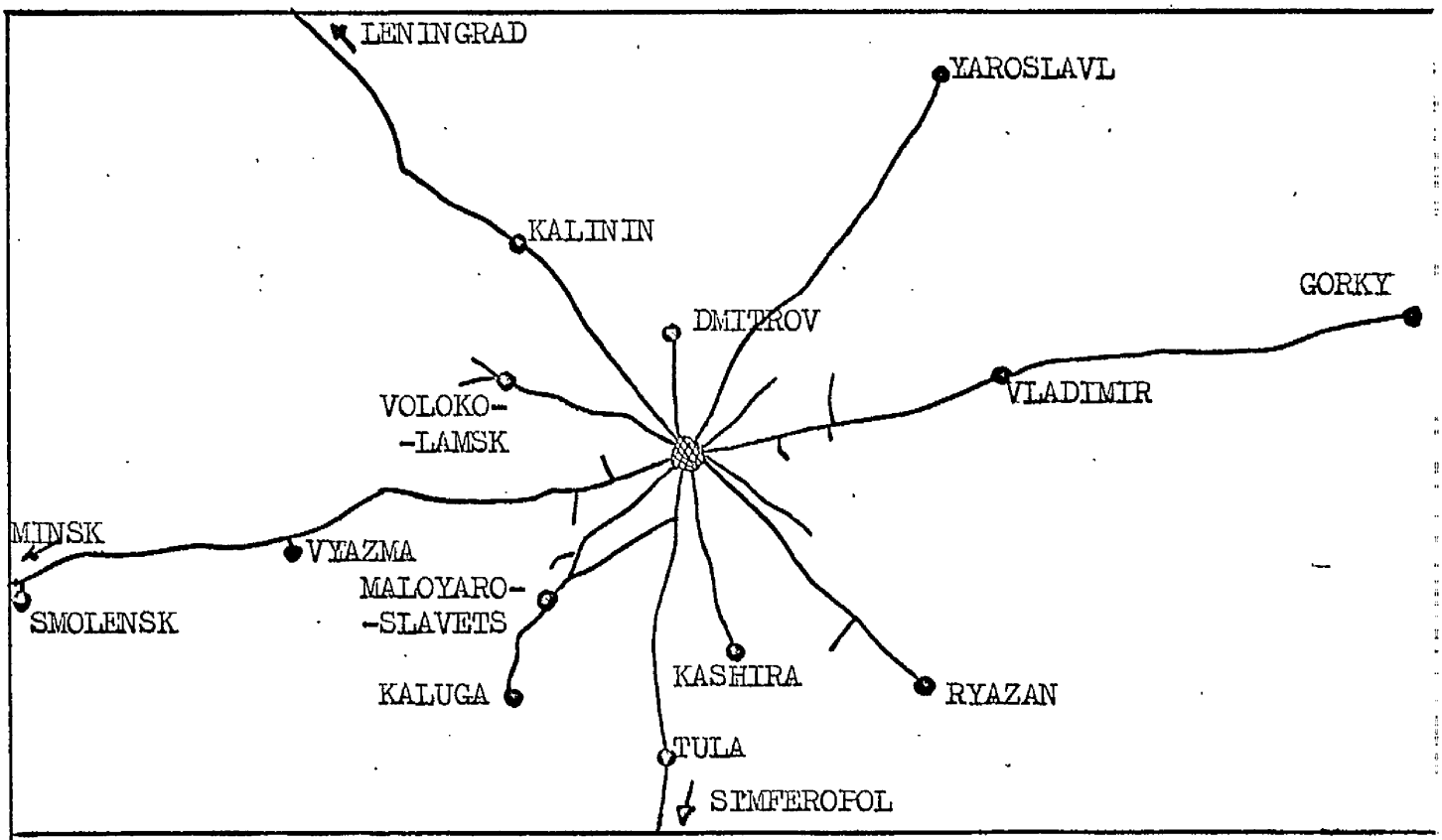


MAP 2

INTER-CITY BUS ROUTES IN RELATION TO DENSITIES OF POPULATION

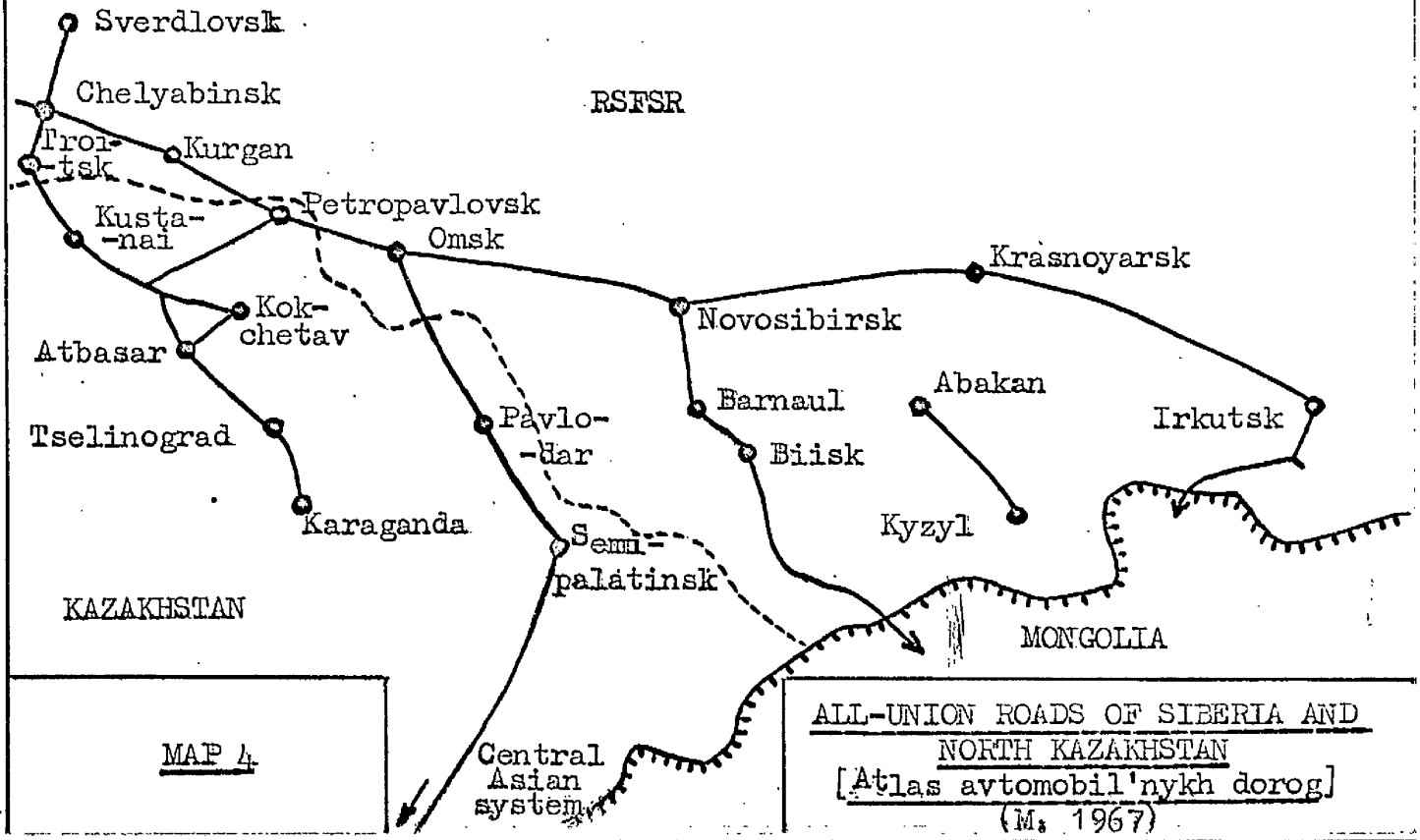
Main centres of inter-city routes

25 persons per sq. mile line



MAP 3: FREIGHT HAULAGE ROUTES FROM MOSCOW AS AT BEGINNING OF 1960

Source: I.V. Nikol'skii, Geografiya transporta SSSR (M. 1960), p. 261.



MAP 4

ALL-UNION ROADS OF SIBERIA AND NORTH KAZAKHSTAN
[Atlas avtomobil'nykh dorog]
(M. 1967)

SECTION D

Basic to any study of road development, whatever the country concerned, is the determination of what proportion of national income is channelled over certain periods of time into such development. Yet in the case of the USSR the calculation simply cannot be attempted on the basis of published data; for not only are the necessary details of state and local expenditure not available, but a large proportion of roads are constructed by productive ministries, etc. out of resources not identifiable by budgetary sub-head. Such construction by productive organisations is reported to be carried out on a particularly large scale in Uzbekistan. There the Ministry of Agriculture finances many approach roads to sovkhozy, the Ministry of Energy and Electrification builds roads to hydro and other power installations, and cotton organisations provide a large number of the roads they require. Again, over the whole of the USSR there is much direct use of local labour and materials which is not accounted for in any formal way (26).

In the circumstances it will be necessary to confine the present investigation into Soviet road development to the ways and means of obtaining the necessary resources - without attempting to determine the actual amounts involved in value terms.

The financing of state roads

Until 1958 there was no tax specifically intended for the financing of roads, and so the budgetary grants made for the construction of state arteries were obtained entirely from general revenue. Then, at the

outset of the 7-year Plan, there was introduced the 2% levy on the incomes of road transport enterprises - including sovkhoz units on khozraschet - to provide resources for the construction of state and oblast roads (27).

The introduction of the levy would certainly seem to have had some part to play in increasing the rates of construction - to use the graph of hard-surfaced roads (see Section A) as the main indicator of the development of the state system; for whereas the annual increase in aggregate length (of hard-surfaced roads) was of the order of 4000 km. per annum over the post-war decade (up to the mid-1950s), it then began to increase markedly until it reached about 20,000 km. per annum in the early 1960s. For the remainder of the period of the 7-year Plan however the annual increase remained about the same; and the rate under the plans for 1966-70 is not significantly greater, as may be seen by reference to the following table. As always, "construction" is not a term amenable to exact interpretation, and the so-called hard-surfaced roads constitute a rather nebulous category.

	1959-65	1966-70	1966
Increase in length of hard-surfaced road (annual av.)	20,500 km.		26,500 km.
Construction of same (plan)	70,000 km.	63,000 km. (approx.)	

Sources: Transport i svyaz' SSSR, op. cit., p.272
Rudoi & Lazarenko, The Soviet seven-year Plan (Transport and Communications), 1959-65 (M, PLPH)
Directives of 1966-70 Plan

Taking account of the increase in GNP over time, one may reasonably infer that the proportion of it devoted to road works has actually been decreasing for several years. In fact, although the 2% levy undoubtedly had a stimulating effect when first introduced, its existence seems over the years to have provided the central authorities with a pretext for reducing as much as possible the scale of grants out of general revenue - to go on numerous press reports, of which the following is typical:-

"The whittling down every year of grants for road construction ... is alarming. Central financing is out back. In general it is expected that the roads should get built out of the 2% deductions from the revenues of road transport enterprises, and the participation in the work of construction of farms, enterprises, etc. Primitive poorly-surfaced roads are the result. For new industrial expansion the use of state funds is normal. Why then should resources for roads come largely out of deductions?" (28).

There are occasional references in the press to evasions of payment of the 2% levy on the part of road transport enterprises. Apparently an excuse sometimes put forward for non-payment is that deduction has not been specifically called for in a plan; which is understandable to the extent that the planning authorities themselves appear to call for the levy only in relation to existing plans for state roads. Much obscurity surrounds the subject; and in any case the road interests have for a number of years advocated an increase in the scale of

deduction to 4% [29]. It may be noted in passing that the fact of the republican MAShO being both road and road transport authorities must entail some internal conflict of interest.

Local roads: construction and maintenance

The decree of 1936 providing for the construction and upkeep of all types of road by the compulsory labour of rural populations [30] was superseded in 1958 by one calling for the participation of all farms, industrial, transport and building organisations in the construction and repair of local roads [31]. Following the issue of the new decree there were corresponding enactments in all the union republics [32].

Included in the basic decree is the statement that in carrying out of the work on local roads it is impermissible for use to be made of material resources allocated in the state plan for the purposes of developing the "more important" branches of industry and construction. Local bodies including farms may however have work carried out under contract by the road-building and bridge-building organisations of the *glavdorupry*.

Although the decree of 1958 refers specifically to local roads (as opposed to *all* types of road under the 1936 decree) there is little doubt that local resources, material and human, are drawn upon willy nilly to aid the efforts of the DEU and DU (see Section B) in the upkeep of state roads.

The detailed arrangements for the upkeep of local roads provide for the following scales of participation:- [33]

(a) by kolkhozy: 4-6 normal working days by every able-bodied member, and 2-4 days by every lorry, tractor and other mechanical vehicle, and draught animal.

(b) by enterprises (inc. sovkhozy) having mechanical vehicles:

3-4 normal days for every lorry etc. possessed - but not less than 0.04% of valovoi output.

(c) by enterprises without mechanical vehicles:

0.04 to 0.05% of valovoi output (or 0.02% of turnover in the case of sales, supply and trading organisations).

Ispolkoms of oblasts and equivalent bodies may permit the commutation of the required contributions into monetary payments.

The contributions concern the roads which are "attached" to the three above types of organisation, i.e. roads for general use. Feeder and approach roads to industrial and similar enterprises (as well as roads entirely within their curtilage) are the direct responsibility of those organisations.

Annual plans for the construction and maintenance of local roads by the participation of farms, etc. are required to be drawn up for each raion by the ispolkom for approval at oblast (or equivalent) level. There is provision for the exaction of fines from farms, etc. - and also from those responsible, as individuals - for failure to fulfil the plans. Fines paid, and also sums of money accepted in lieu of work, etc. are put into a special fund for local road works.(34)

The provision of new main roads

A complaint not infrequently voiced is that state funds are made avail-

able only for the main routes proper, supplies and services for road users and construction of approach roads being left to local planning (and budgets), with the result that the ensuing development is not a balanced one. For example, the first section to be completed of the pre-war-planned Moscow-Kiev motorway - that from Trosna, near Orel, to just north of Kiev - was, on the evidence of one first-hand report, entirely without catering facilities some two years after its opening (35).

A lengthy appraisal of the problems of access to, and services on, entirely new main roads was provided in an article written four years ago on the subject of the Moscow-Volgograd motorway, a project included in the 7-year Plan as originally drawn up (36). Praise was accorded to the road itself, with its lay-byes every 7-10 km., tunnel crossings for farm traffic every 5 km., multi-level intersections, and good engineering standards. Criticism was directed at:-

(a) the lack of outlets to towns by-passed (only six included in plans for whole motorway). Such other link roads as might be desired were to be financed out of local resources, with the result that they could not be expected to stand up to the type of traffic due to use the motorway. The planners' contention that the provision of connecting roads should not be a charge on the state budget was agreed with by the writer, who nevertheless contended that it should be possible for good-quality work on these roads to be done by the builders of the main route under sub-contract to the local beneficiaries.

(b) the absence of any provision for roadside catering or for the

servicing of vehicles. The omission of telephones enabling lorry drivers to maintain contact with movement controllers was especially criticised.

A point which is not referred to in Soviet articles, but could well have validity in view of the very poor condition of the majority of rural roads, is that too lavish a provision of connecting roads to motorways would encourage the local peasantry to use the latter for short-distance haulage by cart and sundry other purposes, in the absence of intensive patrolling. In Britain and other advanced western countries regulations are of course necessary to prevent the inappropriate use of motorways; but there the situation is different in that the new systems of special-purpose roads are superimposed upon existing networks quite adequate for all short-distance needs.

To conclude this account of the Soviet road system: some good arteries for fast traffic do exist, but they are few in number; progress with construction and reconstruction is unspectacular, and does not match the growth in the numbers of motor vehicles (see Appendix) - especially in rural areas. The economic planners have now willed a considerable increase in the rate of production of passenger cars over the next few years, and this will of necessity entail increased expenditure on roads, for which in turn a new approach to their finance will be required. Proposals for vehicle taxes and a much larger scale of levy on the revenues of road transport enterprises are, it seems, now under discussion (37).

Footnotes to Section D

(26) Pravda, 22/9/66

(27) Rudoi and Lazarenko, op. cit. (table below)

(28) Izvestiya, 28/7/66

(29) Pravda, 6/10/64, and also article by the deputy head of MATShD RSFSR in Izvestiya, 26/10/66

(30) TsIK and Sovnarkhm SSSR, 3/3/36

(31) Vedomosti Verkh. Sov. SSSR, No.34, 1958

(32) For RSFSR, 7th April, 1959

(33) Sovety Deputatov trudyashchikhsya 11/67, pp. 90 ff.

(34) Ibid., for account of disputes

(35) Ekon. gaz. 37/62: article Budni bol'shoi dorogi gives experiences of a special correspondent who travelled with lorries on various main routes.

(36) At that time work was about to begin on the section from Kashira to Tambov - now due for completion by 1970. Plans for the section from Tambov to Volgograd were in 1964 - and still remain - at the blue-print stage.

(37) The Togliatti car plant near Kuibyshev is now expected to be fully operational by 1972. Soviet road finance was discussed in an article by Kyril Tidmarsh in the Times of 12/6/68.

APPENDIX

The Motor Vehicle Industry

What follows is intended simply as an outline of the principal features of the Soviet motor industry, and so no attempt will be made to describe its internal structure.

Until 1955 manufacture of both road and agricultural vehicles came under one combined ministry. For the next two years - until the advent of the sovnarkhoz system - there existed separate ministries, viz: the Ministry for the Motor Industry, and the Ministry for Tractor and Agricultural Machine Building. With the abolition of the sovnarkhozy these two bodies were reconstituted.

As in other countries, motor vehicle plants may be divided very broadly into the assembly and the integrated types. In practice, however, the fact of geographical separation of processes, and the question of whether enterprises producing particular components supply one, or more than one, assembly plant, render it difficult to make a clear-cut distinction between the two broad categories. Take the case of ZIL in Moscow, now the largest plant in the USSR. Until fairly recently it was of the integrated type; but now a large proportion, if not all, of the engines required for its assembly lines come from the Mytishchi Engine Plant (MMZ) situated in a suburb of Moscow, and MMZ for its part assembles vehicles on ZIL chassis. The link is so close that vehicles are described as ZIL-MMZ. By contrast no one plant monopolises the output of the diesel engines produced at Yaroslavl (YaMZ). One can only make the general statement that the last few years have witnessed a dispersion of

the separate processes of vehicle manufacture.

The principal motor vehicle plants, including those concerned in the main with engine construction, are widely known by the initial letters of their names. A list of them appears below; and a map is appended, on which may be detected roughly eight regional clusters, viz: Moscow - Yaroslavl - Gorky, the Middle Volga, Belorussia, the Baltic, the Lower Dnieper, the West Ukraine, Transcaucasia, and the Urals.

It is useful to compare the map of motor vehicle manufacturing centres with that showing the extent of the linked network of main roads (Part 3, Section C, Map2). The correspondence will be at once apparent; the industry is practically a European one, if one regards the Ural Region as part of European Russia. Even in Central Asia with its well-developed road communications, an indigenous motor vehicle industry can hardly be said to exist: there is an assembly centre at Tashkent, forming it would seem part of a larger centre for agricultural - mainly cotton harvesting - machinery; and another has recently been opened in Frunze. In Siberia there are just a few scattered assembly plants: at Tesbara (Novosibirsk Oblast), Chita (lorries on ZIL chassis); and Itkutsk has been mentioned also, as well as Petropovlovsk (just inside Kazakhstan).

Important centres for the manufacture of components (apart from engines) are: Dnepropetrovsk, Kirov and Baku (tyres); Kuibyshev and Saratov (bearings); and Shadrinsk in Kurgan Oblast (radiators and ventilators).

Principal motor vehicle plants in USSR

Location and trade designation		Type(s) of vehicle
Moscow *	ZIS/ZIL	General (but mainly 3-6 ton lorries)
Yaroslavl *	YaAZ/YaMZ	Formerly heavy lorries. Now diesel engines
Gorky *	GAZ	General (but mainly medium lorries, and cars)
Miass **	Ural	Lorries (various) inc. tippers
Ulyanovsk **	UAZ	Lorries (various) and light vans
Lvov **	LAZ	Buses
Pavlovo (Gorky) ***	PAZ	Buses
Kutaisi ***	KAZ	Heavy and tipping lorries
Minsk ***	MAZ	Medium-heavy lorries, and tippers
Moscow ***	MZMA	Cars (Moskvich, etc.) and vans
Odessa	OdAZ	Tippers (assembly) and trailers
Zhodino (Belorussia)	BelAZ	Heavy lorries and tippers
Mogilev	MoAZ	Heavy lorries and tippers
Kremenchug	KrAZ	Heavy lorries and tippers
Likino (Moscow)	LiAZ	Buses (high capacity)
Riga	RAF	Bus bodies on GAZ chassis, and taxis
Zaporozhe	ZAZ	Small cars (Zaporozhets)
Kurgan	KAVZ	Buses
Erevan	ErAZ	Light vans
Engels	ZIU	Buses
Saransk	SAZ	Tipping lorries
Irbit	IAPZ	Trailers, and motor cycles
Mytishchi (Moscow)	MMZ	Engines for ZIL, and tipper assembly (ZIL)
Zavolzhe (Gorky)	ZMZ	Engines for GAZ
Melitopol	MeMZ	Engines
Lutsk	LuMZ	Engines
Balashov	GKB	Trailers

Notes and sources overleaf

Notes:

MZMA	Moskovskii zavod malolitrazhnykh avtomobilei
RAF	Remontno-mekhanicheskii avtobusno-kuzovnoi zavod "Festival"
ZIU	Zavod imeni Uritskogo
GKB	Golovnoe konstruktorskoe byuro po avtomobil'nym i traktornym pritsepam
*	pre-war
**	1944-46
***	also pre-1958

Sources:

Soviet Trade Directory (Flegon Press, London, 196).

A.N.Lavrishchev, Ekonomicheskaya geografiya SSSR (M. 1967), pp. 280-2

V.M.Kostennikov (editor) Ekonomiko-geograficheskie raiony SSSR (M. 1965), passim.

A.N.Efimov (editor), Ekon. entsiklopediya (promyshlennost' i stroitel'stvo), I, (M.1962), p.31

Atlas razvitiya khozyaistva i kul'tury SSSR (M. 1967), p.36

Avto. trans. 2/68, pp. 37-39

A notable change which has occurred in the industry over the past few years in respect of commercial vehicle production has been the great increase in the proportion of models of the heavier types (including those with diesel engines) and - at the other end of the scale - of light vans for the retail trade. Again, special-purpose vehicles are now much more numerous, for example tank vehicles, ones with refrigerating equipment and those for carrying powders. Another development has been the

considerable investment in "lorry trains", i.e. tractive unit with semi-trailer, or one or more ordinary trailers.

Output over the past ten years, and plans up to 1970, for the two main categories of vehicle - commercial (with bus), and passenger - are shown in the appended graphs. It will be noticed that the numerical preponderance of lorries, etc. which has been a feature of the Soviet industry right up to the present time is about to be eliminated, and in fact when the new car plant at Togliatti is fully operational - on present estimates by 1972 - passenger vehicles production will be in the lead.

The table below shows output of motor vehicles of the main producing countries of both West and East. It will be noted that the USSR and Great Britain are about on a par as leading European producers of commercial vehicles.

(SEE NEXT PAGE FOR TABLE)

Country	Year	Annual output (thousands)	
		Cars, etc.	Lorry, bus, etc.
USA	1966	8605	1791
W. Germany	1966	2830	221
G. Britain	1966	1604	438
Japan	1966	878	1408
France	1966	1786	238
Italy	1966	1282	84
USSR	1966	229	445
Czechoslovakia	1965	78	44
E. Germany	1965	103	15
Poland	1965	26	34
Yugoslavia	1965	36	19

Sources: W. European figures - Avto. trans. 2/68, p.59
E. European figures - statistical yearbooks.

A note on stocks

No official figures for stocks of motor vehicles in the USSR have been provided since just before the war. The circumstance is probably attributable more to the authorities' lacking reliable information than to a real desire on their part to suppress the facts. The registration offices of the local authorities undoubtedly have much basic information ready to hand; but since, as already mentioned, shortage of spare parts is endemic, and "cannibalisation" probably rife, it cannot always be

easy to determine whether particular vehicles may be said to have real existence.

Bearing this circumstance in mind, one may now consider two methods of attempting to estimate stocks of vehicles: (a) based on production and life expectation, and (b) derived from indicators of performance. These are now considered.

(a) Holland Hunter has estimated * that in 1965, assuming a 15-year depreciation period, and allowing for exports (see table below), levels of production were such as to indicate the existence of 3 million commercial vehicles (with numbers slowly increasing) and 1 million passenger vehicles; whereas, if the depreciation period were taken as ten years, then there would have been about 2 million commercial vehicles (with numbers slightly decreasing) and 2/3 million passengers.

(b) During 1966 productivity of commercial vehicles in the common-user sector in tons per vehicle-ton (indicator (c) - Part 2, Section C) was 1552, whilst tonnage carried was 3374 million; and so USSR average of vehicle-tons per vehicle was 3374/1552. Taking carrying capacity per vehicle (indicator (d) as being its probable average of about 3½ tons, the size of the CU fleet (in 1966) is seen to have been of the order of 600,000. In the cases of some of the smaller union republics, values for indicator (d) as well as (c) are sometimes given in statistical compendia. Such is the case with regard to Tadzhikistan in 1961, where the total number of commercial vehicles (CU and non-CU) is found by calculation to have been approximately

---

* New Directions in the Soviet Economy (Washington, 1966), p.587.

340,000 in that year. *

Exports (1966)

A total of 66,500 passenger vehicles (i.e. cars, etc.) were delivered as follows:-

E. Germany	11,000	Rumania	3,800
Bulgaria	10,800	Poland	3,600
Finland	6,200	Yugoslavia	3,000
Hungary	4,500	Czechoslovakia	2,500

China 3,100

Other countries - Less than 2,000 each

Deliveries of commercial vehicles (exc. bus) totalled 29,700, as follows:-

Bulgaria	5,300	Egypt	4,900
Hungary	3,600	China	3,900
Poland	3,200	Cuba	2,800

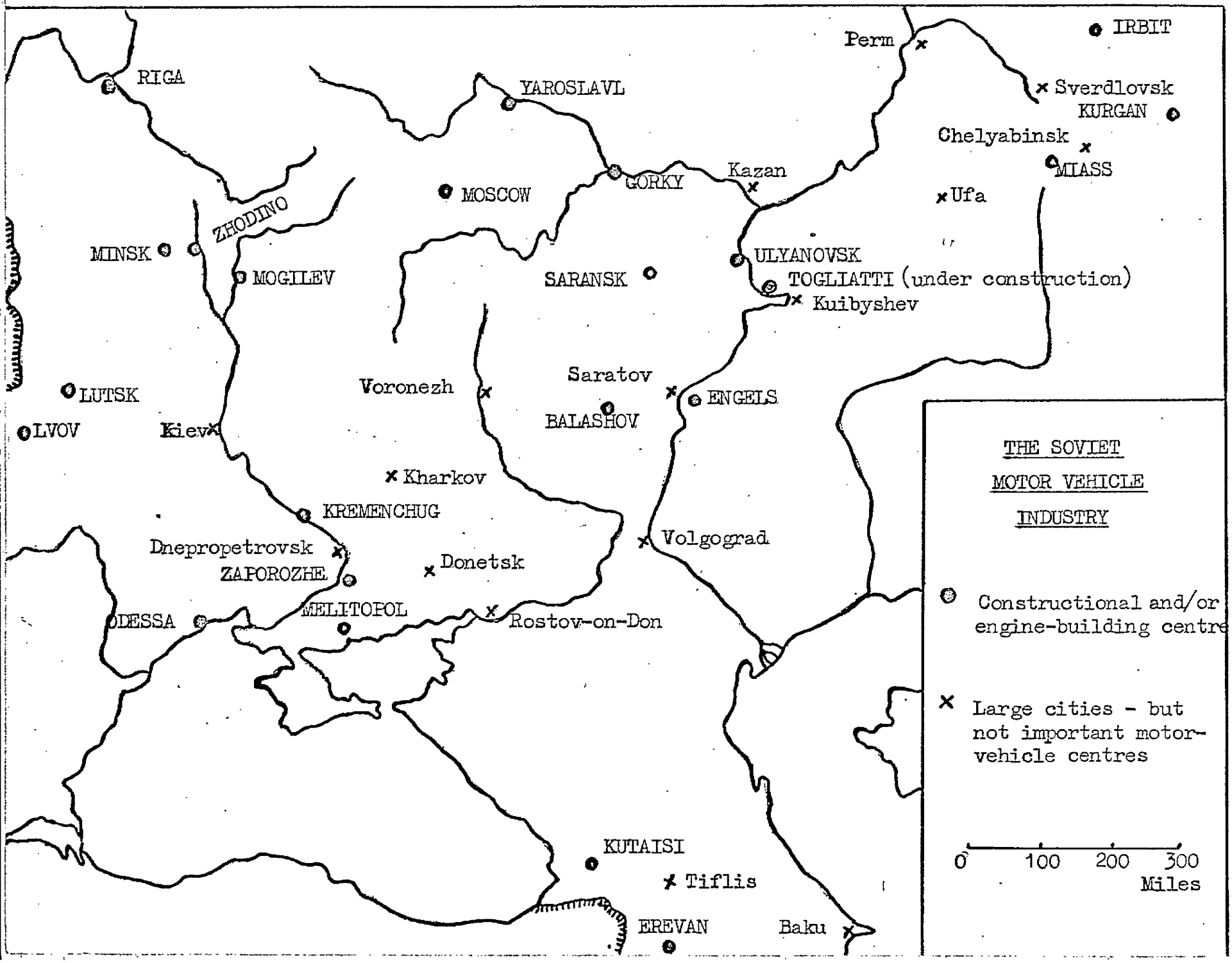
Other countries - Less than 1,000 each

Imports in 1966 comprised 1,200 commercial vehicles, but a negligible number of cars, etc.

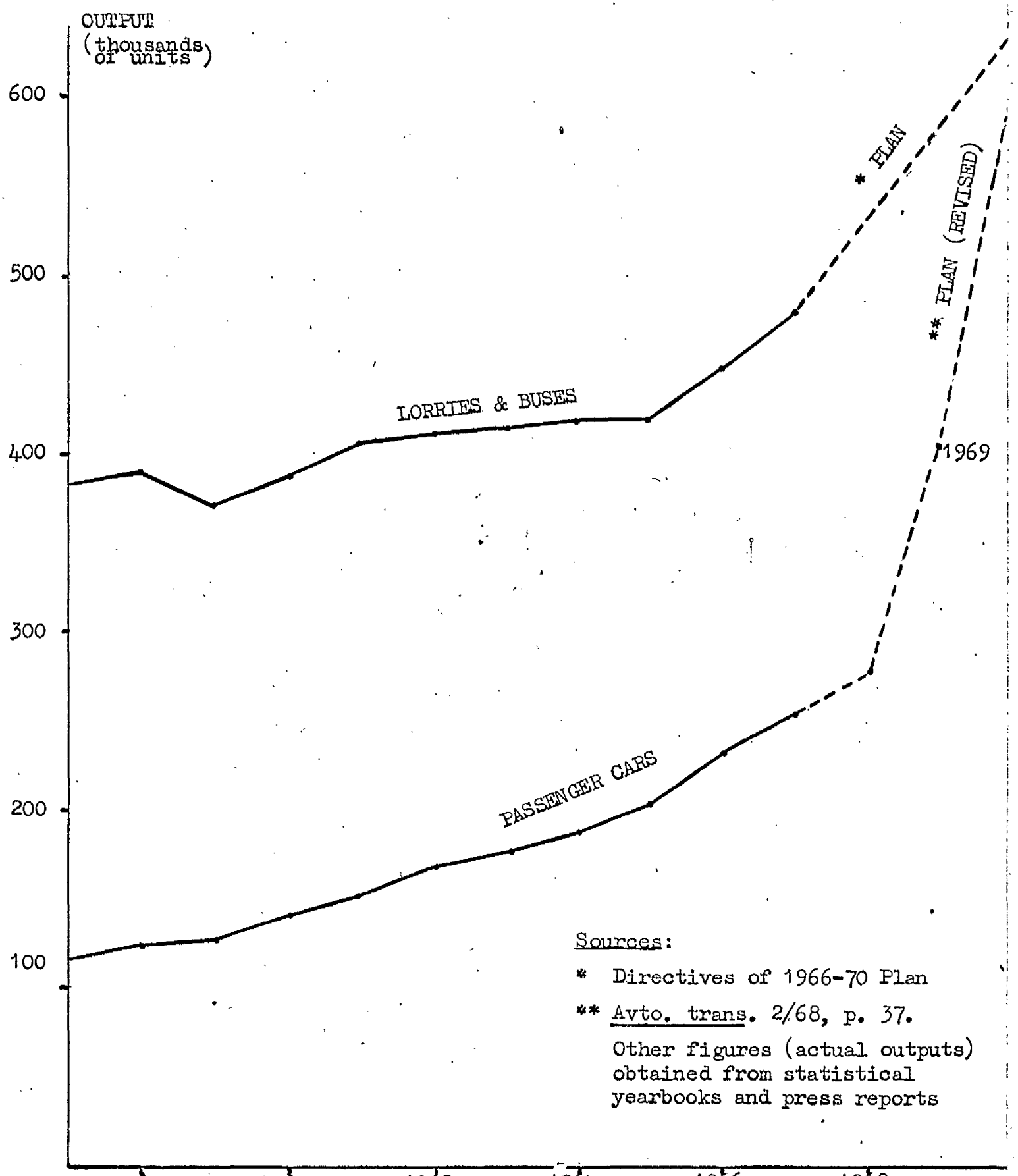
The above information was supplied from Vneshnyaya torgovlya SSSR za 1967 g. (M. 1968)

---

* For relevant statistics see Zamenov, Transport Tadzhikistana, (Dushanbe, 1964), pp. 19, 37.


RIGA
YAROSLAVL
Perm
IRBIT
Sverdlovsk
KURGAN
Chelyabinsk
MIASS
Kazan
GORKY
MOSCOW
Ufa
ZHODINO
MINSK
MOGILEV
SARANSK
ULYANOVSK
TOGLIATTI (under construction)
Kuibyshev
Saratov
Voronezh
ENGELS
LUTSK
BALASHOV
LVOV
Kiev
Kharkov
KREMENCHUG
Volgograd
Dnepropetrovsk
ZAPOROZHE
Donetsk
MELITOPOL
ODESSA
Rostov-on-Don
KUTAISI
Tiflis
EREVAN
Baku
THE SOVIET
MOTOR VEHICLE
INDUSTRY
Constructional and/or engine-building centre
Large cities - but not important motor-vehicle centres
0
100
200
300
Miles

GROWTH OF SOVIET MOTOR VEHICLE OUTPUT



Sources:

* Directives of 1966-70 Plan

** Avto. trans. 2/68, p. 37.

Other figures (actual outputs) obtained from statistical yearbooks and press reports

APPRAISAL

The aim in this concluding section is to make a rather fuller commentary on approach to subject matter than could usefully have been done in the Introduction, and to advance some very tentative suggestions concerning possible future developments.

It might be asked in what way the approach would have differed had the country concerned been a western one. Consider the three parts separately:

Part 1 is a piece of economic history in which road development and motor vehicle construction and usage are assessed in relation to contemporary conditions in the USSR and the shifting desires of the country's rulers. The scheme would not have been radically different had a Western country been the subject.

Part 3 concerns the activities of state agencies and productive organisations charged with responsibility for carrying out road works with central and local sources of finance. Nothing which was described is likely to be quite unfamiliar to someone with a knowledge of the history of British road development.

Part 2 however would have been very different had the road haulage industry been that of a Western country; for them the pricing policies of the various hauliers would have been examined in relation to established transport cost theory. What one recognises in the account of Soviet practice is the familiar "institutional" approach, including a description of what are in fact simply accounting procedures. Could a more "economic" approach have been adopted? Before an answer is attempted some

discussion of terminology will perhaps be useful.

A decision or process may be regarded as economic if it is carried our with the express purpose of increasing the material welfare of some individual or organisation. Having made the assumption that individual persons behave thus economically in respect of their own material benefit, one must next examine the relationship between a manager as an individual and an organisation on behalf of which he is required to make decisions before deciding whether to regard that organisation as an economic entity. If there is complete identification between manager and organisation as there is in the case of a Western single-proprietor firm then the body is certainly economic in the sense adopted. If on the other hand the success of the organisation, and with it the material benefit accruing to its manager, and perhaps the whole body of employees, is measured by some indicators of performance, the pursuit of which does not further an economic end, except fortuitously, then the behavioural pattern of manager and staff may be conveniently described as institutional, and no economic theory may be applied - although the organisation's performance may be analysed statistically with a view to making predictions for the future.

In relation to the Soviet economy consider now two types of decision affecting the distribution of resources: those taken by planner-politicians (the macro), and those made at the enterprise level (the micro) - essentially the distinction made during the study of Soviet transport coordination in Part 2, Section D. The macro decisions are in the main economic,

being made primarily to promote economic growth - whatever view one may take of the rationality of the planners' estimates of it.

In transport the macro decisions concern the infrastructure pattern, and the size of the fleets (road, rail, river, etc.). Fuel and power planning is a closely allied matter, embracing as it does such questions as: the storage of coal, oil, etc. at appropriate times to mitigate the problem of the peak; the striking of a balance between the use of coal and of oil/gas as fuels, the latter of which may be transported by pipe as well as by conventional means of transport; and the location of electric power stations - for long-distance transmission of electricity is a transport-substitute.

Macro decisions may be of various kinds: crude expressions of the wills of the planners; the result of the employment of rule-of-thumb techniques such as the tipovaya metodika * (by which an estimate is made of the number of years over which the heavier outlay of capital involved in one project will be compensated for by the lower running cost of another); or perhaps more refined techniques such as cost-benefit analyses - to whatever extent these may have been developed in the USSR.

It is however open to question whether any macro-economic transport, or other, planning is ultimately meaningful without the existence of an active price mechanism by means of which an infinity of marginal decisions of consumers, transport users, etc. can be automatically coordinated. (Western economic planning is concerned essentially with reconciling private with social benefit, and the conflicting requirements of the

---

* Full designation, in translated form is: "Standard method for determining the economic effectiveness of capital investments and new technology in the national economy of the USSR". The method was intro...

long-term and the short-term, against the background of the market mechanism.)

If, then, one casts doubt on the possibility under Soviet conditions of making any worthwhile assessments of utility, no answer can be supplied to such fundamental transport questions as: whether the pattern is rational or irrational - for example, whether the size of the road sector is "right"; and whether savings could be achieved if the pattern were changed.

Even however if such questions are amenable to satisfactory answer there remains the perennial Soviet problem of the reconciliation of the macro decisions with the complex pattern of managerial behaviour at the enterprise, upravlenie, or even ministerial, level. In short the macro pattern of decision making is perpetually at odds with the micro, which is essentially institutional and not economic.

It is now appropriate to consider whether behaviour at the enterprise level could be put on a real economic basis. Is a pattern conceivable under which the main quantitative decisions are taken by the central planners, yet enterprise managements are left to maximise profits without being under pressure from a higher authority intent to boost quantitative performance? The answer must necessarily be that the quantitative decisions of the central planners (upon whatever calculus they may be based) are the bedrock of the Soviet command economy, and prices, profits, etc. must be subject to them - even under the post-1965 reforms.

Probably a much more useful question is whether certain industries at present in the state sector might eventually be hived off and allowed to

operate on a market basis. Candidates for such treatment would be those having a basic characteristic not readily reconcilable with the requirements of central planning. Two important examples - perhaps the most important - are the consumers' goods industries and road haulage (assuming for present purposes that agriculture is outside the centralised planning system).

To those attempting to plan the production of consumers' goods the perverse factor is the buyer's sense of utility. As is of course well known, of recent years unwanted stocks have tended to pile up, or had to be disposed of at large discount - a situation which in 1964 led to experimentation with direct marketing by manufacturers.

In the case of road haulage the awkward features from the point of view of the planners are the considerable degree of autonomy possessed by lorry drivers by the very nature of their job, and the capability of haulage enterprises of performing a great amount of work at short notice with little formality. Road haulage is par excellence the transport medium of the manufacturers and distributors of consumers' goods.

If eventually a sector of the Soviet economy were allowed to operate on a market basis, road haulage might with advantage be split into a "nationalised" portion run on a divisional basis by existing ministries (of motor transport and main roads), and a "private" portion made up of the small fleets of vehicles operated by firms within the market sector. If the market disciplines were real, the objective necessity for the present never-ending campaigns against vedomstvennye fleets would disappear, for the coefficients of utilisation of the vehicles run by firms within the

market sector would be good - probably considerably better than those of the large common-user fleets.

All this is highly speculative, leaving as it does unasked, let alone answered, a large number of questions concerning the terms under which the hypothetical market sub-economy would operate. It may however be asserted with some confidence that an expanding, and increasingly diversified, road transport sector must necessarily add to the difficulties of maintaining the Soviet economic system in its present form.

GLOSSARY

dispetcher	movement controller
ekspeditor	forwarding (documentation) clerk
ekspluatatsiya	operation, running (also maintenance)
gruz(y)	load(s), goods, freight
naryad	allocation certificate
park	fleet (of vehicles)
perevozka/perevozki	carriage, haul(s), haulage, traffic, movements, shipments (Am.)
postavshchik	supplier, consignor, shipper (Am.)
potrebitel'	consumer, consignee
probeg	run (route length)
putevoi list	log sheet (of driver)
snabsbyt	supply and sales organisation
transportno-ekspeditsionnyi-	decriptive of processes of documentation, cartage, handling and warehousing
zayavka	indent

ABBREVIATIONS

AMO	Avtomobil'noe Moskovskoe obshchestvo
Avtopromtorg	Torgovo-promyshlennoe avtotransportnoe aktsionernoe obshchestvo
Glavdorupr	Glavnoe upravlenie stroitel'stva i ekspluatatsii dorog respublikanskogo i mestnogo znacheniya
Glavmosavtotrans	Glavnoe upravlenie avtomobil'nogo transporta Mosgorispolkoma
Gushosdor	Glavnoe upravlenie shosseinykh dorog
MATShD	Ministerstvo avtomobil'nogo transporta i shosseinykh dorog
MMF	Ministerstvo morskogo flota SSSR
MRF	Ministerstvo rechnogo flota
NKPS/MPS	Narodnyi komissariat (Ministerstvo) putei soobshcheniya
OMES	Okruzhnoe upravlenie mestnogo transporta
Soyuztrans	Vsesoyuznoe ob"edinenie skladskogo i transportno-ekspeditsionnogo dela
TsAS	Tsentral'naya avtomobil'naya sektsiya
TsUMT	Tsentral'noe upravlenie mestnogo transporta
(Tsudortrans ((Glav)dortrans	Tsentral'noe upravlenie (Glavnoe) upravlenie } shosseinykh i gruntovykh dorog i avtomobil'nogo transporta