

THE SHEFFIELD SOCIAL SURVEY COMMITTEE.

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THE Sheffield Social Survey Committee was formed in 1928 for the purpose of undertaking a comprehensive survey of the social life of Sheffield in all its aspects, its development in the past as well as its present condition. The aim of the survey was to find out those facts concerning the life of the city which were of significance for its development, to examine those facts, and to present them in a systematic form so that they would furnish the community with knowledge which might assist its members in their efforts towards civic progress and in the encouragement of a finer sense of citizenship.

The survey work of the Committee was commenced in April 1929, upon the appointment of a full-time Secretary. Since then a large number of enquiries have been undertaken and a considerable amount of very interesting material has been collected relating to social conditions in Sheffield. Some of this material has already been embodied in reports, e.g., on the Milk Supply, on Housing and Licensing, which have been published in this series; and some has been published by other bodies, e.g., the Sheffield Council of Social Service in the case of a survey of children's cinema matinées, and the Royal Commission on Unemployment Insurance in the case of a special investigation undertaken in Sheffield on its behalf. There remains, however, a great deal of material which it has not been possible to publish for lack of funds. It is expected that some of this material will be published during the autumn of 1932, including reports on Unemployment, Adult Education, Transport, and Juvenile

Welfare. It is also expected that an important report on the Standard of Living will be issued during the winter. Further publications will, however, depend upon the receipt of additional financial support.

It is hoped that these interim reports on various aspects of social life in the city will be found both interesting and useful to members of the general body of citizens and to students of social questions, and that they will stimulate considerable thought and discussion on the issues which they raise. The Committee holds no brief for any specific social policy and it is not prejudiced in favour of any section of political opinion, either locally or nationally, but it does hope that its reports will not only be read with interest, but that they will be used as the basis of political and voluntary group action dedicated to the improvement of the social well-being of the community.

Further copies of this report and of other publications of the Committee may be obtained from any Sheffield bookseller, from any of the Sheffield Public Libraries, or from the Secretary. A list of prospective reports will be found on the back cover. The following are already available :—

- No. 1. A Report on a Survey of the Milk Supply of Sheffield.
By A. J. ALLAWAY, B.A.
- No. 2. A Report on the Housing Problem in Sheffield.
By A. D. K. OWEN, M.Com.
- No. 3. A Report on a Survey of Licensing in Sheffield.
By DR. J. N. REEDMAN, M.Com.
- No. 4. A Report on Unemployment in Sheffield.
By A. D. K. OWEN, M.Com.
- No. 5. A Survey of the Development of Adult Education in Sheffield.
By G. P. JONES, M.A.
- No. 6. A Survey of Juvenile Employment and Welfare in Sheffield.
By A. D. K. OWEN, M.Com.
- No. 8. A Survey of Transport in Sheffield.
By A. G. POOL, B.Sc.(Econ.).

PREFATORY NC

THE transport facilities of an industrial city are one of the main determining factors of its economic and social life. On the adequacy of its means of communication with the outside world depends to a very considerable extent its economic prosperity, while its internal means of transport influence the distribution of its population and decide whether its inhabitants shall be concentrated in the central districts of the city or diffused in the healthier suburban areas. A survey of the internal and external transport facilities of Sheffield leads one to the conclusion that the city is, on the whole, very well served. Sheffield deservedly has a reputation as the possessor of one of the most efficient and cheapest tramway and bus systems in the country. It is on the main lines of two railway companies, and, thanks to its central geographical position, is served by through trains to all the more important towns in the country. No trader need encounter any difficulties in getting his goods delivered by road, there being many firms in the district, as well as the two railway companies, which are prepared to transport goods by road to any part of the country. But so far as water transport is concerned, Sheffield is less favourably placed than a number of industrial towns, as it is cut off from the main canal system; on the other hand, it has a direct outlet to the sea via the Don navigation. In facilities for air transport Sheffield at present lags behind, many towns having already provided themselves with aerodromes.

Controversy has been deliberately avoided in this report; the reader will find no discussion of the road versus rail or the tram versus bus controversies, these being concerned with problems which are not peculiar to Sheffield. The aim of the report is simply to sketch the historical development of transport in Sheffield and to present a picture of the city's transport facilities at the present time.

The writer is greatly indebted to many municipal, railway, canal and road transport officials who supplied him with information, statistical and otherwise. In particular, he wishes to thank Mr. A. R. Fearnley, General Manager of the Sheffield Corporation Tramways and Motors; Messrs. Lees, Collins and Taylor of the L.N.E.R. and L.M.S.R., and Mr. Albert Kirk, Secretary of the Sheffield and South Yorkshire Navigation. It must, of course, be understood that where opinions are expressed the responsibility for them rests on the writer alone.

A. G. POOL.

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1.—THE DEVELOPMENT OF TRANSPORT IN SHEFFIELD.

TRANSPORT BY PACK-HORSES.

Until the eighteenth century Sheffield was a comparatively isolated town, with only the most primitive means of transport and communication. None of the main Roman roads touched Sheffield; the town had no relics to attract pilgrims, and was not on any of the main routes used by pilgrims; while the River Don was not navigable above Doncaster. The roads leading out of Sheffield were little more than earthen tracks, which in rainy weather became impassable for wheeled vehicles and well-nigh impassable for horses. Sometimes the surface of the roads was improved by laying down a line of paving stones like those which can still be seen on the road from Redmires up to Stanage Edge; but this was by no means a general practice.

However, Sheffield had something to offer to the venturesome merchant, namely, cutlery, the manufacture of which had been localized in the town as far back as the fourteenth century. Chapmen visited the town regularly, bringing salt, spices, and other goods which could not be produced locally, and buying cutlery from the manufacturers. These goods were transported, until well into the eighteenth century, by trains of pack-horses. The pack-horse was the usual means of long-distance transport by land, carts being used only for short-distance local traffic. Not until 1710 is there any record of wheeled vehicles being used for long-distance goods transport from Sheffield. In or about that year an enterprising citizen of Mansfield, Joshua Wright, started running a "stage-waggon" between Sheffield and London.

One of the main trade routes connecting the West Riding with London and the Continent was that via Bawtry and the Humber. Goods were carried overland by pack-horse or wagon to Bawtry, then an important inland port, shipped down the Trent to Hull, and so out to sea. Daniel Defoe, writing in 1724, described how lead, wrought iron and edge tools, millstones and grindstones were carried down from Derbyshire and Hallamshire to Bawtry and then shipped to Hull, London and the Continent.

EARLY NAVIGATION OF THE DON.

The land route to Bawtry, however, was abandoned shortly afterwards, owing to the improvement in the navigation of the River Don. A series of Acts was passed, authorizing the improvement of the river, so as to make it navigable up to Tinsley. In 1697 a Bill had been promoted in Parliament to make the Don navigable up to Sheffield, but the opposition was so strong, especially from the inhabitants of Bawtry and Gainsborough, and from the landowners along the river who feared their estates would be spoilt, that the Bill was rejected. However, the Cutlers' Company and the Corporation of Doncaster, the two parties most interested in the promotion of the scheme, persevered, and their efforts were successful in 1726. In that year an Act was passed empowering the Cutlers' Company to make the River Don navigable from Holmstile, in Doncaster, to Tinsley, and to improve and keep in repair the highway from Tinsley to Sheffield. The following year the Corporation of Doncaster obtained an Act authorizing them to improve the river from Holmstile to Wilsick House. The scheme, however, proved to be much more costly than had been anticipated, and accordingly the "Company of Proprietors of the Navigation of the River Dun" was incorporated in 1732 to take over from the Cutlers' Company and the Corporation of Doncaster their powers relating to the Don Navigation. The Company had originally a capital of £17,250, composed of 150 shares of £115 each. Seven years later a fourth Act was passed empowering the Company to improve the river between Wilsick House and Fishlake Ferry, from which point ships could proceed without obstruction down to the Humber.

The effect of the whole scheme, which was completed by about 1750, was to make it possible for vessels of 30 tons burthen to come up the river as far as Doncaster, and for 20-ton vessels to come up to Tinsley. It was still necessary to carry goods three miles by road from Sheffield to Tinsley before they could be shipped, but this was a short distance compared with the 20-mile journey which formerly had to be made from Sheffield to Bawtry. Various proposals were made for improving the river between Sheffield and Tinsley or for constructing a canal between the two places, but the opposition of the landowners concerned, especially the Duke of Norfolk, succeeded in staving off these

proposals until 1815, when an Act was passed incorporating the Sheffield Canal Company. The canal from Sheffield to Tinsley was opened three years later with great rejoicing and celebration; now that Sheffield had direct water communication with the Humber the inhabitants looked forward to the time when the town would be an inland port.

For about a hundred years the River Don was the principal means of transporting goods between Sheffield and London and the Continent. And, as the volume of trade between Sheffield and other towns began to increase rapidly in the latter half of the eighteenth century, the proprietors of the Don Navigation prospered exceedingly. In 1790 the shares (nominally £115 each) were worth £1,275; in 1826 £2,160; in 1837 £2,500 each. By the end of the forties, just before the Don Navigation Company was amalgamated with the South Yorkshire Railway, the shares were worth about £3,000 each, the dividends being about £150 per annum.

ROAD TRANSPORT IN THE EIGHTEENTH CENTURY.

Considerable improvements were made in road transport during the eighteenth century, owing partly to the turnpike system and partly to the fact that road engineers were now beginning, for the first time since the Roman occupation, to study the problems of road construction. Hundreds of Acts were passed during this century, handing over the public highways to bodies of trustees who were authorized to improve and repair them and to charge tolls to people using them. For a time, in the fifties and sixties particularly, there was a veritable "turnpike mania," in which Sheffield participated. The Sheffield Town Trustees were at first opposed to the turnpike system and petitioned against the proposed turnpike from Sheffield to Chesterfield in 1739; later, however, they took an active part in promoting the turnpike bills and subscribed liberally to the local turnpike trusts. In 1758 the roads from Sheffield to Buxton via Grindleford and Tideswell, from Sheffield to Manchester via Hathersage and Castleton, and from Sheffield to Leeds via Wakefield, were made turnpike. The roads from Sheffield to Bawtry and from Sheffield to Wortley were vested in turnpike trusts in 1760. Later, the roads to Worksop (1764), Doncaster (1764), Penistone and Huddersfield

(1777), Intake (1779), and Glossop (1818) were made turnpike. The road surfaces were still far from perfect; some turnpike roads were as badly neglected as they had been in the Middle Ages; others, however, were efficiently administered and greatly improved. Arthur Young, who travelled through the district in 1769, described the road to Rotherham as "execrably bad, very stony and excessively full of holes." On the other hand, the road to Wentworth was "hilly but good," from Wentworth to Wakefield the road was "but indifferent," and from Wakefield to Leeds "pretty good."

On the whole, the turnpike system, in spite of its defects and inefficient administration, did bring about a definite improvement in the condition of the roads; so much so, that it now became practicable to establish regular stage-coach services over long distances. Coaching services were comparatively late in coming to Sheffield; a few stage-coaches were running in England as early as 1660, but it was not until 1760 that they were introduced in Sheffield. In that year Samuel Glanville, landlord of the "Angel," started running a coach, described as a "flying machine on steel springs," from Leeds to London, via Sheffield. The journey took three days, the first night being spent at Nottingham, and the second at Northampton. Improvements in the roads and in the construction of coaches made it possible to speed up the coaching services, so that by 1787 the journey from Sheffield to London could be done in 26 hours. The fare for this journey was £1 17s. 0d. In 1787 coaches were running every day from Sheffield to London, Birmingham, Leeds, Carlisle, and twice a week to Doncaster. In the hey-day of the coaching era, i.e., during the first thirty or forty years of the nineteenth century, the famous "Tontine Inn" was the leading coaching inn for Sheffield.

Carriers had also established regular wagon services from Sheffield to distant towns in the second half of the eighteenth century. The Sheffield Directory for 1787 contains a list showing that carriers' wagons were regularly plying between Sheffield and London, Manchester, York, Doncaster, Macclesfield, Mansfield, Tideswell, &c. The carriers' charges were heavier than cheap bulky goods could bear, but not too heavy for the more valuable consignments. For instance, in 1808, the charge for conveying

goods from Sheffield to London was $11/8$ per cwt., and from Sheffield to Manchester $2/2$ per cwt.

RAILWAY DEVELOPMENT.

But if Sheffield had never had any other means of transporting goods than the carriers' wagons and the Don Navigation, the heavy steel and engineering industries could not have developed there. The rapid industrial development of Sheffield in the second half of the nineteenth century was entirely dependent on railway transport.

It is impossible to describe, in the space available, all the early railway projects, successful and unsuccessful, relating to Sheffield. Suffice it to say that from 1825 onwards scores of schemes were promoted, some of which were carried out, but the majority of which were abandoned. The scheme in which Sheffield was most interested was the proposed North Midland Railway from Derby to Leeds. This was to be a link in a through route from London to Edinburgh. George Stephenson surveyed the district and decided that the best route would run through Ambergate, Chesterfield, Staveley, Masborough, and Normanton, thus keeping to the valleys and avoiding any stiff gradients. He proposed that Sheffield, Barnsley and Wakefield should be served by branches from the main line. The manufacturers of Sheffield were naturally opposed to the suggested route, and urged that the line should run from Chesterfield to Sheffield via Dronfield and then on to Masborough, thus putting Sheffield on the main line. Stephenson, however, insisted that a main line should have no gradients of more than 1 in 330, and declared that the gradients between Chesterfield and Sheffield were far too severe for a direct line between the two towns; in fact, he defied any railway engineer to get into Sheffield by any other route than that from the East. The development of locomotive engineering later made it possible to construct the direct line from Chesterfield to Sheffield to which Stephenson objected; but his objection was probably justified at the time. He finally convinced his opponents that the Dronfield route was impracticable and, accordingly, the Sheffield and Rotherham Railway was promoted to connect Sheffield with the main North Midland line at Masborough.

The Sheffield and Rotherham Bill came before Parliament in 1835, but the opponents of the scheme succeeded in securing its rejection by the House of Lords. The promoters of the Bill, amongst whom were some of the leading manufacturers of Sheffield, contended that the proposed line would reduce transport costs between the two towns and so enable Sheffield manufacturers to compete more easily in foreign markets (at least so far as goods exported via Rotherham were concerned); it would also reduce the price of provisions in Sheffield, as a considerable part of the corn and groceries consumed in the town was imported through Rotherham. Great emphasis was also laid on the estimated saving of a shilling a ton in the price of coal, through the reduction in the cost of bringing coal from Earl Fitzwilliam's collieries near Rotherham into Sheffield. They claimed that the canal and river were a costly, slow, and unreliable means of transport, and stated that on occasion, though this was admitted to be exceptional, it took three or four days to bring barges from Rotherham to Sheffield owing to the shoals in the river.

The strongest opposition naturally came from the Sheffield Canal Company, which stood to lose heavily from railway competition, and from the Duke of Norfolk, who, as the principal coalowner supplying Sheffield, preferred not to have the competition of the Rotherham collieries. The Bill was also opposed on grounds that we now find amusing. The *Sheffield Independent* reported that 120 inhabitants of Rotherham, headed by their vicar, had presented a petition against the Bill. The petition "set forth that the canal and turnpike road furnish sufficient communication between the two towns, and expresses an apprehension lest, by increasing the facilities of communication, the idle, drunken, and dissolute portion of the Sheffield people should flock to Rotherham."

The following year, however, the promoters were successful in overcoming the opposition and secured their Act; the line was constructed and opened in 1838. The Sheffield and Rotherham, like most of the British railway companies, had to pay heavily to come into existence at all. The Parliamentary expenses incurred in merely securing the Act amounted to over £11,500. Landowners also had to be handsomely compensated, the purchase

of land accounting for another £20,000. For a short line of only $5\frac{1}{2}$ miles this represented very heavy expenditure. Traffic along the line surpassed the most optimistic expectations; the promoters had based their estimate of profits on the assumption that about 150,000 passengers a year would travel. Actually during the first twelve months more than three times that number were carried. The service was very good, trains leaving Sheffield every hour from 8 a.m. to 8 p.m., and leaving Rotherham every hour from 9 a.m. to 9 p.m.

The opening of the North Midland Railway in 1840 connected Sheffield by rail (via Masborough) with London, all the more important Midland towns—Derby, Birmingham, Nottingham and Leicester—and with Leeds and York. There were two trains to London from Sheffield: one departing at 5.30 a.m. and arriving at 3.30 p.m., the other departing at 12 noon and arriving at 9.30 p.m. The fares to London were: First class, 45/-; Second class, 30/-; Third class, 20/6. Excursion trains were run on the North Midland from the beginning. In August, 1840, an excursion train of four engines and sixty-three carriages, carrying nearly three thousand people, was run from Leeds to Sheffield. A similar excursion was run from Sheffield to Leeds a month later. The following year an excursion was arranged to Derby, the third class return fare being 4/- as compared with the third class ordinary single fare of 5/6.

In 1844, the North Midland, the Midland Counties, and the Birmingham and Derby Junction Railways amalgamated to form the Midland Railway, and the following year the Sheffield and Rotherham was absorbed by the amalgamated company.

In spite of George Stephenson's declaration that Sheffield could be approached by rail only from the East, the Sheffield and Manchester Railway, entering Sheffield from the North-West, was promoted and secured its Act in 1837. The promoters declared that the cost of constructing the line would be £800,000 at the most, and estimated that the net profits would enable dividends of $12\frac{1}{2}$ per cent to be paid. So optimistic was the investing public that the prospectus for the original issue of £800,000 of stock brought forth applications to the amount of £2,000,000. The construction of the line, however, proved to be a very long and

costly business (it was not opened throughout for traffic until 1845), owing to the enormous engineering difficulties involved in negotiating the hilly country between Penistone and Glossop; the Woodhead Tunnel alone, which is just over three miles long, cost £200,000 to construct. The line as a whole cost more than double the amount estimated by the promoters. The heavy capital expenditure of this company, which later became the Manchester, Sheffield and Lincolnshire Railway, accounted partly for the comparatively low dividends it paid.

In 1845, 1846 and 1847, the "railway mania" was at its height. Of the hundreds of Railway Acts passed during this period four affected Sheffield more particularly: the Huddersfield and Sheffield (1845), which connected with the Sheffield and Manchester at Penistone; the Grimsby and Sheffield (1845); the Sheffield and Lincolnshire (1846), connecting Sheffield with Lincoln via Worksop and Retford; and the South Yorkshire, Doncaster and Goole Railway, connecting Doncaster, Barnsley and Penistone. The Grimsby and Lincolnshire lines, the Sheffield and Manchester, and the Grimsby Dock Company amalgamated in 1847 to form the Manchester, Sheffield and Lincolnshire Railway. This placed Sheffield at the central point of a cross-country main line from Manchester to Lincoln and Grimsby. The Sheffield Victoria Station was opened by the M.S.L.R. in 1851.

The Manchester, Sheffield and Lincolnshire adopted a policy of extending its influence as far as possible by absorbing or leasing local lines in adjoining districts. Amongst these was the South Yorkshire Railway, primarily a mineral line, which was leased in 1864. Sheffield was connected with the South Yorkshire colliery district by lines to Barnsley (via Tinsley and Chapeltown), and Mexborough (via Tinsley and Rotherham).

Sheffield had never been content with its position on what was really a branch line of the Midland Railway; but it was not until the sixties that effective steps were taken to improve the rail connection between Sheffield and the South. In 1861 and 1862 public meetings were held in the town in support of the proposal for a direct Sheffield-Chesterfield line. The Midland directors were approached, and they agreed to promote a Bill to

carry out the scheme in 1863. In the meantime, however, a rival scheme had been launched, which was backed up enthusiastically by the whole town—including the Cutlers' Company and the Town Council. This was a scheme for the construction of a line from Sheffield to Staffordshire via Bakewell and Ashbourne with a branch from Dronfield to Chesterfield. It was proposed that this Staffordshire line should have running powers over all the Midland lines. Both the Midland scheme and the scheme promoted by the town of Sheffield were submitted to Parliament in 1864. The Sheffield–Staffordshire Bill, however, was rejected by the Commons when it was discovered that the money which has to be deposited by the promoters of Private Bills had been borrowed. The Midland Bill was passed. The new line was opened for traffic in 1870, Sheffield being now on the main Midland line. A new passenger station was opened (on the site of the present Midland Station), the old Wicker Station of the Sheffield and Rotherham Railway becoming a goods station.

Two other additions to Sheffield's railway facilities remain to be mentioned: the Dore & Chinley Line, and the Great Central extension to London. In 1884, an Act was passed incorporating an independent company with powers to construct a line from Dore to Chinley. The investing public, however, was not sufficiently attracted and the scheme fell through, owing to lack of financial support. It was realized that the line would be exceedingly costly owing to the mountainous character of the route, and apart from the holiday-makers attracted to the Peak District, no heavy traffic could be expected. However, the Midland Railway realized that the line would give them a direct connection between Sheffield and Manchester, and would provide an alternative route from London to Manchester and Liverpool. Accordingly they secured powers to proceed with the scheme in 1888, and the line was opened in 1893. The line, as anticipated, involved very heavy capital expenditure, owing particularly to the construction of the Topley and Cowburn Tunnels. The former is 3 miles 950 yards long, the second longest tunnel in the country.

The Manchester, Sheffield and Lincolnshire Railway promoted a Bill in 1892 for the construction of a main line from Sheffield through Nottingham, Leicester, Rugby, and over the Metropolitan line into London. Naturally, the Bill was strongly

opposed by the Midland Railway, which was already serving all these towns with express trains from London. However, after a strenuous fight, the Bill was passed, and the extension was opened for passenger trains in 1899. The company, which had adopted the name Great Central two years previously, immediately started running high-speed trains to secure traffic from its competitors who were already well established. In 1903, for instance, the "crack" trains from Marylebone to Sheffield took exactly three hours; in 1914 they took 2 hours 57 minutes, a slightly shorter time than is taken by any of the best trains at the present time on either the L.N.E.R. or the L.M.S.R.

THE DECLINE OF ROAD AND INLAND WATER TRANSPORT.

As the railway system developed, the canals and navigable rivers declined in importance and the coaching services completely disappeared. Travelling by rail was much more speedy and comfortable than coaching; consequently the coaching proprietors were gradually compelled to withdraw their services. By the end of the sixties stage-coaches had practically disappeared except in a few isolated parts of the country. With the decline of coaching services the turnpike trusts found themselves in financial difficulties. The trusts, when first created, had generally financed the initial construction or improvement of the roads by issuing loans; the interest on these loans, as well as the cost of road repairs and the salaries and wages of officials, were met out of the tolls charged to road users. The coaches were the principal road users, and they also paid the highest tolls, so that the decline of coaching was bound to be a serious blow to the turnpike trusts. As early as 1841, for instance, the treasurer of the Sheffield-Wakefield turnpike announced that owing to the reduction in the receipts from tolls, through railway competition, no interest would be paid to bond-holders. Sooner or later most of the turnpike trusts in the country got into similar difficulties and the turnpike system broke down. The Acts constituting the trusts were allowed to expire, particularly in the sixties and seventies, the tolls were abolished, and the cost of road maintenance was then met out of the rates levied by local highway authorities.

The Don Navigation has survived the competition of the railways and still plays a useful part in the transport of goods to and from Sheffield. But it is no longer the main artery of commerce that it was in the late eighteenth and early nineteenth centuries. The later history of this ancient trade route can be briefly related. In 1849 the Don Navigation Company purchased the Sheffield Canal from the M.S.L.R., which had acquired it the previous year. Then in 1850 the South Yorkshire, Doncaster and Goole Railway bought up the Don Navigation, the amalgamated company being known as the South Yorkshire Railway and River Don Company. This company was leased in 1864 by the M.S.L.R. and acquired completely ten years later. But, unlike the great majority of the canals bought up by the railways, the Don Navigation and its associated canals have not remained in the possession of the railway company. A number of Sheffield manufacturers, realizing the possible advantages from a revival of canal competition, promoted a scheme for the transference of the Don Navigation and the canals connected with it to an independent company; and in 1889 an Act was passed transferring the navigations from the M.S.L.R. to the Sheffield and South Yorkshire Navigation Company, which took over the property in 1895. The railway company (now the L.N.E.R.) has shares in the Navigation Company, but has not technically a controlling interest, i.e., it possesses rather less than 50 per cent of the voting rights. Of the ten directors, five are nominated by the railway company. There is competition between the canal and the railways for the available traffic, but the competition does not take the form of rate-cutting.

URBAN TRANSPORT IN THE NINETEENTH CENTURY.

Until the middle of the nineteenth century, Sheffield was still too small a town to feel the need for regular passenger services connecting the town with the outlying districts. Hackney coaches, first introduced in Sheffield in 1793, private carriages and horses were the only means of passenger transport available; and only the well-to-do could afford these. Working-class people were compelled to live within comfortable walking distance of their work-places. Then as the town expanded and the outlying districts became more populous, a demand for transport facilities

arose, which was met by the provision of horse-omnibuses. These were introduced in 1852, by private proprietors, the first services being between the town and Heeley, Attercliffe, the Barracks, the Botanical Gardens, and Broomhill; later, bus services to Carbrook, Brightside, Nether Edge, Uppertorpe, and other parts of the town were provided.

In 1870 the Tramways Act was passed, which declared that local authorities and private companies might be empowered by Provisional Order to construct tramways; but local authorities were expressly prohibited from *working* their tramways themselves. They had either to lease them to a private concern or allow the public to run their own conveyances over them on payment of the authorized tolls. It was for this reason that the Sheffield tramways, although constructed by the Corporation, were originally leased to and worked by a private company. In 1872 the Sheffield Tramways Company secured powers by a Private Act to construct and work tramways in Sheffield; but the Corporation was authorized to substitute itself for the company and acquire the powers of construction conferred by the Act. The Corporation elected to make this substitution, constructed the tramways, and then leased them to the Tramways Company. The first tramway route (to Attercliffe), on which, of course, horse trams were run, was opened in 1873. The main conditions of the lease were:—

(1) The Company agreed to pay interest on the loans raised by the Corporation to cover the cost of construction.

(2) The Company was to pay a rent of £100 a year per street mile of track.

(3) The Company was to repair the track at its own expense up to eighteen inches each side of the outside rails, to the satisfaction of the Borough Surveyor.

The relations between the Tramways Company and the Town Council were anything but amicable. A continual source of friction was the question of track repairs; the Highway Committee complained time after time that the track was not being properly repaired and was positively dangerous. The Company, on the other hand, retorted that the tramway track was so much better repaired than the rest of the road that traffic kept to the tramways and so increased the cost of repairs for the Company.

On the expiration of the lease in 1896, the Corporation took over the working of the tramways, being authorized to do so by a Private Act passed the same year. At that time there were tramway routes to Attercliffe, Brightside, Hillsborough, Heeley and Nether Edge, totalling just over nine miles. Since then, the system has been gradually extended, at the present time there being nearly fifty route miles of tramway. A committee was appointed immediately after the taking over of the tramways by the Corporation to inquire into the question of mechanical tramway traction, and it was decided to adopt the overhead electric system. In 1899 electric trams started running on several routes, the electrification of the system being completed in 1902.

The invention of the internal combustion engine has brought about revolutionary changes in road transport during the last thirty years. To some extent, of course, motor transport has developed at the expense of the older forms of transport—railways, tramways, horses. But in the main motor transport has provided the community with facilities which would not otherwise be available. The motor-bus is an extremely adaptable means of transport which is particularly useful in serving the less densely populated districts, and in adjusting transport facilities to the changing requirements of the community; the motor-coach and charabanc enable tourists to travel to places inaccessible by rail; the motor lorry is, on the whole, quicker and cheaper for short-distance transport than the railway; while the private car and motor-cycle give the individual control over his own means of transport and enable him to travel when, where, and by whichever route he chooses. The road has once more come into its own.

2—THE SHEFFIELD TRAMWAYS.

There are two aspects of any municipal transport undertaking with which the ordinary citizen is concerned: as a passenger he is concerned with the fares charged and the facilities provided; as a ratepayer he is concerned with the financial results of the undertaking.

FARES AND FACILITIES.

(a) *Fares.* The policy relating to fares adopted by any tramway or bus undertaking clearly has important social consequences. In the interests of public health people should be encouraged and enabled to live some considerable distance from the areas where factories and works are situated, especially in towns like Sheffield, where the atmosphere in the works area is polluted with smoke. Whether wage-earners are able to live in suburban districts obviously depends on whether suitable housing accommodation is provided and whether cheap transport facilities are available. A policy of high fares must tend to discourage suburban development and leads to the congestion of population in the central districts of towns. If, for instance, as is the case in some towns, minimum fares of 3d. are charged from the centre of the town to suburban districts only two or three miles away, the suburban dweller is compelled to pay three or four shillings a week in transport costs for himself alone, assuming that he makes only two journeys a day. For the great majority of wage-earners, a weekly expenditure on transport of this amount would constitute such a heavy drain on their incomes, that they would avoid living very far from their work.

Hence, most municipalities controlling their own transport systems have adopted a deliberate policy of encouraging people to live in the suburbs by charging very low fares between the suburban termini and the centre of the town. An examination of the scale of fares on most municipal tramways shows that the fare per mile is very much lower for the long journeys than for the short journeys. In Sheffield, for instance, one can travel about a mile for a penny; but for an extra half-penny three or four miles can be travelled.

For the last thirty years the fares charged on the Sheffield tramways have been amongst the lowest in the country. Before the War the standard fare from the city to any terminus was 1d., $\frac{1}{2}$ d. fares being charged for the intermediate stages. The $\frac{1}{2}$ d. fare stages were not particularly cheap, as they averaged only about half a mile in length. But for the 1d. fare one could travel on the average about $2\frac{1}{2}$ miles, this being a considerably lower charge than was made on most other tramway systems. These remained the standard fares until the war-period, when, owing to increased working expenditure, the fares had to be raised. In 1918 the through fares between the city and the suburban termini were raised to $1\frac{1}{2}$ d., and the fares for the intermediate stages to 1d. The following year the through fares were increased to 2d. In 1923 $1\frac{1}{2}$ d. fares for any two consecutive stages were introduced. These three standard fares—1d. for a single stage, $1\frac{1}{2}$ d. for two stages, and 2d. between the city and any terminus—remained in operation until 1930, when $1\frac{1}{2}$ d. became the maximum fare between the city and the suburban termini, the fare for the intermediate stages remaining at 1d.

At the present time the 1d. fare stages in Sheffield are, on the average, about one mile in length. In some towns a greater distance than this can be travelled for a 1d.; in others less. In Manchester, for instance, the 1d. fare stages average about $1\frac{1}{2}$ miles in length; in Liverpool they average as much as 2 miles. Hence, so far as the 1d. stages are concerned, Sheffield tramways are certainly no cheaper than the average for the bigger provincial towns. On the other hand, the $1\frac{1}{2}$ d. stages in Sheffield are the cheapest in the country. The average distance one can travel in Sheffield for the $1\frac{1}{2}$ d. fare is $3\frac{1}{2}$ miles; on one route (Woodseats to Market Side via Abbey Lane and Millhouses) the $1\frac{1}{2}$ d. stage is nearly $5\frac{1}{4}$ miles in length.

The fares for children (ages 5 to 14) are exceedingly cheap in Sheffield, $\frac{1}{2}$ d. being the fare charged for any distance between the city and a terminus. This reduced fare is available for the children at certain schools up to the age of 17. Until 1930 reduced return fares were available up to 9 a.m., 3d. being the return fare charged on 2d. stages. Hence, those workers whose jobs take them out before 9 a.m. have never had to pay more

than 1½d. from any terminus to the city. When the fares were reduced in 1930, these special return fares were withdrawn, except on the Walkley and Nether Edge routes (the two shortest routes), where 2½d. return tickets are still available.

The table on the opposite page gives the average distances that can be travelled for various ordinary fares on a number of provincial tramway systems.

(b) *Frequency of service.* The frequency of an urban passenger transport service is second only in importance, from the point of view of the passenger, to the level of the fares. Whether it be tram, bus, or tube transport, passengers expect to be able to arrive at a stopping-place or station and not have to wait more than a few minutes before the vehicle they are wanting comes along. The general rule in passenger transport of all kinds is that the shorter the distance passengers are travelling the more frequent the service they expect.

Up to a point, it will clearly pay any transport undertaking to increase the average frequency of its services, as this will stimulate traffic. If, for instance, a tramway service is very infrequent, many potential short-distance passengers will prefer to walk rather than wait ten minutes or a quarter of an hour for a tram. But beyond a certain point, increasing the frequency of a service will secure little or no extra traffic; it will merely have the effect of sharing out a given number of passengers between an increased number of trams, so that fewer and fewer passengers are carried in each tram. Such an increased frequency of service, though doubtless convenient for passengers, means that increased expenditure is having to be incurred for each passenger and, if carried too far, will result in a financial loss on the service. In short, up to a point it pays financially to provide a more frequent service, owing to the stimulus given to traffic; but beyond that point an increased frequency of service can be provided only by reducing the profits of the undertaking.

TABLE SHOWING THE AVERAGE DISTANCES THAT CAN BE TRAVELLED FOR VARIOUS
STANDARD TRAMWAY FARES.

	$\frac{1}{2}$ d. Miles	1d. Miles	$1\frac{1}{2}$ d. Miles	2d. Miles	$2\frac{1}{2}$ d. Miles	3d. Miles	$3\frac{1}{2}$ d. Miles	4d. Miles
Sheffield	—	1	$3\frac{1}{2}$	—	—	—	—	—
Leeds	—	1	2	3·2	4	5·05	5·69	7·39
Manchester	—	1·56	2·34	3·13	3·90	4·68	5·46	6·26
Birmingham (a)	—	1·33	2	3	4	5	6	7
Liverpool	—	2	—	4·5 to 6·94	—	—	—	—
Cardiff (a)	—	·73	1·38	1·96	2·63	3·26	3·74	4·13
Glasgow (b)	·57	1·16	2·24	4·57	9·16	—	—	—

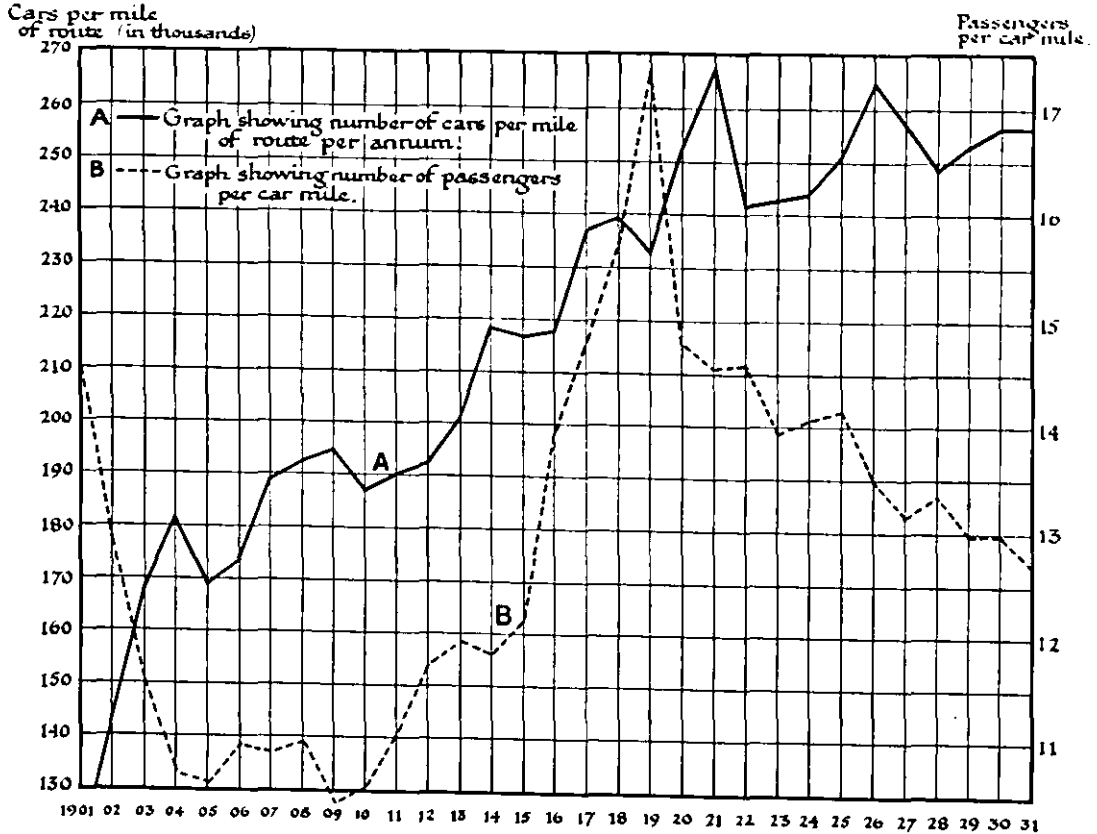
(a) Reduced Workmen's Tickets available. In Birmingham, Workmen's Tickets average $\frac{1}{2}$ d. a mile; in Cardiff, ·46d. a mile.

(b) The longest $2\frac{1}{2}$ d. stage extends to $21\frac{1}{2}$ miles.

The diagram on the opposite page illustrates this. One graph (A) shows the average number of cars per year travelling over each mile of route in Sheffield for each year since 1901. The other graph (B) shows the average number of passengers per car-mile in Sheffield over the same period of years. The number of passengers per car-mile depends of course on the total number of passengers carried as well as on the frequency of service, so that a very close correlation between changes in the average frequency of service and changes in the average number of passengers per car-mile cannot be expected. Nevertheless, a comparison of the two graphs shows how often it has happened that an increased frequency of service has reduced the average number of passengers carried in each tram. From 1901 to 1904 an increased frequency of service was associated with a decrease in the passengers per car-mile. This occurred again between 1905 and 1909. Then from 1909 to 1912 there was a decrease in the frequency of service and an appreciable increase in the number of passengers per car-mile. During the war-period there was an enormous increase in the number of passengers carried, owing mainly to the heavy workmen's traffic, this necessitating more frequent services and giving a big increase in the number of passengers per car-mile. Then from 1919 to 1921 a sharp increase in the number of cars per route mile was associated with a sharp decrease in the number of passengers per car, which was only partly accounted for by the falling-off in the total passenger traffic. Finally, taking the period 1923 to 1930 as a whole, both the total number of passengers and the frequency of service increased, whereas the number of passengers per car-mile steadily declined.

The increased average frequency of service during the last thirty years, indicated in graph (A), is due to two factors. It is due partly to a reduction in the average interval of time between the trams starting from the termini, and partly to the fact that as new routes have been opened they have generally been made to branch off from existing routes; the result is that the trams running on the new route have automatically increased the frequency of service on the section of track common to the new route and the old route. An examination of the map of Sheffield tramways shows that each section of track running

DIAGRAM I.



The Number of Car-Miles and Passengers per Car-Mile on the Sheffield Tramways 1900-01 to 1930-31.

from the city is common to several routes for a considerable distance from the centre of the town. For instance, such districts as Broomhill and Hunter's Bar have a very frequent service of trams, being served by three different routes.

At present, the time interval between trams starting from the termini varies from three minutes on some routes to ten on others, the population served by the particular route being the main factor determining the frequency of service. In addition to the ordinary services, special arrangements are made for dealing with "rush" traffic; extra cars are provided during the "rush" periods, the number of cars operating being increased by about 120% at these times.

(c) *Speed of trams.* Besides cheap fares and frequent services, passengers require also frequent stopping-places and as high a speed as possible. Obviously the last two requirements clash; the result is that owing to the provision of stopping-places at very short intervals, the average speed on tramways is comparatively low. In Sheffield, for instance, the average speed of the trams is just over 9 miles per hour; but between stopping-places the trams run at 16 to 20 miles an hour.

Sheffield compares very favourably with other towns in this matter of tramway speeds, especially in view of the hilly character of the town. The following table gives the average speed of trams on a number of the leading provincial systems:—

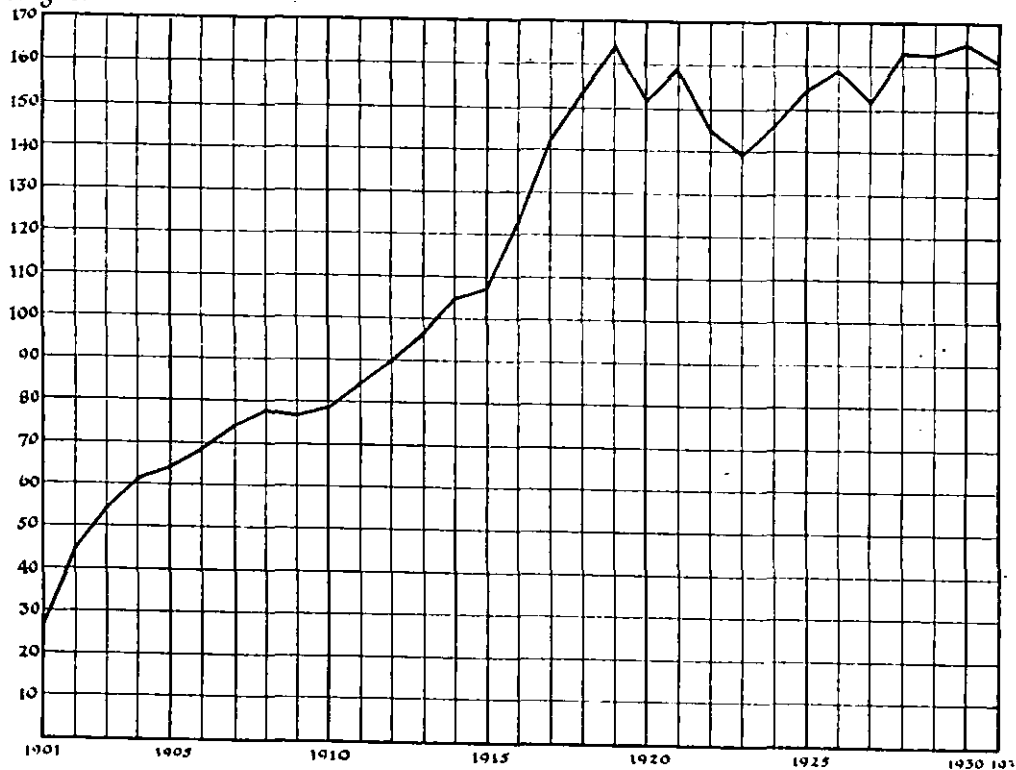
Glasgow	...	...	9.39 miles per hour
Sheffield	...	...	9.041 "
Birmingham	...	...	9.03 "
Manchester	...	...	8.54 "
Liverpool	...	...	8.5 "
Leeds	...	...	8.37 "
Cardiff	...	...	7.5 "

The average speed on the Sheffield tramways has increased by about three miles an hour during the last thirty years.

(d) *The Growth of Traffic.* The curve on the opposite page indicates the growth of traffic on the Sheffield tramways during the past thirty years. The number of passengers has increased nearly sixfold during this period—from about 27,500,000 in the

DIAGRAM II.

Millions of
Passengers.



Number of Passengers on Sheffield Tramways 1900-01 to 1930-31.

year ending March 25th, 1901, to about 154,000,000 in the year ending March 31st, 1932. The curve brings out very clearly the huge increase in traffic, mainly workmen's traffic, during the war period, and the sharp decline in traffic in 1921, when the trade depression set in. From 1923 to 1930 the general trend of the curve is upward, except for the abnormal year 1926-27. Since the intensification of the depression in 1930, the volume of traffic has fallen off, though the reduction has been surprisingly small in view of the abnormally high percentage of unemployment in Sheffield.

The growth of traffic during these three decades is due to a variety of factors. In part it is due to the growth of population, which increased by about 33% during the period; moreover, in any big city where the population is increasing, the proportion of the population living in the suburbs and therefore making frequent use of transport facilities naturally tends to increase. Secondly, it is due partly to the extension of the tramway system, providing an increasing proportion of the population with transport facilities. The length of the system has increased from about 17 $\frac{3}{4}$ route miles in 1901 to about 50 at the present time. Finally, the increased traffic is due partly to the growth of the "travel habit." Quite apart from necessary journeys to and from work, the average member of the community makes increasing use of transport facilities for such purposes as shopping expeditions, visits to places of amusement, visits to public parks, getting to football matches and to the outskirts of the city for hiking, and so on.

The best indication of the change in people's travel habits is given by the change in the average number of journeys made per head of population, as this eliminates the effect of increasing population. In the year 1900-01, the number of journeys per head of population was about 70; in 1931-32 the corresponding figure was 298. Moreover, in the latter year we must allow for the journeys made on Corporation buses running within the city area. No statistics are available from which the number of bus journeys per head of population can be accurately calculated, but the figure is probably round about 30. This gives us a total of about 330 journeys per head of population on the municipal transport system, roughly a fivefold increase since 1901.

FINANCIAL RESULTS.

It is not proposed to discuss here the financial policy of municipal transport undertakings, i.e., whether they should be run at a profit or a loss or so as just to cover expenses. It will be assumed that a municipal tramway system which provides cheap and efficient services and at the same time yields a net surplus over all expenses is satisfactory from the point of view of both passengers and ratepayers.

During the last thirty years the Sheffield tramways have proved to be a very remunerative investment for the ratepayers. Each year the tramways have yielded a net surplus over all expenses (including working expenses, repairs and renewals, debt charges, income tax, &c.), which has been used partly to relieve the city rates and partly to build up an accumulated surplus fund. During the twenty-nine financial years 1900-1928 the total amount of £585,731 was contributed out of tramway profits to relieve the local rates. In addition, an accumulated surplus fund standing at £63,179 in 1932 has been built up.

Moreover, the tramways have contributed slightly over £200,000 towards the cost of street improvements, which, though conferring some benefit on the tramways, have also benefited transport in general. In effect, this £200,000 is an additional contribution from tramway profits to the relief of rates, since, in the absence of the tramway system, this expenditure would have fallen on the rates. The City Council has recently (in 1930) adopted the principle that in future street improvements benefiting transport in general shall not be made a special charge against the tramways.

Further, in considering the financial results, it must be remembered that tramway undertakings, whether municipally or privately owned, suffer from certain special disabilities. In the first place, the Tramways Act of 1870 compels every tramway undertaking to maintain not only the rails on which the trams actually run but also the roadway between the rails and eighteen inches outside the outer rails. This means that the biggest part of the cost of highway repairs on the tram routes is a charge on the tramway undertaking, despite the fact that the trams do not run on the road surface at all. The increase in the volume of motor traffic in recent years has naturally made this liability

to maintain the roadway an increasingly heavy burden for the tramways. Secondly, the permanent way of a tramway, like the permanent way of a railway, is assessed for purposes of local rates, so that tramway undertakings, unlike bus undertakings, have to pay local rates in respect of the track they use.

Finally, it must be remembered that the real net profit of the Sheffield tramways is considerably greater than the so-called "net surplus", as interest on the outstanding debt and sinking fund payments are deducted from the net profits of the undertaking before the net surplus is arrived at. These two items (interest and sinking fund charges) amounted to just over £100,000 in 1931-32, the net surplus being £3,790. The total capital expenditure on the Sheffield tramways and motor-buses amounted in 1932 to £2,600,628, of which £2,440,552 had been met out of loans. This debt has been gradually reduced year by year, about 64% having been paid off up to 1932. The outstanding debt on the tramways and motors in that year was £938,069. In effect, the City of Sheffield is buying its tramways on the instalment plan, the annual instalments being charged against the annual profits of the undertaking. When the debt is completely extinguished, and no further debt charges have to be made against profits, the whole of the net profits will belong to the city.

3.—MOTOR-BUS SERVICES.

Sheffield was one of the first municipalities to realize the potentialities of the motor-bus and to introduce municipal bus services. There were many districts on the outskirts of the city and many villages in the surrounding area which were definitely in need of transport facilities but which could not provide sufficient traffic to justify the heavy capital expenditure on a tramway route. The motor-bus was an ideal means of supplying such districts with transport facilities by connecting them up with the suburban tramway termini. But the problem immediately arose, when bus services became a possibility, as to who should run them. Should they be provided by private enterprise or by the municipality? In most parts of the country it was private bus proprietors who took the initiative, but in Sheffield the Corporation claimed from the beginning that the services should be municipally owned. They took up the attitude

that it was largely owing to the very cheap tram fares between the city and suburban termini that the outlying districts would be able to secure a reasonably low through fare for the tram and bus journey into the city; so that, if the bus services were provided by private enterprise, the bus proprietors would be reaping the benefit of the cheap municipal tram services. Hence the Sheffield Corporation secured powers to run buses, and introduced them as early as 1913.

Since then the bus services within the city have been practically the monopoly of the Corporation. Before the reform of the licensing system under the Road Traffic Act of 1930, the Corporation was the local authority for the licensing of bus services, and by refusing to license private bus proprietors who wished to run services within the city, eliminated the possibility of competition from private owners. In addition, the bus services between Sheffield and the towns and villages in the surrounding area were, with a comparatively small number of exceptions, operated up to 1928 by the Sheffield Corporation. The exceptions included a number of important services between Sheffield and such towns as Barnsley, Chesterfield, Doncaster and Mansfield, which were, and still are, provided by bus companies or by other municipalities, and a few minor services provided by small bus proprietors.

There can be no doubt that the municipal operation of buses in the Sheffield area has been to the advantage of the whole of the district served. Firstly, because where bus transport is left to private enterprise there is a very natural tendency for the profitable routes to be overcrowded with buses and for the less profitable to be neglected. A municipal transport undertaking can avoid both these extremes and adjust the services to the estimated requirements of the various districts. The policy of the Sheffield Corporation has always been to judge the financial results of the bus services as a whole, not the financial results of particular routes. As long as the total results are satisfactory, the Corporation is prepared to cater for the requirements of the whole area, even though some of the routes show little or no margin of profit.

Again, when a municipality controls its own transport system, new housing estates can be deliberately planned so as to

provide the most convenient transport facilities for the majority of houses. The Manor Estate, for instance, was planned so as to be conveniently served by buses (since replaced by a tramway route) along the Prince of Wales Road. Buses have also been used to pioneer the development of housing estates, as the Corporation has been prepared to provide services before the private bus owner would have regarded them as a commercial proposition.

Further, Sheffield has escaped the evils of excessive competition between private bus proprietors, such as racing between buses, and increased traffic congestion through the provision of several services where one would suffice. And finally, by commencing motor-bus operation very early, the Sheffield Corporation has obviated the difficulties which have arisen in many towns where municipally and privately owned buses have competed with one another, frequently with dire effects on the finances of the competing undertakings.

In 1928, the railway companies secured Parliamentary powers to operate road transport services and, in the case of bus transport, adopted a policy of acquiring interests in existing undertakings rather than introduce competitive services of their own. The agreement made in the same year between the L.M.S.R. and the L.N.E.R. Companies and the Sheffield Corporation was one of the first arrangements for road and rail co-ordination negotiated by the railway companies, and has served as a model for a number of similar agreements with other municipalities, e.g., Halifax and Huddersfield.

The main terms of the agreement are as follows :—

(1) Category A routes, comprising all passenger transport services within the city area, are owned and operated by the municipality.

(2) Category B routes, comprising bus services between the city and the suburban districts outside the city, are jointly owned by the Corporation and the two railway companies. These services are controlled by a Joint Committee, one half of whose members are elected by the City Council and the other half by the railway companies.

(3) Category C routes, comprising the long-distance bus services formerly operated by the Corporation, were sold to the

railway companies. These services, though belonging entirely to the railway companies, are also controlled by the Joint Committee. But in spite of this division of routes into three groups, the bus services in the Sheffield area are still operated as a single undertaking under the control of one general manager, who is responsible to the City Council for the tramways and category A routes, and to the Joint Omnibus Committee for categories B and C routes.

The Joint Omnibus Committee co-operates with a number of municipalities and companies which run buses into Sheffield from outside the city. These include the Corporations of Chesterfield, Doncaster and Rotherham, the Yorkshire Traction Company, East Midland Motor Services, and the North Western Road Car Company. Wherever the Joint Committee and any of these municipalities or companies run buses over the same route, the services are so arranged as to avoid any overlapping of facilities, and the return tickets are inter-available, i.e., passengers can use their return tickets on the buses of either of the undertakings co-operating along the route.

The L.M.S. and L.N.E. Railways have not only secured a share in the bus services operated by the Sheffield Corporation, but, in addition, have acquired substantial interests in the bigger bus companies operating in the Sheffield area, namely, the North Western Road Car Company, East Midland Motor Services, and the Yorkshire Traction Company.

Road and rail services are co-ordinated in several ways through the Joint Omnibus Committee and the bus companies associated with the railways.

(1) Many of the bus services start from or call at the main stations of the two railway companies.

(2) Special buses meet late excursion trains arriving in Sheffield after the ordinary services have ceased running.

(3) Walking tour tickets are available at the week-end and on Bank Holidays, whereby hikers can travel by bus to the starting point of their walk and return by train from the terminating point.

(4) On some of the bus routes covering long distances passengers have the option of returning by rail on payment of a small supplementary charge. For instance, a daily express bus

service between Sheffield and London is run by one of the companies associated with the two railways; the return bus fare is 23/- (compared with 39/10 by rail), and on payment of an extra 4/6 passengers can make the return journey by rail.

4.—MOTOR TRANSPORT IN SHEFFIELD.

The growth of motor transport in Sheffield in recent years is best indicated by the censuses of mechanically-propelled vehicles, which are summarized in the following table. Pre-war figures are not available and the figures for 1921 are estimated.

TABLE SHOWING THE NUMBER OF MOTOR VEHICLE LICENCES CURRENT IN SHEFFIELD IN SEPTEMBER OF EACH YEAR.

	Private Cars.	Motor Cycles.	Goods Vehicles.	Motor Hackneys (a)	TOTAL.
1921	2,530	3,980	1,700	480	8,960
1926	5,900	6,266	2,564	538	15,268
1927	6,657	6,867	2,857	509	16,890
1928	7,429	7,167	2,998	491	18,085
1929	8,443	7,369	3,194	519	19,525
1930	8,769	7,602	3,239	527	20,137
1931	8,952	6,305	3,317	477	19,051

(a) Motor hackneys include motor-buses, motor-coaches, taxis, and cars for hire.

The rate of increase in the number of motor vehicles in Sheffield has been considerably less than the rate of increase for Great Britain as a whole. Between 1921 and 1931 the number of motor vehicles in Sheffield increased by about 113%; in Great Britain as a whole the corresponding figure was 161%. The lower rate of increase in Sheffield is doubtless a reflection of the exceptional severity of the trade depression in the city. In 1931, there was one motor vehicle per 27 persons in Sheffield as compared with one per 21 persons in Great Britain.

It is rather surprising to find that in spite of the intensity of the slump in trade during the last two or three years, the number of private cars in Sheffield (and in Great Britain) continued to increase between 1930 and 1931. Allowance must be made, however, for the probable increase in the number of second-hand licensed cars standing idle awaiting purchasers; car

salesmen are complaining that the increasing stocks of second-hand cars are spoiling the market for new ones. This factor probably accounts for part, if not the whole, of the apparent increase of 2% in the number of private cars between 1930 and 1931. During the same period the number of motor-cycles in Sheffield and in Great Britain declined very considerably. This was due partly to the depression in trade and partly to the low prices of new and second-hand "baby" cars. To a small extent, the introduction of compulsory insurance under the Road Traffic Act may have discouraged the ownership of motor-cycles.

Of the 3,317 commercial motor vehicles registered in Sheffield in 1931, the great majority (probably 70 to 80%) are used by firms for the transport of their own products or raw materials, or are delivery vans owned by retail firms. The remainder belong to firms of road haulage contractors (of which there are about fifty in Sheffield and Rotherham), some on a fairly large scale and owning several scores of lorries, others owning only a single lorry. The bigger firms run regular services to London, Manchester, Liverpool, Leeds, Birmingham, Nottingham, Goole, &c.

One of the most interesting aspects of the motor haulage business in Sheffield is the development of a goods clearing-house organization on what appear to be unique lines. Thirty-eight of the principal firms of haulage contractors have co-operated to establish a clearing-house, known as Direct Motor Services (Sheffield) Ltd., the shares in which are held by the haulage firms. Traders having consignments for transport by road can ring up the clearing-house, which will quote rates and arrange for the haulage of the goods. In allocating the haulage the clearing-house naturally gives a first preference to firms which are members of the clearing-house; if none of them have a lorry available for the particular consignment the job will be given to a haulier outside the clearing-house, possibly a man who is wanting a return load from Sheffield to his home town. The haulage contractors who are members are, of course, perfectly free to secure business independently of the clearing-house. This organization is unique in that the other goods clearing-houses in the country are run not by the haulage contractors themselves but by independent firms or by Chambers of

Commerce. Incidentally, the Sheffield clearing-house acts as a kind of co-operative purchase society; petrol, tyres, brake fittings, &c., are bought in bulk on behalf of the members, who thus obtain these goods at lower prices than they would otherwise have to pay.

The motor-coach side of the road transport industry is also well developed and organized in Sheffield. Practically all the local motor-coach proprietors are in the Sheffield Motor Coach Owners Association, the members of which own altogether rather more than a hundred coaches; the great majority of these vehicles belong to only five firms. Regular trips are run to many seaside resorts and other places of interest, such as Blackpool, Bridlington, York, Lincoln, the Derbyshire dales, the Dukeries, and so on. The fares for these trips were arranged at a joint conference between the Sheffield Motor Coach Owners Association, the Sheffield Corporation, and the two railway companies. Generally speaking, the coach fares are considerably lower than the corresponding ordinary fares by rail, but higher than the excursion fares. The motor-coach owners undertake, in addition to their scheduled tours, the conveyance of parties under special contract.

5.—TRAFFIC ACCIDENTS AND STREET CONGESTION.

(a) The most serious aspect of the development of motor transport in recent years is the increasingly heavy toll of human life through traffic accidents. Part of the price we are having to pay in this country for improved transport facilities is the loss through traffic accidents of several thousand lives every year.

The following table shows that road accidents in Sheffield were between three and four times as numerous in 1931 as in the years immediately preceding the war.

Year.	Number of Fatal Accidents.		Number of Non-Fatal Accidents.		Total Number of Accidents.	
1912	...	14	...	430	...	444
1913	...	20	...	542	...	562
1919	...	32	...	715	...	747
1920	...	54	...	673	...	727
1921	...	35	...	703	...	738

Year.	Number of Fatal Accidents.		Number of Non-Fatal Accidents.		Total Number of Accidents.
1927	...	35	...	1,069	1,104
1928	...	57	...	1,312	1,369
1929	...	62	...	1,320	1,382
1930	...	69	...	1,300	1,369
1931	...	58	...	1,569	1,627

In Sheffield last year one person out of every 8,930 was killed and one out of every 330 injured in traffic accidents. For Great Britain one of every 6,690 was killed and one out of every 220 injured. Hence Sheffield compares well with the country as a whole in respect to traffic accidents.

It will be observed that the number of fatal accidents declined in 1931 compared with the previous year, although, on the other hand, there was a considerable increase in the number of non-fatal accidents. The apparent increase in the number of non-fatal accidents, however, is misleading, as it is primarily due to the fact that the police all over the country are now securing more complete information as to the number of people suffering from minor injuries through road accidents. The figures for Great Britain show similar changes:—

	Fatal Accidents.		Non-Fatal Accidents.		Total Accidents.
1930	...	7,305	...	177,895	185,200
1931	...	6,691	...	202,119	208,810

An analysis of the road fatalities in Sheffield in 1931 throws a good deal of light on the relative risks to which various classes of road users are exposed, and on the causes of accidents. The 58 fatal accidents in 1931 were made up as follows:—

Pedestrians	...	...	...	...	36
Motor-cycle drivers	...	...	...	...	7
Pillion passengers	...	...	...	...	2
Motor-cycle combination drivers	...	...	...	...	3
Side-car passenger	...	...	...	...	1
Pedal cyclists	...	...	...	...	5
Bus passengers falling off platform	...	...	...	...	3
Passenger in private car	...	...	...	...	1
					<hr/>
				Total	58

Pedestrians, the most numerous class of road users, thus accounted for 62% of the fatalities. Of the accidents to occupants of vehicles (drivers and passengers), the majority (13 out of 22) involved motor-cyclists and their passengers. On the other hand, no driver of a private car, lorry, van, motor-bus or tramcar was fatally injured. The following table gives the distribution of fatal accidents to pedestrians according to age:—

5 years and under	6
Between 6 and 12	12
.. 13 and 20	0
.. 21 and 30	0
.. 31 and 40	0
.. 41 and 50	2
.. 51 and 60	9
.. 61 and 70	5
Over 70	2
	—
Total ...	36

The pedestrians killed clearly fall into two groups—young children who do not appreciate the dangers they run, and elderly people who succumb to injuries from which younger people might recover, and whose sight and hearing are beginning to fail them. Pedestrians aged between 13 and 40 escaped without any fatal injuries.

As to the causes of road accidents, the evidence brought forward at the inquests in 1931 shows that the great majority of fatalities are due to the failure of the human element; only a very small proportion of the accidents can be traced directly to mechanical defects or treacherous road surfaces. In two cases, involving the deaths of a pedal cyclist and a side-car passenger, the vehicles got out of control and ran down hill. The City Surveyor takes every possible precaution against traffic accidents, and in consequence very few accidents are recorded as due to slippery roads or blind corners; in 1931 only one fatality could be attributed directly to skidding on a greasy road.

At the inquests on the 36 pedestrians killed in 1931 there was only one case where the jury recorded their opinion that the driver of the vehicle concerned was to blame for the accident. In two-thirds of the verdicts the juries stated definitely that no

blame could be attached to the driver of the vehicle. In the remaining cases there was insufficient evidence for the juries to be able to apportion the blame. There can be little doubt that in a very considerable proportion of these 36 cases the negligence of pedestrians was primarily responsible for the accidents. Many cases were recorded of pedestrians stepping into the road without noticing the oncoming traffic, or stepping carelessly from behind stationary and moving vehicles into a stream of traffic. Playing football in the streets and climbing up the sides of lorries caused the deaths of several children. In two cases the umbrellas carried by pedestrians prevented their noticing approaching vehicles, and in one case blindness was responsible for the accident.

At the remaining 22 inquests, where drivers and passengers were the victims, the juries apportioned the blame in only a small proportion of the cases. In one case a pillion passenger was killed through the reckless driving of a motor-cyclist; in another case an error of judgment on the part of a lorry-driver caused the death of a motor-cyclist; and in a third case the negligence of a pedal cyclist led to his being killed in a collision. At the inquests on the passengers who fell off the platforms of buses no blame was attached to the drivers concerned.

One of the most significant features of the accident returns in Sheffield is that the drivers of trams, buses and taxis, as well as private chauffeurs, have excellent records in the matter of accidents. No tramcar or taxi was involved in a fatal accident in 1931, and only three out of the thirty-six pedestrians were killed by buses (one being a case of suicide). These facts suggest that, in those accidents where the driver is wholly or partly to blame, it is the inexperienced and occasional driver, rather than the regular driver, who is generally responsible for the accident.

It is beyond the scope of this report to examine the various proposals that are being made to prevent road accidents, such as speed restrictions, heavier penalties for dangerous driving, the exertion of pressure on offending motorists by insurance companies, and so on. Reference must be made, however to the various steps which have been taken in Sheffield to reduce the number of street accidents. At all the more dangerous points

automatic traffic signals or police constables regulate the movement of traffic. Police officers are stationed outside many schools while the children are assembling and leaving; iron railings are fixed in the pavements outside school gates to prevent children from dashing out of school into the roadway. In all the Sheffield schools instruction in "Safety First" is given by the teachers. The Sheffield Safety First Council has been very active in recent years in carrying on propagandist work and in making representations to the authorities as to ways and means of increasing the safety of the streets. It is, of course, difficult to measure the influence of the propagandist work done by the Safety First movement; but there is some reason for thinking that the general public are beginning to adapt themselves to modern traffic conditions. It is practically certain that since the end of the War accidents have not increased in proportion to the volume of traffic. The volume of traffic obviously depends on (a) the number of vehicles on the roads, and (b) the average number of miles travelled per vehicle. So far as the first of these is concerned, in Sheffield the number of road fatalities per thousand vehicles has fallen from about 7 in 1920 and 4 in 1921 to 3.5 and 3 in 1930 and 1931 respectively. As to the second factor, average mileage per vehicle, this must have increased steadily up to 1930, as the consumption of motor spirit in Great Britain was increasing much more rapidly than the number of motor vehicles. Moreover, the average mileage per gallon was almost certainly increasing during this period, owing partly to technical improvements and partly to the increase in the proportion of light vehicles to the total number of vehicles. Hence it seems highly probable that the number of road deaths per (say) 100,000 miles of motor traffic has declined in Sheffield since the War. This is evidence, though by no means conclusive evidence, for the view that the public are beginning to act more habitually on "Safety First" principles.

(b) The increase in the volume of motor traffic since the War has greatly intensified the problem of street congestion, which has now become extraordinarily acute in every big city. In Sheffield traffic censuses have been taken periodically since pre-war days, at certain selected points, for the City Engineer and Surveyor, and the returns for a number of representative points are given in the table on the opposite page. They give some

TRAFFIC CENSUS RETURNS ON SELECTED SHEFFIELD ROADS, 1914-1931.

NAME OF ROAD	CENSUS POINT	1914		1925		1925		1928		1931	
		Average No. of Traffic Units per day	Average Tonnage per day	Average No. of Traffic Units per day	Average Tonnage per day	Average No. of Traffic Units per day	Average Tonnage per day	Average No. of Traffic Units per day	Average Tonnage per day	Average No. of Traffic Units per day	Average Tonnage per day
The Wicker.	Stanley Street	9,488	5,188	7,933	14,086	7,732	14,516	8,583	17,772	13,583	22,073
Blonk Street.	River Bridge... ..	7,774	6,284	6,358	10,528	4,488	11,191	5,667	13,218	5,204	11,597
Brightside Lane.	Opposite Vickers'	2,561	2,500	2,148	2,974	2,422	3,819	—	—	3,670	6,302
Division Street.	Between Carver Street and Rockingham Street	2,295	1,590	2,838	3,201	—	—	—	—	2,771	3,965
Glossop Road.	Westbourne Road	1,329	968	—	—	—	—	—	—	3,057 ¹	5,599 ¹
Meadow Head.	City Boundary	660	592	1,557	2,671	2,600	4,773	2,197	5,133	—	—
Abbeydale Rd.	City Boundary	2,034	1,051	—	—	3,039	4,334	2,945	4,722	3,694	5,589
Ecclesall Road.	Whirlow	576	434	—	—	—	—	1,183	2,046	—	—
Barnsley Road.	Sheffield Lane Top	689	667	822	1,563	1,284	2,568	1,486	2,694	2,336	4,410
Sheffield Road.	Bawtry Road	2,497	2,033	—	—	3,673	6,462	—	—	5,862	10,336
Manchester Rd.	Between Fulwood Road and Crosspool	940	882	—	—	1,236	1,283	—	—	3,550	6,412

¹These figures relate to the year 1930.

idea of the huge increase in the tonnage of traffic passing through Sheffield streets since 1914. It will be observed that the smallest increases in the volume of traffic have taken place in the business and industrial parts of the city (The Wicker, Blonk Street, Brightside Lane, and Division Street), where even before the war the traffic was very heavy. On the other hand, increases of several hundred per cent are recorded on the main roads leading into and out of the city (e.g., Barnsley Road, Manchester Road, Sheffield Road, and Abbeydale Road). Before the war the traffic at these points was very light, as practically all goods and passenger traffic travelling more than a few miles was conveyed by rail; now on all the main roads connecting Sheffield with other centres of population there is an incessant stream of traffic.

In the central streets of Sheffield traffic congestion, though doubtless less severe than in the capital cities of the world, has become a serious and difficult problem. Some Sheffield streets, during the "peak" periods, are now carrying practically as much traffic as they are capable of carrying. When this point is reached traffic blocks inevitably become very frequent and intensify the congestion by slowing down the rate of movement. Various devices are being utilized to reduce the congestion, such as automatic traffic signals, one-way traffic, encouraging motorists to travel by roads which avoid the centre of the city, and so on. More thorough-going remedies, such as street widening, are practically ruled out, owing to the enormous prices that would have to be paid for property in the centre of the city; underground railways, another method of relieving traffic congestion, are not an economic proposition in a city the size of Sheffield. Another possibility which may have to be considered in the future is the substitution of petrol buses or trolley buses for the tramways, as tramways reduce the traffic capacity of streets much more than buses. In some cities, where the tramways are nearly obsolete, this substitution has already been made; but where, as in the case of Sheffield, a city has a modernized and up-to-date tramway system, scrapping the trams means scrapping a highly remunerative asset.

The traffic problem in Sheffield, though serious enough, is probably less acute than in many other industrial towns, for a variety of reasons :

(a) Sheffield is not the central point of a densely populated urban area, as Manchester or Birmingham are; except on the East side of the city there are no industrial areas very near to Sheffield. On the West is mountain and moorland, and to the North and South there are no important towns nearer than Barnsley and Chesterfield.

(b) The main industries of Sheffield, iron and steel and heavy engineering, obtain the bulk of their supplies of raw materials and send away their finished products by rail, thus keeping down the volume of motor lorry traffic in the city. The cutlery industry may appear to offer rather more scope to the road haulier; but in this case there is the difficulty that the average consignment of cutlery is too small to provide an economical load for the average motor lorry.

(c) The municipal operation of buses in Sheffield has prevented the undue multiplication of bus services that frequently occurs under competitive conditions; the traffic problem in Sheffield is not complicated by a continuous stream of buses running through the main streets of the city.

Finally, Sheffield, like most other large cities, has provided itself with a ring of by-pass roads at a distance of about $2\frac{1}{2}$ miles from the centre of the city. These are very effective in keeping long-distance traffic out of the congested parts of the city.

6.—RAILWAY TRANSPORT.

Although, in the early days of railway development, Sheffield was considered to be in a most unsuitable geographical position for a main line service, it is now probably at least as well served by rail as any other provincial city. Situated on the boundary between the territories of the L.M.S. and L.N.E. Railways, Sheffield has the advantage of through express trains to all the more important towns on both systems; in addition, many through trains are run to towns on the Great Western and Southern Railways, e.g., Bournemouth, towns in Devon, Cornwall and South Wales.

(a) *Passenger Traffic.* The following table shows the total number of passenger journeys starting in Sheffield in each of

the three years 1929-1931, the total for each year being subdivided according to the type of ticket taken by the passengers.

PASSENGER JOURNEYS FROM SHEFFIELD (COMBINED TOTAL OF
L.M.S. AND L.N.E. RAILWAYS).

	Ordinary Tickets.	Workmen's Tickets.	Season Tickets.	Other Reduced Tickets.	TOTAL.
1929	451,502	1,354,976	521,953	2,301,886	4,630,317
1930	388,052	1,068,282	492,942	2,189,757	4,139,033
1931	317,193	892,288	417,886	1,980,003	3,607,370

The outstanding feature of the table is, of course, the very serious decline in passenger traffic during this short period. The number of passengers travelling at ordinary fares was reduced by 30%, workmen's traffic declined by 34%, and season-ticket traffic by 20%. The extension of cheap ticket facilities failed to keep up even the traffic at excursion and other reduced fares, the number of passengers in this category falling by 14%. For the passenger traffic as a whole, from Sheffield, there was a decline of 22% in the three years. To some extent, the decline was doubtless due to the competition of buses, motor coaches and private cars, but the main influence affecting the volume of traffic is the intensification of the trade slump from 1929 onwards. This is reflected particularly in the heavy decline in workmen's traffic.

A second feature of the table is the increase in the proportion of passengers travelling at reduced fares. Since the War the railway companies have found themselves compelled, in the face of trade depression and road competition, to extend year by year the various facilities for travelling at reduced fares. In addition to workmen's, season and excursion tickets, there is nowadays a great variety of reduced fares available—week-end tickets, holiday return tickets, holiday season tickets, tourist tickets, walking tour tickets, cheap day tickets, reduced fares for parties, conferences, fishermen, footballers, and so on. The result is that only a comparatively small proportion of the total number of passengers pay the full ordinary fares. For Great Britain as a whole, in 1931, 86.28% of the passengers travelled at reduced fares and only 13.72% at ordinary fares. In Sheffield the corresponding proportions were 91.15% and 8.85%. Hence, although we ordinarily think of railway travel as costing 1½d.

a mile, third class, the great majority of passengers, over 90% in the case of those travelling from Sheffield, pay less than this fare; in many cases the fare paid is less than $\frac{1}{2}$ d. a mile. For the country as a whole the average railway fare last year worked out about $\frac{3}{4}$ d. a mile.

The pooling scheme which has just been arranged by the L.M.S. and L.N.E. Railways has already resulted in a further improvement in passenger facilities. Certain classes of return ticket (ordinary, week-end and tourist) are now inter-available on the two railways between stations served by both companies. For instance, a passenger taking a week-end ticket from Sheffield to London on the L.N.E.R. can use the return half to travel back on the L.M.S.R.

(b) *Goods Traffic.* So rapid has been the development of road transport in recent years that there is a tendency in some quarters to regard the railways as "back numbers" and to assume that they will decline, as did the canals and turnpikes in the nineteenth century. Undoubtedly the road hauliers have made great inroads into the goods traffic of the railways, particularly into the more valuable classes of traffic. But, for the transport of the great bulk of the foodstuffs, coal, and raw materials required in this country, the railways are still indispensable. An industrial city like Sheffield still depends for its very existence on railway transport, as is shown by the following statistics of goods train traffic dealt with at L.M.S.R. and L.N.E.R. stations in Sheffield. The figures are combined totals of forwarded and received traffic, but do not include coal, for which information is not available. It is probable that the tonnage of coal handled by the railways in Sheffield exceeds the tonnage of all other goods put together, as in the country as a whole coal accounts for about two-thirds of the total tonnage. The decline in goods traffic by 30% in three years again shows how seriously Sheffield has been affected by the industrial depression.

Goods Train Traffic (forwarded and received) at Sheffield Stations :—

Year.					Tons.
1929	...	...	...	...	2,519,992
1930	...	...	...	...	2,234,649
1931	...	...	...	...	1,762,583

The following table shows for a number of selected commodities the tonnages forwarded from the Sheffield stations of the two railway companies :—

Brass and Copper	...	...	...	1,993
Bricks, Tiles, &c.	...	...	...	13,775
Confectionery (Sweets and Chocolates)				7,539
Hardware	...	...	...	18,522
Iron and Steel (including Scrap Iron)				496,276
Machinery	...	...	...	11,134

It will probably come as a surprise to many readers to learn that Sheffield manufacturers forward by rail 7,500 tons of sweets and chocolates a year.

In recent years the railways have introduced a variety of new facilities for traders with the object of preventing further losses through road competition. Many additional express goods trains are being run, at times advertised to traders. Railhead distribution is enabling manufacturers and wholesale dealers to get goods delivered to local retailers at a moment's notice. Many manufacturers supplying retailers in Sheffield and the surrounding district find it convenient and economical to send goods in bulk to one of the Sheffield stations, where they are stored in a railway warehouse. Then, as the manufacturers receive orders from the retailers, the railway company is instructed to deliver the goods required from the stock in the depôt, or railhead, as it is called. Some firms keep their own staffs on the railway premises to arrange for the distribution to retailers; others authorize the railway companies to deliver goods from the railhead depôt on application from the local retailers. The latter are thus able to obtain their supplies of goods from a local railhead instead of from a distant manufacturer. The amount of traffic dealt with in this way through railhead depôts in Sheffield has increased rapidly, the figure at the present time being about 24,000 tons a year.

Containers have been introduced and are becoming increasingly popular with traders, as they make it possible to transport goods direct to destination without any intermediate handling at railway terminals. The amount of traffic conveyed in containers into and out of Sheffield in recent years is as follows :—

GOODS CONVEYED IN CONTAINERS.

		Forwarded (tons)		Received (tons)
1927	...	248	...	411
1928	...	222	...	975
1931	...	1,216	...	2,861

The demand for containers on the part of Sheffield traders, though increasing, is clearly of very small dimensions at present. But it is certain that as its advantages become more widely known, much greater use will be made of this facility. Much of the traffic forwarded from Sheffield, of course, can never be conveyed in containers; for instance, steel rails, armour-plate, heavy forgings, and similar iron and steel products, require special wagons for their transport. Cutlery can quite easily be packed in containers, but the average consignment of cutlery going to any one destination is far too small to justify the use of a container.

Since the railway companies acquired road transport powers in 1928 they have carried the war into their enemy's camp, and have become road transport operators on an extensive scale. Their policy in the case of bus services, as was pointed out in an earlier section, has been one of buying up or acquiring financial interests in existing bus companies. But, in the case of goods transport, they have preferred to provide road goods services of their own. The L.M.S.R. and the L.N.E.R. are prepared to transport goods by road from Sheffield to any destination, whether there is a goods-train service to that destination or not. As yet, however, they have not introduced road goods services working to a regular time-table.

7.—THE SHEFFIELD AND SOUTH YORKSHIRE NAVIGATION.

The Sheffield and South Yorkshire Navigation comprises 57 miles of waterway, consisting partly of canals and partly of canalized river. The main route from Sheffield to Hull runs via Rotherham, Mexborough, Doncaster and Stainforth to Keadby, and thence down the Trent. This is the route normally used by barges going to and from Hull. There is an alternative route from Bramwith Lock to Goole via the New Junction Canal, which is jointly owned by the Sheffield and South Yorkshire

and the Aire and Calder Navigations; this route is generally used by boats going to and from Goole. The third outlet to the Humber, via Fishlake Ferry and the Dutch River, is seldom used, as this stretch of the river is tidal. A branch canal runs from Swinton to Barnsley; the Barnsley end of this, however, is now practically derelict. The company has extensive warehousing accommodation at the Sheffield Canal Basin, where goods can be stored in bulk by traders until they are prepared to accept delivery.

The waterway is navigable right up to Sheffield for boats carrying 100-ton loads, and up to Rotherham for 110-ton boats. The barges are normally hauled by horses; tugs are occasionally used, but tugs can only be used economically to haul a train of barges, and the volume of traffic seldom makes this possible. Moreover, it must be remembered that the time taken in passing through locks is considerably increased when tugs are used. And as there are 15 locks in the short stretch between Sheffield and Rotherham alone, the time gained through the greater speed of tug haulage is just about counterbalanced by the extra time lost in passing through locks, so that, in practice, there is very little possibility of increasing the speed of transit along this navigation by the use of tugs.

The one advantage the canal offers to traders is cheapness; the rates charged (including the tolls levied by the Navigation Company and the charges made by the canal carriers*) are definitely cheaper than the corresponding railway rates. On the other hand, the railway companies can normally guarantee a much quicker delivery between, say, Sheffield and Hull, than the canal carriers. Barges usually take two to three days to travel from Hull to Sheffield, though occasionally the journey has been done in 24 to 36 hours, whereas the railway companies provide next-day delivery between the two towns.

It is the slowness of canal transport, undoubtedly, which is mainly responsible for the decline in the tonnage carried on the canal. Owing to the shortness of the average railway haul in this country, traders have adopted the practice of keeping comparatively small stocks and relying on the railways to deliver

* The Navigation Company merely own the waterway; they do not undertake the conveyance of goods. This is done by independent canal carriers.

goods at very short notice. Under trading conditions of this kind, when speed has become an all-important consideration, the canals are almost bound to lose in the competition for traffic. The following figures of total tonnage on the Sheffield and South Yorkshire Navigation indicate the extent of the decline in traffic since pre-war years. To some extent, of course, the reduction in the amount of traffic is due to the post-war trade depression.

1896	...	1,039,423 tons	1929	...	457,000 tons
1913	...	962,000 "	1930	...	431,000 "
1925	...	429,000 "	1931	...	424,000 "
1927	...	508,000 "			

For traffic in the conveyance of which a couple of days more or less is of little consequence, the canal is eminently suitable. The main classes of goods carried on the Sheffield and South Yorkshire Navigation are coal, grain, sand, clay, inflammable oils, and timber. Practically all the grain imported into Sheffield via Hull is conveyed by the canal.

8.—AIR TRANSPORT IN SHEFFIELD.

A survey of air transport in Sheffield at the present time can be little more than a survey of possibilities; civil aviation is practically non-existent in Sheffield except for the occasional visits of "joy-riding" planes. During the last year or two there has been much discussion of the possibility of establishing a municipal aerodrome in Sheffield. In 1930, Sir Alan Cobham surveyed a number of possible sites for an aerodrome in the neighbourhood of the city and reported to the Corporation that the most suitable site was at Coal Aston, just outside the city boundary, where there was formerly a military aerodrome. The best site from an aviation point of view was at Shireoaks, 15 miles away, but Sir Alan considered that its distance from Sheffield ruled it out as a practical proposition. The proposal to establish an aerodrome at Coal Aston was strongly opposed by the Sheffield Voluntary Hospitals, whose Committee had purchased a site adjoining the proposed aerodrome with a view to erecting a general hospital; the noise of aeroplanes, unless greatly reduced by technical improvements in the future, would render the site unsuitable for hospital purposes. The question

has now been settled, however, by the recent decision of the Sheffield City Council to utilize the Coal Aston site for housing purposes. Whether steps will be taken to construct an aerodrome on one of the other possible sites has not yet been decided.

Various arguments have been put forward by the Sheffield Chamber of Commerce and other organizations in support of the proposal for a municipal aerodrome :

(a) When main line air services are developed within the British Isles the geographical position of Sheffield will make it a natural air port; air routes from Scotland to the South of England or from Ireland to the Continent, via Liverpool and Hull, would naturally pass through Sheffield.

(b) Feeder air services connecting Sheffield with Croydon and any other air ports from which continental services may be operated in the future could be introduced.

(c) An aerodrome in Sheffield would encourage people to buy aeroplanes for business and pleasure purposes, and would enable business representatives to visit Sheffield by the air taxis which are already beginning to ply.

(d) The establishment of an airport in Sheffield might stimulate the manufacture of aircraft in the city.