

A STUDY OF MOTOR TRUCK

STORE DOOR PICKUP AND DELIVERY CHARGES



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428 Memorial Drive,
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May 13th, 1936.

Professor George W. Swett,
Secretary of the Faculty,
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Dear Sir:

In accordance with the requirements for
graduation we herewith submit a thesis entitled "A
Study of Motor Truck Store Door Pickup and Delivery
Charges."

Respectfully submitted,

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To Miss Dorothy Bond must go the credit for typing and correction of this manuscript.

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SUMMARY

The passage of the Motor Carrier Act on August 9th, 1935, marked a new milepost in the struggle to form order out of chaos in the trucking industry. By this step the industry was brought under the supervision of the Federal government, and the Interstate Commerce Commission was given authority similar to its regulatory power over railroads. Up to this time the confusion in all branches of the field had been unbelievable, and the pickup and delivery problem was no exception.

The pickup and delivery problem is important not only because it is involved in the rates which must be filed with the Interstate Commerce Commission but also because its substance embodies one of the major advantages of trucks; that is, the service offered by them. The problem can be resolved into two major divisions; first, the service to be rendered, and second, the charges for this service. Consequently there appear the following aims toward which our study has been directed:

1. To determine whether the pickup and delivery charges should be incorporated in the line haul rates.

2. To investigate the variations in the costs of pickup and delivery service.

3. To determine on the basis of these costs equitable variations in the pickup and delivery charges. In the solution of the problem and in the attainment of these aims we have confined our study to conditions in the City of Boston. A further limitation was placed upon the study by electing to consider the problem in a few large companies.

The conclusions reached by this study show, among other things, the advantage of separating the service (pickup and delivery) and line haul rates. They have also shown the basis upon which delivery charges should be varied; that they should not only be varied according to factors inherent in the shipments such as weight and destination, but must also be dependent upon factors at the shipping and receiving points. Idle time, the largest element of cost waste, has been found to arise almost entirely from adverse conditions at these points. We find, therefore, grounds for making the following recommendations:

1. The line haul and service (pickup and delivery) charges should be computed separately. The tariff should be provided with a separate rate scale for each charge.

2. The service charges should be made proportional to the weight of the shipment.

3. The service charges should be made constant within certain definite zones to be defined in the rules and regulations appended to the tariff.

4. An extra charge of 10¢ per hundred pounds with a minimum of 25¢ should be assessed if collection or delivery cannot be made on the street level within 25 feet of the tail-gate of the truck.

5. If, for any reason beyond the carrier's control, a shipment is not accepted when tendered for delivery, and a re-delivery must be made, an additional charge of 10¢ per hundred pounds with a minimum of 25¢ should be assessed for each re-delivery.

HISTORY

The trucking industry is one of the youngest forms of transportation that has reached a noticeable stage of development in the United States. It is significant to note that the United States is the country which has attained the highest development in the transportation field of any country in the world. The greatest factor in the early development of the trucking industry was the situation brought about by the World War. During this period there were conditions under which the government would not allow the use of the rail-roads for transportation of certain types of commodities on short hauls except by special license. This meant that in some cases the delay in getting goods from one place to another was excessive and expensive. The obvious solution to the problem was the motor truck and, as a result, the trucking industry received its first real boom.

The substitution of small delivery trucks for the horse and wagon as the medium of delivery in the cities and towns formed the actual beginning of trucking. The first trucks that were used were, to say the least, not reliable in operation. As the equipment became more reliable the truckmen saw that there was opportunity to substitute their service for that of the

railroads on short hauls. In addition they could offer the advantage of faster and more flexible service. At first the customers were willing to pay more for this service and as a result the industry prospered on less than carload freight for short hauls.

The realization that there was a chance in the trucking field for the development of markets that had never before been touched helped the industry all the more and led to the construction of specialized equipment for the various kinds of loads that could be carried, such as tank trucks for carrying oil, milk and the like. One of the more specialized types of equipment which was developed at this time was the refrigerator truck for use in the delivery of perishable goods. The service that was developed in this field opened up tremendous markets, and more new uses for the motor truck itself.

At this time came the World War and greater opportunity for the trucking industry. It was the added push that was needed - and the most was made of it. Tremendous improvements were made in equipment: the change from solid to pneumatic tires; the use of the tractor semi-trailer unit, and many other mechanical improvements too numerous to mention here. It was found that economy resulted from the use of this new equipment for making long hauls of up to a thousand miles or more.

Soon it was found that the truck had an advertising value in the form of a traveling billboard; that there was additional saving in packing as compared with that required by the railroads; and that, as a result of the service provided, inventories could be reduced. The use of the motor truck became more and more prominent until it has reached the high point of development in which we find it today. It is a factor in transportation which cannot be overlooked, and transportation is one of the things without which we could not live today. The trucking industry is important.

Perhaps more important than the past history of the truck is the present and even a venture into the future. At the present time, the service offered by trucks which is most important from the shippers' and receivers' own point of view, and as reported by them, is the convenience of ~~store~~^{store} door pickup and delivery.¹ This includes, of course, the resultant saving in time and the consequent saving in the cost of transportation.

It is with this subject of store door pickup and delivery that we shall deal in the following pages.

¹See Appendix II.

Condition of the Industry in June 1935.

In June 1935 the trucking industry was completely on its own. There was no Federal legislation of any sort and, in general, the only state legislation was in the form of limitations on the capacity and size of trucks that could be taken over state highways. Of course there were also the usual tax laws covering trucks. These were not new inasmuch as they applied simply as did the taxes on pleasure cars and could not be considered regulation in any sense of the word.

As a result of this lack of legislation and because of the general type of management found in the industry, there was a complete lack of business-like organization. Each company, if such it could be called, commenced and stopped doing business in remarkably short periods of time. Failures were due to any one of a number of causes, - but in any event it was only the large companies that lasted for any length of time.

One type of short-lived trucker was a particular menace to the industry. The number and persistence of these bothered the larger companies. The type of which we speak was the driver of some large company who thought that he could make more money by starting in business for himself. After much inaccurate calculation and some

borrowing he bought a truck and started business with only the truck as capital. In his accounting, usually kept on an old envelope in his rear pocket, he completely neglected-among other things - depreciation which is obviously an important element of truck operation. He allowed only a small wage for himself in the hope that he could build up a large business in the future. He did not bother with insurance for his loads, trusting to luck that there would be no loss. Soon his truck became obsolete or he had an accident and the business failed. But before he failed, he carried hundreds of loads at very reduced charges as he was able to do because of his neglect of certain principles of accounting. Thus, he injured the large companies by his low rates. In some cases the truck manufacturers helped this type of operator by lending large sums on the truck.

As can be seen the field was full of the keenest competition resulting from the complete chaos caused by the fly-by-night operators. The large companies often survived only with the greatest difficulty inasmuch as their proper accounting and accurate fair rates were always underbid by these small operators. The only business held consistently by the large companies was that offered by shippers who realized the advantage of trading with a substantial and well-managed concern.

It was only the fact that these shippers were the ones that handled the greatest proportion of freight to be shipped that kept the large concerns alive.

Of all the causes of the astounding variations in rates, perhaps the greatest was the complete and utter lack of regard for the simplest and most basic principles of accounting.

In an industry such as transportation which is so vitally important to highly developed community life, such a condition is distinctly inexcusable. Still there was nothing that private industry could do to eliminate the complete disruption, as long as free and unregulated competition was allowed to continue.

The matter was therefore brought to the attention of the Federal authorities and, in due course of time, turned over to the Interstate Commerce Commission. Work was started immediately and suggestions were made.

The result of this action was the passage of the Motor Carrier Act - in August 1935.

THE MOTOR CARRIER ACTPurpose

The Motor Carrier Act was approved August 9th 1935. In effect, it was Part Two of the Interstate Commerce Act, as an amendment to that act, and was passed for the purpose of bringing interstate activities of motor vehicles under the control of the provisions of the Interstate Commerce Act, and particularly under the regulatory supervision of the Interstate Commerce Commission. Through the short title of the amendment: "Motor Carrier Act", its main purpose can be seen; the regulation of trucking. To quote from the act itself, (Appendix I), it became the policy of Congress to regulate such transportation to

"promote adequate, economical, and efficient service by motor carriers, and reasonable charges therefor, without unjust discriminations, undue preferences or advantages, and unfair or destructive competitive practices; improve the relations between, and coordinate transportation by and regulation of, motor carriers and other carriers."

The Interstate Commerce Commission is given the power to carry out the provisions of the Act, but it is not given the power to interfere with the right of states to tax carriers even though they be engaged in interstate business.

Provisions

Above we have shown the aims of the Act. The Interstate Commerce Commission is given certain specific powers for the purpose of carrying out these aims.

Common Carriers may be regulated by the establishment of "reasonable requirements with respect to continuous and adequate service, transportation of baggage and express, uniform systems of accounts, records, and reports, preservation of records, qualifications and maximum hours of service of employees, and safety of operation and equipment."

Further, the Commission may regulate contract carriers, private carriers, and truck brokers, although naturally the extent of regulations in these later cases is less widespread. Contract carriers are included in the above fields of rate regulation, except that there can be no regulation of the quality of service provided by them; private carriers come under the jurisdiction of the Commission only in regard to the safety provisions for the equipment and maximum hours of service. Brokers may be held responsible only for their business methods. In all classes of carriers, the Commission has the right to disclose facts about the methods of business, and to recommend to Congress from time to time that additional legislation be passed along the line of regulation.

The Commission has not so far the power to set rates for any and all conditions; it operates its control on the principle of acting after receiving complaints of failure to comply with the provisions of the Act, or

after finding evidence of such failure on its own initiative. If this evidence is substantiated, an order may be issued compelling compliance. Any complaint may be dismissed if it does not state reasonable grounds on the part of the complainant for investigation and action on the part of the Commission. This clause protects the Commission against complaints which would merely waste its time, from persons who had no justification for them, but merely hoped that some evidence of non-compliance could be found which would be cause for action. Many government agencies must give due consideration to every complaint which is brought before them, and some of their serious business is delayed by unimportant matters which must be attended to in order. Except for this regulation, many competitors, for example, would use the power of complaint to stall for time. The Act also provides for applications for reconsideration of judgments.

According to the Act, no common carrier may run trucks on the highways except in intrastate service without a "certificate of convenience and necessity provided by the Commission", unless the company was in operation as a common carrier before June 1st, 1935, and has operated continuously as such since that date. These certificates are issued after the applicant has been

found to be able and willing to carry out the services proposed in the application and if his business is found to conform to the requirements of the Commission. The certificate shall specify the service to be given and the routes of operation, although under special conditions a motor carrier may leave the assigned route.

A contract carrier may not operate without a permit issued by the Commission, except under the circumstances indicated above for common carriers in regard to the period of operation and territory covered. The issuance of such permits will be limited by the same conditions of fitness, etc. which were noted above for common carriers. Brokers may operate only under license.

All certificates, permits, and licenses may be revoked by the Commission for failure to comply with the provisions of the Motor Carrier Act. It is the intention of the Commission to force compliance, however, rather than to revoke licenses, and the holder of one of these is given a period of not less than ninety days, (such period to be fixed by the Commission), in which to comply.

Under certain specified conditions, consolidation between two or more companies may take place. This consolidation may be brought about by regular merger, by stock purchase, or by some method of leasing.

This may not be done, however, except after an application has been presented to the Commission, which then must notify the governor of each state affected by the proposed transaction. Any other persons affected must also be notified and made aware of the time and place for a public hearing. After such a hearing, the Commission will allow the merger if it appears to be for the public good.

Common carriers of property must "provide safe and adequate service, equipment, and facilities for the transportation of property"

and set up

"just and reasonable rates, charges, and classifications,....and reasonable....practices relating ...to the...method of presenting, marking, packing, and delivering property for transportation, and all other matters relating to or connected with the transportation of property in interstate or foreign commerce."

Through rates may also be made by common carriers in conjunction with rail or water transportation. Preferential practices are completely stopped through the plan of the Act, which prohibits

"unreasonable preference or advantage to any particular person....or to subject any particular person,....to any unjust discrimination or any undue or unreasonable prejudice or disadvantage."

The matter of complaints to the Commission is further emphasized as it applies to rates and other practices of carriers. If after investigation, the Commission finds

that any charge is

"unjust or unreasonable, or unjustly discriminatory or unduly preferential or unduly prejudicial, it shall determine and prescribe the lawful rate....thereafter to be observed."

In other words, the Commission is not given the power to set rates definitely, as it is in the case of railroads, except when it has found through investigation brought on by complaint that the rates are unfair in one way or another. If the Commission has good evidence of unfairness, it can also require adjustment of charges when goods are carried by motor vehicle in conjunction with other forms of transportation. New rates must be filed with the Commission after an adjudgement of unfairness, although that body may suspend the enforcement of these rates if complaints about them are received, until such time as their equitableness has been established. Establishment of rates under these provisions shall give consideration

"to the need, in the public interest, of adequate and efficient transportation service by such carriers at the lowest cost consistent with the furnishing of such service; and to the need of revenues sufficient to enable such carriers, under honest, economical, and efficient management, to provide such service."

It is provided in the Motor Carrier Act that every common carrier by motor vehicle shall file all his rates with the Commission, and have them open to public inspection in printed form. The Commission has

the right to prescribe what information must be included in this printed matter, and the form in which it shall be done. A common carrier is not allowed to charge for any services except as is stated in his printed rates, and he is not allowed to do any business unless these rates have been filed and published. Contract carriers are regulated by the Act in that they must file and publish copies of their contracts which contain their minimum charges, and they are not allowed ^{to} do any business for less than these published rates, except, of course at the discretion of the Commission. Contract carrier rates will be held unlawful if they give preference to such a company over a common carrier.

Both periodic and special reports are required from all motor carriers by the Act. It is up to the Commission to determine the form, content, and time of these reports. It may also require copies of all contracts and agreements made by a carrier, and may even prescribe the forms to be used and the length of time they must be preserved for all records of the companies.

The final provisions of the Act are concerned with the methods for enforcement, and the penalties for non-fulfillment. These clauses are for the purpose of putting some power behind the Act. Companies are prohibited from evading the rate regulations by rules regarding regular collection of amounts due. Thus there

will be no chance to lower rates by merely forgetting them after a long enough time.

Effects

The foregoing summary of this amendment to the Interstate Commerce Act contains a resume of all sections which have any important bearing on the control of motor trucks, particularly the rates charged by motor carriers. A study of these sections will show that this Motor Carrier Act is as widespread in its control over the motor truck industry as could be expected, and that the great power given to the Interstate Commerce Commission over the industry cannot help but be felt by the most remote operator. A further study of the Act will reveal that its effects will undoubtedly be felt most strongly by this remote operator. He will have been running one truck for whatever business and at whatever prices he can get, and the notions of good business principles have not come into his head.

It is primarily the aim of the Motor Carrier Act ~~either~~ to bring the one-truck operator, the fly-by-night operators, and others similar under the jurisdiction of Congress. Such operators have always been a thorn in the side of the entire motor truck industry. Not only has their effect been felt through the sort of competition they furthered, which took good business away

from the legitimate operators, but also through an indirect effect brought on by the bad name they have given the industry. The operators of the largest fleets of trucks are perfectly respectable business men who have always run their business on sound business principles, with cost accounting and other methods to bring about economy. The best ones have refused to take any business except at rates which will bring a fair return on the investment. By including indirect charges, such as depreciation, in their accounting, they have done business on a basis calculated to enable them to continue on into the future, having at all times the equipment and ability to give the service called for by customers. These larger companies have always lived up to the principle of the law which has now been passed, with regard to fair rates and reasonable methods of operation, and will be effected only by the ^{ENFORCEMENTS} provisions. These are already showing themselves not to be burdensome.

The situation in the industry relating to the smaller truck operators has been dealt with in the section on the situation in June 1935. It is in that situation that we find the real need for Federal legislation of some sort. The equipment of these owners or operators of relatively small fleets has not been kept up to a decent standard consistent with the safe transportation of goods or people. The competition mentioned above

has caused serious worry to the better established companies because of the abnormally low charges. As is shown in the situation in 1935, the policy of many of these operators has been to cut rates down to the point where only the out-of-pocket expenses are covered. Often trucks are sent out without any guarantee of a return load. This is a practice which is consistently avoided by reputable concerns, who feel that the salvation of the industry lies in cooperation between different operators in getting all rates to a level at which companies will be able to make money. If all rates can be set at a reasonable level, carriers will not have to worry about making provisions for rate-cutting wars, nor will they feel that business can be taken away from them by operators who can merely make a pretense about giving as good service. The large operators are hoping to be as secure in their field as railroads are now, the latter being the most heavily regulated industry. They do not feel, however, that newcomers should be entirely shut off from possible entry into the field.

The Motor Carrier Act has not been in effect long enough to be fully felt in all branches of the trucking industry which it is designed to reach. Most of its advantageous results, however, are either beginning to take effect, or are showing evidence of how they will take effect in the future. Many of these are quite

obvious from a study of the Act and of the methods in which it is designed to operate. There is no direct slam at the small carrier. Neither are the provisions such that there is any need for him to be forced out of business. Many such operators have always operated by intelligent methods and so^{do} not need to fear any consequences from the necessity of complying to certain regulations about equipment, or publishing rates.

The first important regulation is the one requiring certain standards of equipment to be used, the standards to be determined by the Interstate Commerce Commission. One has only to look at motor truck traffic on the highways to understand how this clause will affect the industry. If the age of various units is noticed, and the condition of repair in which they are kept, it will be obvious that there is a tremendous variation in this respect. If the newer trucks are watched for the name of their operating company, most of these names are of companies which have kept well in the public view and are well known. The older trucks, on the other hand, some of which are in poor conditions of repair, belong largely to companies which are seldom heard of, as often as not because they own only a small fleet of trucks. If, therefore, the rule regarding condition of equipment is strictly enforced, it will obviously cause more difficulty among the owners of smaller fleets, as they are the ones whose equipment is more inadequate.

The rules in the Motor Carrier Act regarding the permits, licenses, and certificates which allow the operation of motor trucks are merely means of enforcing the above rules of conditions of the equipment in service. It must be in efficient enough condition to permit its safe and reliable use. We have seen already that many companies will find their present equipment outlawed, and that those who have not kept well managed accounts may not be able to stay in business.

Consolidation may take place under the Act. Under this clause it may be seen that it is not necessary for companies to go out of business merely because they have not been obeying the edicts of the Commission. A more practicable solution can be found in the possibility of consolidation. The equipment and business of a company may be bought up by a larger company, and the officers of the smaller become members of the larger firm. Thus no one will have been driven out of business and much wasteful competition will be eliminated.

Probably the most important section in the Act is the one dealing with rates and charges. It must be again noted that the Commission as yet is not given the power to set rates as has been done for railroads. All tariffs must, however, be filed, and the Commission is given the power in cases where it has determined that

rates are unfair to act and have the charges changed. After that time a schedule of the Commission's making may be enforced. Some of the worst practices in the industry should be stopped by this part of the Act. Many of these have already been mentioned. Much of the unfair competition will be stopped and practices of rate cutting to get a large contract will not be allowed. After complaint by either a customer or a competitor, low rates may be raised to a minimum below which they must not fall. Furthermore, they must be the same for all customers. The matter of filing is causing a difficulty which is more easily surmounted by the larger companies. Definite rates which must be adhered to are extremely complicated.

In another section is shown the process by which fares and classifications are set up. A study of this will show that such data is much more accessible to the larger companies who probably already have it in their own forms. The complaints which will bring action by the Commission are brought about easily by the necessity of having rates published. Thus any suspected violation can be detected immediately without any underhanded methods of discovering practices of a competitor. Along this same line is the requirement for periodic and special reports. This immediately gives all information needed to the Commission.

It is apparent from the foregoing discussion just what will be the result of the rules which are so much more severe on the small operator than on the large one. The result will be to make the entire trucking industry more business-like and will bring it closer to finding its true place in the transportation field. Trucking will be a respectable business and it is hoped and expected that eventually its true place will be one in which other forms of travel will be helped by it. The problem of rates which is the particular question under discussion in this entire thesis has its entire being through the passage of this Act. Some companies, to be sure, have made the study already, but it has not come before an official body. Even now, the problem of Pickup and delivery rates is of concern to companies who are attempting to file copies of their tariffs, but it becomes through the Motor Carrier Act a matter of importance to the Interstate Commerce Commission, since it is now up to that body to determine, after collecting information, what are equitable rates. Furthermore, under the provisions of the Act the Commission is given the power to set rates in particular instances, and it was undoubtedly the purpose of the Act to have all charges uniformly set, beyond the control of the individual companies. This ideal situation cannot be reached without a considerable period of study.

THE PICKUP AND DELIVERY PROBLEM

Since its infancy the trucking business has attracted a large portion of its freight as a result of the service given the shipper and the consignee, and the low rates. No small part of this service is the pick-up and delivery operation. The fact that the shipments do not have to change hands at least twice, as is the case when shipping by rail (and usually much more often with l. c. l. shipments), is an excellent selling point for the truck. The great quantity of goods carried by truck consists of comparatively small shipments. These shipments are hardly more than a bother to the railroads and do not receive the correct attention. There is, of course, an increasingly large tonnage of bulk goods, such as oil, wood, coal, etc., which is being handled by the trucks for distances up to 50 miles. This tonnage, however, does not rightly belong in our problem since all the trucks coming under this classification have a single load for one customer, and therefore do not have the general pickup and delivery problem.

A survey conducted by Mr. Joseph B. Eastman, Federal Coordinator of Transportation, bears out this reasoning to a remarkable degree. The results of this survey are contained in Appendix II. It is interesting

to note that of the ten reasons given for the use of the motor truck, five predominated by a wide margin. These are: Pickup and delivery, Faster Service, Cheaper Total Cost, More Flexible Service. The sample taken, which included 35,468 responses, is sufficiently large to allow a reasonable degree of certainty as to the universality of the results. On the tonnage basis the Faster Service element led by a sizeable margin. Delivery, Cheaper Total Cost, and More Flexible Service were just below on the tonnage rating and well above any of the other elements. Likewise in the number of responses, Faster Service and Delivery were the two leading factors; yet, the other five mentioned above were nearly as popular and again way above the rest of the field. Thus, it is obvious that the delivery element is all-important. Not only does it have a high rating by itself, but as a matter of fact it is the unquestioned leader of the entire group. Although this does not appear in the figures it takes but a moment to realize that a large majority of the time saved by the motor truck over the railroad is directly attributable to the fact that the truck collects the freight, makes the trip, and delivers the freight with very little time being spent standing in yards, etc. The same truck can pick-up the freight and deliver it to points which the railroad could never hope to reach. Thus the very factor of pickup and delivery service is responsible for a large portion of the faster service obtainable.

In this problem we are concerned only with the actual pickup and delivery of the freight which means that the line haul may be made by either truck, rail, or water. The major emphasis will be on the freight carried by the truck on its line haul, but there is at least one other important angle which should not be neglected. The railroads have seen that the truck has a great advantage in the service it is able to provide. Thus, practically every railroad in the country has adopted or is about to adopt some sort of a combination rail and truck system which will make for better service on L. C. L. shipments by rail. In nearly every case this system consists merely of a pickup and delivery service by truck being maintained for cooperation with the railroads - the railroad rate including the pickup and delivery charge. Thus, the railroads are now vitally interested in all parts of this problem. The mere fact that the general practice has been and will continue to be that of hiring a trucking company the new service instead of buying their own trucks has very little effect on their interest. The railroad must still pay the contract carrier a sum sufficient to allow the carrier a decent profit, and since the carrier must observe certain practices in order to avoid a loss, the railroads are interested in these practices which are the basis of the cost of service.

Thus it is obvious that the pickup and delivery service is growing larger in scope and importance every day. It has become one of the major factors in every form of transportation, regardless of the method used of performing the service.

Definition

There is no absolute definition of what is meant by pickup and delivery in the large majority of truck tariffs today. This seems quite foolish to us, since there are so many very different interpretations which can be set on the words that the subject bears a short explanation. The fact that the truck calls at the shipper's place of business to receive the freight is unquestioned. But just how far the truckman should be obliged to extend his service is the controlling question. A more specific discussion of the ramifications of this question will be found further on in this report, but it is necessary to point out the discrepancy which is present.

Mr. R. A. C. Henry, Director of the Bureau of Economics of the Canadian National Railway, defines store-door pickup and delivery as follows:

"By store-door delivery is meant the function of moving freight from the terminals of the delivery railway carrier to the premises of the consignee on incoming traffic by rail, and from the premises of the consignor to the terminals of the receiving carrier outbound by rail."*

*Railway Age, October 27th, 1933 - Page 856.

Much the same definition is used by the rail carriers in California and Arizona (see Page 253 Motor Truck Red Book and Directory - 1934 Edition). This definition, however, is not specific enough. From it one could easily infer that the truckman must carry freight up many floors, etc., if the consignee or consignor is not located on the first floor of the building. Therefore, it seems to us that the following definition is much more sensible by virtue of being much more specific. Why we believe the particular conditions created as a result of this definition to be the correct ones will be explained later in the report. The definition is the one found in Rule 3 of the Rules and Regulations in the tariff issued on March 1, 1935 by the Consolidated Motor Lines, Inc., of Hartford, Conn. This rule is:

"Rates shown herein include pickup and delivery. 'Pickup' refers to the service of the carrier involved in calling for and collecting freight, and receipting therefor, from a platform or doorway directly accessible to trucks at the consignor's warehouse, factory, store, or similar place of business. 'Delivery' refers to the service of the carrier involved in delivery of freight to a platform or doorway directly accessible to trucks at the consignee's warehouse, factory, store, or similar place of business."

The New England rail carriers have much the same rule:

"The railroad will arrange for Pickup and/or Delivery of the freight at customer's doorway or platform, and only if such spot is directly accessible to trucks and conditions of streets or alleys, leading thereto or therefrom, permit of practicable truck operation."

These latter definitions establish the type of service which can be expected to a much better degree than the former. The entire report is written using these as the definitions of the service, although certain necessary additions are made.

Delivery Charges

This report is chiefly concerned with the charges which should be made for the pickup and delivery service, on what these charges should be based, and what factors must be taken into consideration when establishing the individual rates for the various trucking companies. A short discussion will serve to show the specific problem which we must face, after which each factor will be separately considered and evaluated.

There are many factors which enter into the cost of delivery service and which thus should be considered when establishing rates for this service. Such factors as terminal cost, gasoline and oil, repairs, etc. are one division - the other being made up of the factors such as delivery time, the accompanying idle time, traffic conditions, city distances, road conditions, the size of the shipments, etc. In the first set, the factors are quite definite, and their costs can be ascertained with a reasonable degree of certainty since they are constant for each delivery made. An entirely different problem is encountered with the second set.

All of these items change with each delivery, and the worst of the situation is that the variations are not known in most cases until the delivery has been made. Thus the question arises as to how these costs should be considered when making the rates. Should each variation be taken into account, or should all the variations be averaged and a set charge be made for each delivery no matter what the conditions and their variations? It is here that we find the crux of the problem of delivery rates.

The large majority of truck operators have merely added some arbitrary charge for the pickup and delivery to their line haul charge and incorporated the two different charges as a single rate. As far as we have been able to ascertain few companies in Boston have taken the trouble to analyze the situation carefully and completely - several have made so-called studies, none of which appears to have gone as far as our own short study. In many cases the pickup and delivery charge has been completely eliminated due to the strenuous competition and need of business. Truckmen have set up an arbitrary zone within each city, often the corporate limits of the city, and deliver to any point within this zone under any conditions for the same rate. When one considers the many factors which operate as cost producers it is quite apparent that such a basis for delivery charges is not equitable in many cases. The very fact that the charges and zones are entirely arbitrary and the results of the demands of competition shows that the

truck operators have not studied the problem in the correct light with a view towards setting up rates which will adequately reimburse them for the delivery service. A typical example of the usual sort of thinking is illustrated by one truckman who adds 10¢ per hundred pounds to his line haul charge at both ends of the haul for all deliveries and pickups. He was told that this sum would cover his costs and without any investigation decided to use it. It is obvious that he is overcharging on some deliveries and losing money on others, and without study it is not possible to say whether he has arrived at a good average rate or not.

Thus we find that the present state of the delivery charge is not at all satisfactory in most cases. The rates are based on competitive conditions rather than cost and often make no allowances for special situations. The whole subject of delivery rates is settled much too quickly and without the benefit of careful study. Even a small amount of study shows the problem to be so complex that the only solution must be simple in order to be usable and understandable, but again let us emphasize that the chief difficulty lies in the fact that so little careful work has been done in the field.

PROCEDURE

The procedure followed in attacking this problem was very simple. This simplicity was brought about by the fact that as the investigation proceeded, it became more and more obvious that we should expect the answer which we finally reached. This meant that the efforts expended in the early part of the work were justified and that we needed merely to continue them further in order to prove to readers that we had sufficient evidence to support our findings. The plan followed was laid out ahead of time when writing the preliminary report and was approved by those advising on the methods to be followed.

The solution of the problem is based mostly on data which is entirely original with this investigation. This data was collected by riding on the trucks of three companies and keeping a complete diary of all events which took place. Appendix III shows the form on which this data was taken, and also the items about which we were concerned. These included conditions relating to the actual delivery being studied and those which affected parts of the ride between deliveries. We thus obtained widespread information about delivery conditions. Most of this has already been well known, particularly by the drivers, but there has been very little attempt to gather it together and sort it so that it will mean

something. During these truck rides we were also able to obtain a great deal of information from the drivers themselves. This proved to jibe well with the facts we had ourselves observed, although the drivers were able to give some pertinent information which we would otherwise have been without. This information showed that much of the data we gathered was typical, and also how conditions in different localities varied. We learned, for example, which streets were usually crowded, which stores made delivery easy, and which ones made it difficult. The complete record of information obtained from truck drivers is given in Appendix XIX.

Our most important source of data next was the interviews which we had with truck operators themselves. From them, we not only obtained a great deal of information we have about how rates are set up but also most of the cost information. Interviews were held with officers of various agencies, such as the Chamber of Commerce, as well as with the operators themselves. From the Motor Truck Rate Bureau, we obtained a complete study of their recommended practices, which are now being followed by many of the trucking companies, particularly the smaller ones. We also were given copies of the actual tariffs as filed with the Interstate Commerce Commission. To summarize, we used interviews to determine the basis for rates, the mechanics of setting up rates, and the rates themselves. Our problem was helped further by getting

truck operators' opinions on some of the issues involved. We were able to find out what men were in favor or the extent to which the industry will be controlled under the new Motor Carrier Act, and what they favored doing about some of the doubtful matters to be decided in making rates. We were usually able to hear many complaints about other operators, which were checked later.

Our third source of data was literature, mostly periodicals which we obtained from libraries. This list is shown in the bibliography, and includes government pamphlets, articles in magazines, handbooks, and former theses. This source was less important than the other two.

PRECISION DISCUSSION

The sufficiency of the data which we have collected must be shown not by the large quantity of it, but by the fact that our solution of the problem ^{is} justified by the amount present. This is naturally true in the case of a small amount of data only when the data can be seen to vary slightly from a constant average. If the variations are larger, by the laws of statistics, the sample taken will have to be larger.

Sample

It is perfectly obvious that there is much data which could have been taken and was not. For example, the list of truck companies which we contacted is small, compared to the list in the greater Boston classified telephone directory, which covers nearly two pages. In the matter of setting rates, there are some differences between all of the companies used, but these are only in details, and it would obviously not further our conclusions if we were to discuss all possible ways of setting rates; several examples, showing the principles which may be involved are sufficient. The data obtained from personal observation is small compared to the total number of deliveries made during the entire period of investigation for this thesis. The adequacy of this

data can be shown to be a representative sample by the curves and charts which have been drawn from it. The curves are smooth, and approach quite closely sections of the theoretical bell-shaped curve of distribution which is expected in all studies of a collection of data taken at random. In the matter of costs there is no need to obtain a large sample. Only a few of the companies have made any such studies, but when made, all compare favorably in this respect.

Territory Covered

The territory covered in the collection of data is primarily in the metropolitan district around Boston. There are, of course, cities in which the delivery problem is considerably different from that in Boston. In some, pickup and delivery will be made more easily, in others, it will be much more difficult. Traffic conditions, etc., will become worse as the population increases. Boston is an average size large city and experiences all of the conditions in kind if not in degree of a larger city. The methods by which we arrive at our conclusions will show that further complications of traffic would make our answer more obvious. The thoroughness with which we covered this metropolitan district is shown on the small map in the appendix (Appendix IV), on which streets upon which deliveries were made are colored. To a person knowing the limits of Boston's business, these limits can be seen to be well covered.

The conditions of delivery outside the immediate area of downtown Boston were not observed to any great extent. This localization of study can be justified on the grounds stated above. By the very nature of the problem of the thesis, its complexity increases as the density of traffic and population increase. If it is true that the problem is of greater importance in large cities than in small ones, then it is also true that it will be greater in the heart of Boston than in the outlying districts.

A study of the large map (Appendix XXVII) will show the different zones marked on it vary tremendously, from the smallest that would be expected to one covering about 90 square miles, which is very nearly as large a zone as could be drawn on our present map including as it does all the area usually spoken of as the Boston metropolitan district. The innermost zone is not more than ten square miles in area. This set-up shows a great variation in the methods of setting up rates. Many more schedules could have been collected, but they could not have been shown clearly on the map. Furthermore there would have been no point in trying to show more zones, as the territory is already divided into well-spaced sections.

Type of Service Covered

Almost all of our work has been along the line of delivery service, rather than pick-up. There are two reasons for this. The first is that the pickup service is done in more random fashion than delivery. The trucks do not start from any particular point, nor do they operate at any predetermined time. This means that following a truck during pickups would mean less along the line of data collected. The second reason is that there is no practical necessity for differentiating between pickup and delivery. The trucks on which we rode made one or two stops for pickups in the middle of their delivery route in cases where the driver knew the packages to be ready, and the location was not off the regular route. This was done to save time in the afternoon when most pickups are made, and the store in question was not on the expected pickup route. In these few examples which we observed, the conditions were not at all different from those accompanying delivery. Information was also obtained from the drivers as to this situation, and their opinion agreed with what was learned from observation.

Contacts Made

Very nearly 100% of the work of all kinds was done with the large trucking companies. At first glance this would appear to be a failure to get a sample which covers the whole industry fairly. It is true that there

is a lack of coverage in this respect. It is shown in the discussion of the Motor Carrier Act, however, that the ultimate effect of this will be to remove most of the very small companies, or at least those who operate on less careful business methods than the large companies. This means that the work was done with an eye to the future, when the situation in the whole industry will resemble the present situation in the larger companies. This transition has already begun to take place, as the smallest operators are not able to carry on, and the problem which we are attempting to solve is one which is faced much more by the large companies. Another reason for this selection is that the large companies do own a major proportion of all the trucks operated, and that it is possible to get the greatest tonnage of operation from a study of the smallest number of companies by using these large carriers. A last reason for this selection is that the size of the companies studied makes very little difference, when the importance of the data obtained is considered. We have shown that the problem is more important to the large operator, and also that the data obtained from personal observation does not depend on the condition of the truck used, or its age, nor does it depend on the size of the company operating that truck.

It can be seen from a study of the graphs that a very large percentage of deliveries were less than 1,000 pounds. This percentage cannot be assumed to hold throughout the industry, but on the other hand varies with different companies. However, it can be seen that much of the problem disappears with large shipments. For one thing, delivery time becomes dependent almost entirely on the size of the shipment, and for another, the importance of time between deliveries does not enter into the picture. This whole matter is discussed more thoroughly in the section on delivery. Not only is the problem greater with shipments of small weights, but the average of deliveries is very much within the limits which we have studied. For example, in a study made by Keeshin Transcontinental Freight Lines, an average of 393 pounds per delivery was found to hold. This company is the largest in the country, and over a thousand shipments are made over its lines each day. It is therefore safe to assume that any average determined by them will hold throughout the industry. Therefore, the range of deliveries can be said to be adequate for our problem.

COMPOSITION OF EVIDENCEINTRODUCTION

The composition of evidence must take place along two lines: first, a breakdown of rates, and second, the effect of various elements on the problem of pickup and delivery costs. The rate breakdown concerns the problem of whether the line haul charge should be separate from the pickup and delivery charges. The basis for the discussion of this problem will be the actual methods used for the formulation of the rates. The second line of composition must be argued in two sections; first, the determination of costs, and the effect of the time element on these costs; second, the manner in which the different elements cause significant variations in the delivery problem. There will, therefore, be three sections in this part of the thesis. The purpose of the first two sections is obvious; the purpose of the third will be to inspect and evaluate each element in turn. This process must necessarily include the answers to several questions for each of the elements. A brief discussion will serve to show the nature of the investigation which will be made and the points which will be emphasized.

Analysis of Elements

The first question to be asked when an identification or analysis is to be made is - what is it? It is quite necessary to know exactly with what the analyst is dealing before one can thoroughly understand the treatment of the subject or reason sensibly through to the conclusions. Thus it is important to explain the subject or state a definition before the discussion is started.

The second, third and fourth questions to be answered should be grouped together since they naturally follow one another. They are: where does it arise? how does it arise? and why does it arise? In order to discuss any problem intelligently it is paramount that those who enter the discussion or follow the discussion have a full knowledge of the sources of the problem, how it appears, and the reason for its appearance. It is quite impossible to arrive at the correct solution without such information. Many problems can be solved readily in theory, but such readiness is thrown to the winds when the time comes for a practical solution simply because it would be impossible to incorporate the necessary parts of the theoretical solution into the actual situation. On the other hand, if one is well informed as to the actual situation, and thus the practical limitations, no time is wasted in the formation of fanciful solutions which

are of no use whatsoever. The answers to these three questions show very definitely the limitations which will be in force, and thus the lines along which the solution must be made.

These four questions must be answered before the solution can be reached for any problem. In this particular case, however, we are dealing with the separate elements of a large problem each of which is a small problem in itself. Therefore, it is important that another question be answered -- how does it affect the problem? It is important to discover the relation which the element in question bears with the problem as a whole and to make the initial decision as to whether or not this relation is important. If it is not, we may pass over the element with but little further comment. If it is important, however, a close examination must be made in order to insure an accurate solution.

The sixth and last question to be answered is merely - what should be done about it? The answer to this question will cover the various possible solutions with their advantages and disadvantages. It will then be necessary to pick the correct solution for this problem with a reasonable explanation as to why it is the best or most usable one.

The answers to these six questions will provide a base of fact and tentative conclusions upon which the effect of eachelement on the delivery time will be analyzed. A summation of the conclusions in all three sections will provide answers to the issues of the problem.

RATE BREAKDOWN

In the trucking business an operator must take one side and only one side of any question without any strings attached. No one can be on top of the fence in the halfway position; each man takes his own definite stand and defends it until he is forced out of business by bankruptcy or combination. The question of the advisability of separating the delivery rates from the line haul rates is no exception to the rule. Many of the most successful operators hold entirely opposite views on the question and refuse to accept any arguments for the alternative method. The majority of operators at the present time use a single rate to cover line haul, pickup and delivery. There is evidence, however, which shows that these operators may be wrong, and it is the purpose of this section to weigh this evidence from an impartial viewpoint and discover the most advantageous method for all concerned.

Although this thesis is concerned only with the pickup and delivery problem in Boston, some very helpful material has been gathered from other sources and much of it will be used wherever possible. It would appear that the truck operators in the Central, Western, and Southern parts of the United States have approached the entire problem of rates from a much more sensible angle

than the New England operators. This assumption is based entirely upon the tariffs which they have published and the rules and regulations which they enforce. The reason for this difference of genuine attention is not clear, but it may be attributable to the intense competition in the New England district. It is probable that there is a higher percentage of fly-by-night operators in this district than in the others. It is these operators who cause the great difficulty by excessive rate cutting and other practices which are not wholesome to the industry. Although the well financed operators do not wish to follow the same tactics, in some cases they are forced to do so in order to keep their business. Thus it would appear that the trucking business as a whole has been in a much greater state of flux throughout New England than in the rest of the country. Another indication of this assumption is the fact that many of the Western and Central states have had much more complete legislation regarding trucking than the North Eastern states. In the same manner, the tariffs published in these states are much clearer and seem to show much more experience than the majority of the New England tariffs. Of course, there are exceptions to this general assumption, and there are some very well-run trucking companies in the northeastern part of the country.

Theory of Rate Structure

In order to be able to make any decision with regard to the line haul and delivery charge controversy, it is first necessary to explain motor truck rates and tariffs, how they are made and why they are made. This explanation will serve a double purpose since it will also be referred to in the section bearing on the cost of operation.

It is important that there has been very little uniformity with respect to motor freight rates up to the present, but there is hope for the future as soon as the Interstate Commerce Commission can investigate both the rates which were recently filed with it, and the situation in general. The reasonableness of a motor truck rate involves several considerations, and in many cases presents a difficult problem in correlating the interests of the truck owner, the railroads, and the shipper. The principle of return on investment to the owners of the motor trucks is one that must be considered, and the public should not be subjected to unjust rates in order to provide excessive earnings. However, owners are entitled to a fair profit and motor truck rates should not be made so low as not to yield a fair return on the investment.

The Motor Truck Red Book and Directory, 1934 Edition, lists the following factors to be taken into consideration when making a common carrier rate:

1. Cost of service to the truck operator
2. Number of trucks in commission
3. Value of the service to the shipper
4. Value of article shipped
5. Nature of the article, whether crude or finished, liquid or dry, etc
6. Risk in handling
7. Distance of haul and highway conditions
8. Size and weight of the article
9. Whether special equipment or extra services are required
10. Expense and time at terminals and transfers
11. Volume of traffic and periods of movement
12. Method of packing and protecting article
13. Rates on similar articles moving under similar conditions and circumstances
14. Rates of rail carriers and consolidated companies
15. Cost to the shipper operating his own trucks
16. Rates of contract truck carriers
17. Competition between producing centers or markets.
18. Whether or not the rate will be conducive to an increasing movement

19. Prospects of trucks being returned loaded or empty
20. Trailer use and movement

The importance of the contract carrier must not be forgotten. Any rate made by a common carrier for any commodity may be shifted by a contract carrier for his own purposes, especially in the districts where the contract carriers are well organized. The rates of some of the large operators throughout the country are related generally to the railroad freight rates, but they may or may not include pickup and delivery service. The Motor Truck Red Book, 1934 Edition, has this short discussion of the contract carrier:

"The contract carrier is a factor with respect to the possibility of stabilizing the charges to be applied by the common carrier truck operators. The privately owned truck also competes with both common and contract carriers the same as in the past. The privately owned railroad, transporting lumber, coal, ores, etc., was a factor in connection with the stabilization of the rail carrier rates, when they related to the movement of goods under competitive conditions from producer to consumer.

"The contract carrier is subject, in the main, to the same basic elements for establishing transportation charges as a common carrier truck operator and where state regulations do not control the contract carrier rates, the common carrier truck operator is subject to keener competition than in those states that provide regulations effecting the rates of both.

"The Commission's report, in Docket 23400 (Findings of the Interstate Commerce Commission, in Docket 23400, Co-ordination of Motor Transportation, 182 I. C. C. 263) in speaking about the contract carrier, reads in part as follows:

"Subject to no regulation in most jurisdictions, and limited regulation in others, contract carriers have a free hand in making their charges; they can make changes readily and can freely discriminate between shippers, types of traffic, and communities. For the distances covered, their rates are generally considered less than rail and are less stable than common-carrier rates. They sometimes are based on known costs and are reflected in definite mileage, tonnage, and hourly or other rates, and sometimes on what can be obtained. The former basis prevails more generally in the case of regular contract carriers, and the latter in the case of contract operators of less experience."

It is easy to see that the contract carrier was a problem for the common carriers several years ago. There is, however, every reason to believe that enough legislation has been passed since then to remove many of the old evils, and certainly the Motor Carrier Act under Federal regulation once in operation will go a long way towards cleaning up the discrimination, rate-cutting, and similar unwholesome activities.

The factors listed as the ones to be taken into consideration when making a carrier truck rate demonstrate the rate-making problem which each truck operator must face. It is true that many of the operators merely take 25% from the existing rail rates, but nevertheless these factors influence his rates, whether or not he cares to take the trouble to investigate them carefully before setting the rate. Naturally these same factors

apply to line haul rates or delivery rates, but there are several which can be omitted when the discussion of delivery rates is brought up, because their effect is chiefly concentrated in the line haul rates - factors no. 17 and 19 are among such factors.

One of the most difficult portions of rate-making involves those factors which describe the article to be shipped - leaving out for the present all considerations as to the gasoline used, taxes on the truck, terminal expense, and similar items. The railroads long ago solved this problem by setting up Freight Classifications which separate all the commodities carried by freight into classes according to their density, delicacy, value, etc. The trucks have followed suit, and have set up similar classification lists. The latter, however, are not nearly as complicated as the railroad lists. It is interesting to note here that one of the advantages the truck claims over rail from the shipper's point of view is the simplicity of such classification lists. It would appear, nevertheless, that as regulation is made more orderly and exact the old-time simplicity will gradually disappear to some extent. Again it is necessary to quote from the Motor Truck Red Book to show some of the principles involved in classification:

"The principles involving the classification of motor freight for the purpose of applying class rates, are practically the same as those which control the making of ratings in connection with the railroad classifications. Articles having

essentially the same value, bulk, weight, and other similar characteristics, and involving practically the same cost of handling, should be assigned to the same class.

"The handling of goods by motor truck, in many cases, differs greatly from the methods used by the railroads. One of the outstanding principles established in connection with the motor truck classification is the controlling element that is equivalent to 1. cl. freight on railroads....Where a movement of goods by motor truck involves the establishment of charges on articles having a carload rating, at a lower basis than shown, it is the general practice of most motor truck operators to publish commodity rates.

"Another principle which governs the establishment of class rates for motor truck tonnage is the loading capacity of the equipment, having due regard for existing laws regarding load limits and liability on the part of the common carrier. The classification contains descriptions of the articles together with the package requirements, in many cases; rules and regulations governing transportation; the class to which the articles are assigned; in some cases, the valuation and minimum weight per shipment; the motor truck freight rates to be applied on the different classes; and specific rules and regulations governing their application to the motor truck tariff.

"Each classification has rates higher than first class, such as 1 1/4 times first class, 1 1/2 times first class, 2 times first class, etc."

When a truck operator makes up his rates, he first establishes the base rate which is applicable to a certain class of goods (5th, 4th, etc.). This rate is then transposed to the other classes according to the relation they bear with the basic class (such as 125% base class, 150% base class, 75% base class, etc.). Appendices V and VI illustrate this method of building the rates.

Cost Principles Involved

This discussion of rates has up to this point really covered only the theoretical method of rate making. The actual method follows these theoretical lines as far as possible but should be described separately in order to give the correct picture of the entire process. With this thought in mind the next part of this section will deal with an actual procedure of rate building which can be considered the general type used by most efficient operators. The material used in the following explanation has been taken from an outline prepared by the Motor Truck Rate Bureau of Massachusetts Inc., during the summer of 1935 for the use of its members when compiling tariffs to be filed with the Massachusetts Department of Public Utilities.

The fundamentals underlying the cost principles of rate making in the motor truck field might well be grouped into five factors as follows:

1. Payload or maximum legal registered carrying capacity.
2. Basic operating cost formula.
 - a. Application of average cost figures to a formula.
3. Body capacities expressed in:
 - a. Cubical displacement
 - b. Densities of commodities required for maximum pay-loads.

4. Load factor of vehicle in operation.
5. Speed formula for line haul.
6. Translation of cost factors into tariff form:
 - a. Formula for the classification of commodities
 - b. Translation of factors into cents per hundred pounds
 - c. Outline of final tariff form
 - d. Interpretation of tariffs.

Payload or maximum registered carrying capacity (1)

The basic operating cost sheet (Appendix VII) has been compiled by using the average cost figures for Massachusetts and applying them to a typical 12 ton registered carrying capacity unit. Considering the traffic density between centers it is sound economics to assume that the vehicle permitting the largest lawful carrying capacity or "pay-load" will control the level of rates. Therefore for the purpose of discussion we shall confine ourselves to the 12 ton unit as shown on the basic operating cost sheet (Appendix VII).

Basic Operating Cost Formula (2)

In the basic operating cost sheet the items listed will be found to be practically self-explanatory.

Application of Average Cost Figures to Formula (2a)

On the basic operating cost sheet (Appendix VII) the total "Fixed Cost" for a year is 2335.48. Allowing for Sundays, holidays, repair days, etc., it was determined that the vehicle was in operation an average

of 300 days per year - making the "Fixed Cost" per day of \$7.78. Likewise the average hours worked per day were nine - making the hourly fixed cost \$.865. This figure, however, does not include the driver's wages - which amounts to 60¢ per hour - nor the Workmen's Compensation - which amounts to 3¢ per hour. Adding in these two items makes the total fixed cost per hour 1.495 or with profit it is \$1.66. The variable costs indicated in items 12 to 15 (Appendix VII) are contingent on the number of miles operated and note B in this appendix indicates the depreciation formula. Considering all items and including a profit the variable cost equals \$.156 per mile.

Body capacities-cubical displacement (3a)

The cubical displacement of a vehicle body is an important factor in arriving at the base rate. The body displacement controls the weight densities of commodities required to furnish the maximum pay-load. Due to present legal limitations as to over-all lengths, widths and heights we have accepted 1200 cubic feet displacement as the maximum for bodies of 24,000 pound pay-load.

Body displacement-densities of commodities T
required for maximum pay-loads (3b)

With such cubical displacement figures it is evident that the commodities handled must weigh twenty (20) pounds or more per cubic foot to permit full legal pay-loads.

Load factors of vehicles in operation (4)

The percentage of tonnage handled in proportion to the potential capacity of a vehicle can be found easily from the average amount of tonnage handled over a period of a year, the capacity of the vehicle, and the number of trips made by the vehicle in one year's service. A vehicle loading 24,000 (with this capacity) has a load factor of 100%. Careful surveys and research showed that the average load factor in Massachusetts amounts to 62 1/2% or 125% for a round trip.

Speed formula for line hauls (5)

The speed formula for vehicles operating between terminals was considered as one hour for the first and last five miles in order to allow for traffic conditions in entering and leaving city terminal areas, and twenty five (25) miles per hour or fraction thereof for the balance of the mileage.

Example of rate making from costs*LINE HAUL COSTS

Distance between Cities A & B-----	60 miles
Time consumed in A for 5 miles.....	30 minutes
Time consumed in B for 5 miles.....	20 minutes
Time consumed for Balance of 50 miles.....	<u>2 hours</u>
TOTAL TIME	2 hours & 50 minutes
A. Cost of Time @ \$1.66 per hour	\$4.70
B. Cost of Miles @ .156 p	<u>9.36</u>
TOTAL COST LINE HAUL	\$13.06

 *from pamphlet on rate-making by Mr. F. I. Hardy of "The Big Three".

Load factor of 62 1/2% registered carrying capacity -----15,000 pounds.

C. Total Cost \$13.06 divided by 150 cwt. equals Line Haul Cost or \$.0807 per cwt.

Terminal Costs or Pickup and Delivery at A & B using same cost methods as above in New England are as follows:

D. 0.	to 1000 equals	\$.16	1001 to 2000 equals	\$.14
	2001 to 3000 "	.12	3001 to 5000 "	.10
	5001 to 10000"	.08	10001 to 20000"	.06

To compute rate 1 to 1000 pounds 5th Class add \$.16 for terminal (D) plus \$.0807 (C) for Line Haul, total rate equals \$.2407 or 24¢ per cwt. 5th class for 60 miles.

Appendices V and VI show typical sheets composed of many such calculations as they would appear in a tariff. With this brief discussion of rate-making in mind, we shall proceed with the main topic of this section - namely, the advisability of combining the line-haul charge with the delivery charge. A discussion of the costs shown in the example will be set forth in a latter section.

Mr. Hardy* makes several comments on the making of rates which are very pertinent to this subject of line haul and delivery charges. They are quoted in full below:

"After a great many years of rate making using segregation in accounts of fixed and variable accounts as shown (Appendix VII), we believe it is the only sound method to be used for rate making purposes and that it is necessary to segregate the so-called Line Haul from the Terminal costs to arrive at a sound rate level.

*from pamphlet on rate-making by Mr. F. I. Hardy of "The Big Three."

"As an example----City A is really the City of Boston and we find that it takes 30 minutes to make 5 miles in or out of Boston. In all other cities in Massachusetts we find the time 20 minutes for 5 miles. This will vary in various sections of the country. There will also be a variation of speed in the open country. You will note that I have used a speed of 25 miles per hour outside of the congested areas as between A & B".

Basis for Separation

The Line Haul and Delivery costs are essentially different types of costs. The line cost is dependent much more on distance than the delivery cost and the delivery cost is dependent more upon time than the line haul cost. The various elements which make up the fixed and variable costs will be discussed in a separate section, but the difference which has just been mentioned is not due to any change in the elements of the costs pertaining to line haul and delivery. The difference is traceable directly to the type of service offered. The delivery service consists of city driving, which is naturally slow, and the line haul consists largely of open road. Thus the actual proportion of fixed costs to variable costs is much different for these two types of driving. Appendix VIII shows an actual calculation of the basic cost of truck operation for an hour under the separate conditions. The percentages of fixed to variable expenses under the different conditions are also shown. It is quite obvious that the delivery cost and the line haul cost are not the same animal, and thus should not be grouped together.

Discounting the fact that these two rates are not of the same nature, there are several other reasons which make it apparent that they should be separate. The first of these is the necessity for changes. It is quite possible that certain of the delivery rates must be changed from time to time or that special commodity rates must be set up for a certain manufacturer due to the volume he ships. If the delivery rate is separate, it is a small matter to change it since the change affects only this part of the entire rate. If the two (line haul and delivery) were combined, it would be necessary to disturb the entire rate and perhaps the entire rate scale in the tariff in order to institute the one small change. The work involved in making such a change might well have been almost entirely omitted if the delivery rates had been set up alone.

The first example is one of voluntary change, but there are many tariff changes which are involuntary - that is, they are brought about as the result of a complaint of one sort or another. If a shipper in Boston complained that the delivery rate that his competitor was receiving was discriminatory and was successful in upholding his claim, the entire rate structure would again have to be torn down to make the necessary changes. If the rates were separate, however, the only the delivery structure would be changed.

Many of the operators calculate their line haul rates, merely add 10¢ per hundred at either end for terminal or delivery charges, and express their through rate from consignor to consignee as the sum of these two rates. No one can be sure of the actual amount of the delivery rate, since it is not stated. Practically any rate can be set without any one other than the man who set the rate being able to say what the amount of the rate is. This sort of procedure quite obviously invites wholesale rate-cutting and other discriminatory practice. Since no one can tell whether the operator is making the correct charge or not, there is no way to prove that he is charging unduly low rates. He may say, when his delivery rates are attacked as being either too high or too low, that they have remained the same and only the line haul portion has been changed and vice versa. Thus it is easy to see that it would be a difficult job to prevent strenuous competition under such conditions.

The third reason is that the separation of the line haul and the delivery rates would be an aid to accurate cost accounting. It is true that very little accurate cost accounting is practiced by the vast majority of New England truck operators. Nevertheless, the Motor Carrier Act will eventually make it imperative that the

the operator who is to succeed use cost accounting. The few operators who do use cost accounting at the present time have divided their accounts into three major sections: 1. The line-haul expenses; 2. The terminal expenses; 3. Overhead and Traffic expenses. The rates are then made up by taking the cost figures for line haul and delivery and apportioning a certain amount of the overhead and traffic expenses to each of the other rates. A typical set of such expense accounts is shown in Appendix IX.

A fourth reason for the division of the rates is apparent when a zoning system for delivery distances is used. Under such a system the operator sets up arbitrary zones and makes a certain delivery rate to each zone. If the line haul and delivery rates were combined it would be necessary to have a completely different set of rate scales for every combination of zones that might be covered by a freight movement. To illustrate - freight might move between zone 1 in Boston and zone 1 in New York, or between zone 1 in Boston and zone 2 in New York, or between zone 2 in Boston and zone 3 in New York, etc. It is obvious that much confusion would result from such a tariff arrangement. Most of the operators who do use the zoning system at the present time have a through rate from one zone in each city to another zone in the other city and make an additional

charge for deliveries to other zones. This sort of a procedure, however, is obviously nothing better than a compromise and thus should not be used. The entire rate machinery could be simplified in such cases by separation of the delivery and line haul rates.

The purpose of this section was to discuss the advisability of separating the line haul and delivery rates. It has been pointed out that the two rates are fundamentally different, that much confusion can be avoided by separation and that the separation aids certain valuable procedures. There remains only to show that the separation would not make rate calculations difficult; this demonstration is comparatively simple. It would merely be necessary to set a separate scale for the delivery rate. Then the shipper would add the delivery rate indicated on the scale to the correct line haul charge in order to obtain the through rate. If he desired to send the freight to the terminal himself he could very easily compute the through rate, merely by neglecting the pickup charge scale (which although not mentioned beforehand, must obviously also be included - it is actually the delivery charge for the shipper's city). It appears that the separation would not cause any difficulty and would be of very definite benefit, and therefore that such a separation should be recommended.

COST OF OPERATIONNeed for Cost Control

"Motor truck operations can be divided into three general classes, insofar as cost control is concerned. The first class is the business which uses only a few trucks. In the second class comes the large fleet operator, such as the bakery, dairy, department store, bottler, etc., where the delivery is a major adjunct to the vital business problem. In such cases the delivery expense may be as much as 20% to 40% of the gross income. In these cases it is most imperative that delivery costs be kept in detail, especially on each piece of equipment. The third general class consists of businesses who sell transportation, such as express companies, long distance haulers, and the like. Strange as it may seem, such companies whose whole existence or possibility of profit depends on efficient operation, have made the least advances in keeping individual truck costs and complete control of their delivery expense. This probably explains why this business is in such a chaotic state and competition is so ruinous. In the majority of cases the tariffs are based on something less than the railroad rate, regardless of whether the work can be done at a profit or consistent with cost. It is in this line of activity that cost control can do the most good.

"It is inconceivable that truck transportation should be so far behind other industries in cost control. No one system of truck costs will answer all operations. This has been admitted from time to time and the classifications have become so general in one extent and so detailed in another that they have lost their effectiveness. There are any number of such truck cost control systems available through truck manufacturers, general accounting systems, or finally through agencies that specialize in transportation problems. The wisdom of such cost control and detailed information should be obvious. As time goes on with keener competition and more efficient operation from the railroads and the like, this will become all the more apparent.

Thus the chapter on operating costs in the 1934 edition of the Motor Truck Red Book and Directory starts. The wisdom of these two paragraphs is quite apparent. Likewise, they serve to substantiate our previous contentions as to the state of the industry. It must be admitted, however, that some progress has been made since the writing of that chapter. On the other hand, it should be obvious from our statements that the progress has been slow and very much the exception rather than the general rule. Like every other business, the trucking industry is founded on a basis of cost. The rates are, or at least should be, contingent on the cost of service provided as was shown in the preceding section.

There can be little doubt that the operating costs have a very strong bearing on the delivery problem. In fact, it can safely be said that they cause the delivery problem; from the time wasted, etc. Likewise there can be little doubt that these same costs vary for each delivery. There are two governing factors in the cost variances: 1. the elements of the costs, and 2. the variances in these elements. In order to cover the subject thoroughly the discussion on these two factors will be split into two sections. The purpose of this (the first) section is to show how the various elements in the delivery problem affect the cost, and the section immediately following this will show the manner in which these elements vary.

Cost Division

All truck operation costs can be divided into two general classes, the fixed charges and the variable charges. While it is true that some of the items might conceivably fit into both of these categories, simplicity demands that the split be made. There are, of course, several methods of listing the various costs that must be taken into consideration. However, since it is the purpose of this section to show how certain delivery elements effect the cost of service, the cost items will be arranged in the order which is best suited to that purpose. In the section following this it is shown that all the delivery elements which effect the cost can be expressed in units of time. Therefore for the purposes of this discussion the division of fixed and variable costs will be used. Appendices VII and IX show two alternative methods of listing the costs. The method as illustrated in Appendix X is useful for determination of the profit for a particular trip, and the one in Appendix XI for the total cost per mile.

Fixed Charges

For the purposes of this study, fixed charges will include interest on the investment, insurance, garage expenses, registration, taxes, administration, and driver's salary. The variable costs include gasoline, oil, grease, repairs, depreciation, and tires. The fixed charges per

mile are found to vary inversely with the mileage traveled, while the variable costs vary directly with the mileage.

The first item under fixed charges is the interest on the investment. The net investment should include the cost of all equipment. The Motor Truck Red Book and Directory, 1934 Edition, lists the following items which should be included:

- | | |
|----------------------------|----------------------------|
| 1. Chassis cost, F.O.B. | 12. Fifth Wheel or |
| 2. Tires | Towing Hook (in- |
| 3. Four Wheel Brakes | cluding installation) |
| 4. Electric Starting & | 13. Additional tires |
| Lighting Equipment | 14. Semi or four-wheeled |
| 5. Helper Springs | trailer chassis |
| 6. Front bumper | 15. Body (trailer) |
| 7. Cab & Windshield | 16. Painting |
| 8. Body (Truck) | 17. Cost of assembling and |
| 9. Other extras | equipping (applies |
| 10. Delivery charges | when purchaser in- |
| (extra for a trailer | stalls body or other |
| combination) | equipment). |
| 11. Trailer Brake Connect- | |
| ion | |

TOTAL INVESTMENT-----	_____
LESS REPLACEMENT	
COST OF TIRES-----	_____
NET INVESTMENT-----	_____

The replacement cost of the tires is deducted, due to their rate of depreciation being much greater than that of the balance of the equipment. Usually many sets of tires are using during the life of the truck. Tire expense is included under variable costs. The net investment should represent the total cost to the user of the truck and of all equipment ready for service, less tire cost. The interest charge is made on the undepreciated

investment only. The total investment is reduced by the depreciation charges (the method of depreciating will be explained further on in this section), which are usually made in equal amounts until the investment is fully written off, so that the average investment during the term is one-half of the total investment. Therefore the interest is charged on one-half instead of the entire amount. Equal results are accomplished if half the interest rate is charged on the entire amount. (This is not exactly true, since the theory of future worth does not follow such a path. For all practical purposes in this industry, however, this reasoning is satisfactory). The usual interest rate is 6 per cent per year.

Insurance charges should include the cost of fire and theft, public liability, property damage, collision, cargo, and employers liability coverage. Since these rates are different for various localities and conditions, the actual amount charged by each operator will vary accordingly.

Garage expenses are the next item on the list. This should include such items as rent, heat, power, and light. In certain cases, the trucks are merely stored in a public garage - the company having no such building of its own.

The license fees should include the state registration tax and any other assessment in the form of

franchise, property tax, or other privilege, paid to the city, county or state authorities. It is important to note here that for interstate trucks all the license fees for each state should be included. The two items registration and taxes are covered by this paragraph.

Under the administrative expenses come the various items of accounting, supervision, office rent, solicitation of business, legal, advertising, and similar expenses.

The driver's wages are subject to considerable variation and the exact amount which the proposed operation expects to pay should be entered. Each driver is covered by the workmen's compensation insurance, which amount should be included under the general insurance item. The practice in New England has been to group this compensation insurance cost with the driver's wages, but that is not strictly correct since the charge is merely one more form of insurance which the operator must have in order to operate his trucks.

There are many different theories as to exactly what should be included as fixed charges, but certainly the items mentioned so far are very definitely fixed cost items. One author says, "Spare trucks or substitute

trucks hire should be included in the fixed (maintenance) charges, as it is assumed that each truck will be out of service approximately 15 days in each year for repairs, overhauling, painting, etc. When a large fleet is operated, one substitute truck for every 20 trucks in the

fleet will insure continuous operation. Driver's wages should not be included, as the regular driver will drive the substitute truck. Where substitute trucks are hired, the daily rate paid should be the amount charged."

Such items, however, are not too general in character - they are more for the individual operator, and it is the aim of this section to be as general as possible.

Now there appears a totally different group of charges, the variable costs. Whereas the percentage of fixed charges to the total cost decreases rapidly when the mileage is increased, the percentage of the variable charges increases a proportional amount. The variable charges also are likely to vary from one section of the country to another, due to the different prices of gasoline, oil, grease, tires, labor for repairs, etc.

Variable Charges

The first item under variable charges is the depreciation. The exact procedure for charging off the depreciation is a large problem, but several satisfactory answers have been developed. Mr. C. G. Anthony, president of the Pacific Freight Lines (Los Angeles) in an exhibit presented before the California State Railroad Commission in March 1932 made some interesting observations with regard to this item - "Depreciation was figured on a mileage basis. We believe this to be more accurate as it does not charge an idle truck with the same rate as the truck covering 200 to 300 miles daily. On the

time basis, depreciation becomes a fixed charge; while on the mileage basis it becomes a variable cost." Mr. Anthony further found that maintenance plus depreciation for 100,000 miles just about equals maintenance plus depreciation on a 200,000 mile basis. As the number of miles allotted to the life of a truck is increased, the depreciation per mile decreases; but this reduction of depreciation cost is offset by the fact that maintenance increases as parts exhaust their service lives and must be replaced.* The Motor Truck Red Book and Directory, 1934 Edition, to which we have referred so often has several very pertinent comments to make on this question and therefore we will again take the liberty of quoting this book:

"Depreciation on the net investment should consider the size of the truck, mileage, quality of construction, obsolescence, and type of service it will be expected to give. One large company, making all sizes of trucks, recommends that depreciation be set up on a yearly basis if the annual mileage is below 25,000 and on a mileage basis if the annual mileage exceeds 25,000 as shown in the table:

Size of Truck	Probable Depreciation Life	
	Years	Miles
1/2 to 1 ton	2 - 4	50,000 to 70,000
1 1/2 to 2 ton	3 - 5	75,000 to 100,000
2 1/2 to 4 1/2	4 - 6	100,000 to 125,000
5 to 7 1/2	5 - 8	125,000 to 150,000

"Another manufacturer bases the depreciation charges against all sizes of trucks on the estimated life in miles, the range being 150,000 to 300,000 miles, depending upon the nature of the operating conditions, unless the low annual mileage would extend the life beyond eight years. In the latter event, the rate of depreciation is fixed on the basis of time instead of mileage.

*From Principles of Motor Transportation, by Ford K. Edwards.

"The Bureau of Internal Revenue of the Treasury Department, in January, 1931, issued a booklet entitled 'Depreciation Studies' which contained a table showing the probable useful life of motor vehicles. This table is given below:

	<u>Probable Useful Life</u>	<u>Depreciation Rate</u>
Electric	10 years	10%
Gas..Under \$1000	3 years	33%
\$1000 to \$1500	4 years	25%
\$1500 to \$2500	5 years	20%
Over \$2500	6 years	17%

"One of the largest operators having all sizes and several makes in its fleet, depreciates its motor trucks on a yearly basis with a definite salvage value deducted from the initial cost of the truck. One and one-half ton trucks, such as Fords and Chevrolets, are depreciated on an estimated life of three years, with a salvage value of \$50. The next group costing up to \$2000 is estimated to have a life of four years and a salvage value of \$300. Trucks valued at \$2000 are depreciated on a basis of five years and a salvage value of \$450 and those between \$3000 and \$4000 six years, with a salvage value of \$575. The last group, those costing over \$4,000 are depreciated on a basis of eight years life with a salvage value of \$600.

"Trailers may be depreciated on a basis of five to eight years life depending upon operating conditions or, if depreciated on a mileage basis, about twice the tractor mileage.

"If a truck or any other piece of machinery is kept in good operating condition through careful maintenance, and replacement made of worn or broken parts, there is practically no limit to its life. However, obsolescence, change in operating conditions, or requirement of continuous service demands that a limitation be placed upon the economic life of the truck regardless of the fact that it may have considerable useful mileage left in it.

"Usually the yearly costs are to be converted to a daily basis, considering 300 working days to the year. However, if the service is seasonal, or the trucks are not operated six days a week, the costs should be determined on a basis of fewer working days per year. All mileage costs can be converted to a daily basis by first making a careful estimate of the average daily mileage from the proposed routes or schedules and then multiplying the cost per mile by this average mileage."

The importance of the depreciation charge is quite obvious from a glance at the variable charges in Appendix VII. They alone amount to nearly $1/4$ of the total variable cost. The method of charging depreciation is dependent upon the company and the truck for which the costing is done. It is important to note, however, that although the methods may vary considerably the results obtained for the final cost data are nearly the same. The most important single consideration when making the charge for depreciation is to make sure that a reasonable charge is made. For example, it would be quite foolish to charge depreciation on a truck for three years when you planned to make the truck last for four or five. Although this fact seems very elementary the number of mistakes of this general character that are made is quite astounding. A number of efficient operators write off more depreciation the first year than the succeeding years. The advantage claimed for this procedure lies in the equalization of combined shop and depreciation costs. This principle is obtained by a nationwide parcel-delivery service which writes off one-third the value of a truck the first year, one-third of the remainder the second year, one-third of the remainder the third year, etc. Theoretically the entire amount is never retired but at the end of the fifth year the depreciation fund so accumulated approximate 86% of the original value of the truck, not including

interest earnings on the fund.* Again let us say that the actual amount charged off in each individual case depends upon factors too numerous to be considered here, but that whatever the method used it should be the result of careful study and consideration in order to make the correct charge - not too small nor too large. However, one trend in the industry should be mentioned; this is the trend towards greater yearly mileage per truck - one operator who pays very close and intelligent attention to his costs gave the following figures which are quite indicative of the trend: 1917 - 18,144 miles per year, 1925 - 21,200, 1931 - 30,000, 1935 - 50,000. Of course many of the long-haul companies drive distances much greater than these during a year, but these figures should be very close to the general average.

Another variable charge item amounting to over 1/3 of the total variable cost is the item of repairs and maintenance. Very close attention should be paid to this item - laxness can make the repair bill mount far above a reasonable amount and thus it must be carefully controlled. On the other hand, repairs and overhauling of chassis and body are subject to considerable variation, due to the many factors which affect these costs, such as size of load carried, average speed, character of the roads, driver's

*This case from Principles of Transportation-Ford K. Edwards.

ability, cost of labor, type of inspection and repairs, etc. The Motor Truck Red Book* has this section on the subject of maintenance:

"For estimating purposes, where the trucks are run over hard-surfaced roads at normal speeds, and with normal loads, repair and maintenance costs may be assumed as follows:

Repair and Maintenance

1/2 to 1 1/2 tons	.020 cents per mile
2 to 3 tons	.025 cents per mile
3 1/2 to 4 1/2 tons	.0275 cents per mile
5 to 6 tons	.0300 cents per mile
7 1/2 tons	.0400 cents per mile

Note: - when used as a tractor, to haul trailers, add 20%. The above figures are amply high and much lower costs apply to trucks of the highest grade."

The repairs item should also include the cost of repainting once a year. This charge usually runs between 50 and 100 dollars per year. To illustrate what can be done to reduce the repair expenses it is interesting that the Keeshin Transcontinental Freight Lines paint and letter their trailers for \$15 a job when outsiders quote \$120 as their price. It will be noticed that the Repairs item on Appendix VII is considerably larger than the discussion indicates is necessary. This difference is due to the fact that several other factors such as ropes and canvas are included. Again it should be remembered that at best the repair item is quite variable in itself and

*Motor Truck Red Book and Directory-1934 Edition P. 65.

should not be considered constant for any two situations.

The third important factor in the variable charges is that of gasoline, oil, grease, etc. At the risk of becoming monotonous the Motor Truck Red Book* will again be quoted:

"Garage supplies, such as grease, rags, kerosene, anti-freeze, etc., are covered in this item by a sliding scale which should not be in direct proportion to the mileage covered but should depend also upon how often the trucks are greased and washed. A fair average is about 25 cents per day, increased to 30 or 35 cents for extra large trucks or long daily mileage.

"The cost of gasoline fluctuates throughout the different seasons of the year and a conservative price, somewhat above the average, should be assumed. If bought at wholesale, use the tank wagon price with tax added. For mileage per gallon of fuel it is best to use actual performance figures wherever they are available. The grades encountered on the routes and the frequency of stopping and starting are factors which govern the fuel consumption. Lacking actual operating data, the following figures can be used for estimating purposes.

Size	Gasoline Consumption	
	Medium Duty	Heavy Duty
1 1/2 to 2 tons	12 to 14 miles per gallon	8 to 12 miles per gal.
2 to 4 1/2 tons	8 to 11 miles per gallon	5 to 8 miles per gal.
5 to 7 1/2 tons	4 to 7 miles per gallon	3 to 5 miles per gal.

"The average cost of oil to fleets is about 50 cents per gallon and the consumption depends largely upon operating condition. For estimating purposes it can be assumed that the oil consumption is approximately:"

1 1/2 to 2 ton	400 to 500 miles per gallon
2 1/2 to 4 1/2 ton	300 to 400 miles per gallon
5 to 7 1/2 ton	200 to 300 miles per gallon

*Motor Truck Red Book and Directory, 1934 Edition, P. 66

The amount of the gasoline item in Appendix XII is quite enough to show that this is an important item in the costs.

The last item in the variable charges is the cost of the tires and their repairs. The life of good tires should average at least 30,000 miles (from data collected by Mr. Irving Malkin in 1932 - the age should be longer at the date of this writing, although no recent data was collected on this item.)

The study of trucking costs is very complicated and no attempt will be made in this thesis to make any such study. There are, however, several generalities which are of interest and are pertinent to this study.

Cost Trends

The costs of hauling freight by motor truck have decreased very materially during the past 20 years. Appendix XIII illustrates the degree of this decrease. The final point on the curve (that for 1936) was prepared by the authors from the cost data in Appendix VII. One comment should be made concerning this 1936 cost. The cost data in Appendix VII was made up by a large New England operator who is working under contract to one of the railroads in Boston and performing their pickup and delivery service. The data which forms Appendix X shows very clearly a very much lower per mile cost than that found in Appendix VII. The data in Appendix X came from the largest truck operator

in the country - Keeshin Transcontinental Freight Lines - which does a gross revenue business of \$6,000,000 per year. It would seem to indicate quite clearly that costs can still be reduced considerably by careful management. Each item under the variable expenses in the Keeshin account is well under the size of those in Appendix VII. Some of this reduction is due to the advantages to be gained by large quantity buying (such items as gasoline) and some due to the excellent management of the Keeshin Lines. It is difficult to predict just when the average cost level will be as low as that of the Keeshin company, but it seems fairly safe to say that since one large operator has proven it possible to make such costs it is merely a matter of time before the small operators make such costs or are forced to sell to the larger operators who can make the costs. The slope of the cost curve in Appendix XIII is remarkable. It is obvious that the costs cannot continue to decrease at this same rate for a great deal longer simply because they can never become nothing. This remarkable decrease is due to several factors. The equipment now in use is much more satisfactory than that in use 10 years ago. Likewise the industry has grown and in turn the operators have been able to run their trucks greater mileages. Obviously each extra mile reduces the burden of fixed charges per mile. It is apparent that the costs will continue to decrease, but it is also apparent that the rate of de-

crease will ease up considerably within the next year or so, and will continue downward slowly for the next few years. It might even be supposed that the Motor Carrier Act will cause many consolidations so that before very many years the trucking industry in the country will be controlled by a few very large companies. If this is true and the equipment continues to improve at the present rate a cost of 10¢ per mile is not an impossibility, providing always, of course, that the companies are in competition so that there will be some incentive to reach such a rate.

Time Costs

The fixed charges are often called the time costs. This time cost applies whether the truck is rolling or standing and is in direct proportion to the hours operated within the limits of an average working day, which is usually nine hours and will be considered so in further calculations. From the chart in Appendix VIII it is quite obvious that the fixed charges become more and more important as the miles per hour decrease. Thus the fixed charges are 50% of the total cost at 10 M. P. H. and only 30% of the total cost at 25 M. P. H. The speed of 10 M. P. H. is usually considered to be the average speed of a truck passing through Boston. There is, however, difference between the speed of a truck passing through a city, such as a line haul truck making for the open road, and

that of a delivery truck. A glance at Appendix XXVI shows that the speed of the trucks making deliveries cannot be much greater than 7 M. P. H. on the average - excluding suburban deliveries. By the same calculations as those shown in Appendix VIII it is found that the fixed charges are now 60% of the total cost, As the previous discussion of depreciation indicated, many operators feel that depreciation for delivery trucks should be charged on a time basis, in which case the depreciation cost obviously becomes a fixed charge. The calculations in Appendix XIV show that the fixed charges are now a still higher percentage of the total - 63% to be exact)Note: - the calculations in Appendices VIII and XIV might be criticized because the costs employed are not those of the usual size truck used in delivery service. However, there are two excellent answers to such criticism. The first is that the costs are the only accurate recent ones which were available. The second is that they only serve as an illustration of a principle and it is quite apparent that the costs of the ordinary delivery truck would bear the same general relationships.) Thus it is obvious that the fixed charges are indeed an important factor in the delivery costs. Another indication of the importance of the time element in the cost can be drawn from Appendix XII. A glance at this revenue breakdown shows that wages are by far the largest item on the entire list, almost as large as all the remaining items together -

and yet the wages must be paid whether the truck is earning money or not during the delivery time!

All the fixed costs continue to operate when the truck is idle just as they do when it is in operation. Since they are such a large percentage of the total cost of delivery it is important that the truck be made to work productively as much as possible, or that the company be compensated somehow for the idle time. The discussion regarding costs which has already been presented showed where the fixed charges originate, as well as the sources of the variable costs. From these it is easy to see that the fixed cost is a time cost. With the fixed cost amounting to 63% of the total cost of the truck making the deliveries, it is obvious that delays are expensive, and thus any method which can be devised to lessen the idle time or to compensate the operator for this idle time should be a valuable suggestion. The next section of the report will analyze the sources of idle time during delivery with a view towards making such suggestions.

DELIVERY

In Section II of this part of this report it was shown how certain elements in the delivery problem affect the cost and how significant variations in these elements will cause variations in the cost. It was not attempted in the previous section to show in what manner these elements did vary, but merely that significant results would follow such variation. In this section, which is the third, it will be shown to what extent variations in these elements are dependent on each other and why these variations have or do not have an important bearing on the problem. Some of these elements are as follows: types of articles delivered, the distances between deliveries, road and traffic conditions, differences in localities, size of shipments, customer's location, hour of delivery. To talk of the possible ways in which these elements cause significant variations in the delivery problem does not have much meaning, but when it is seen from inspection that all affect the length of time which is required to get the articles being delivered from the freight terminal or entrance into the city, then the method of proof can be understood.

Type of Delivery

The first element which will be discussed is the degree to which variations in the type of delivery are possible. Appendix XXVI shows the complete data which was taken on this subject. From that sheet it can be

seen that the only important ways in which the articles delivered may vary are in number and total weight to any particular customer. The largest number of individual packages which were delivered to one customer was 26. The total weight of this shipment was only 693 pounds, while shipments up to 1300 pounds were encountered, and made in only two packages. Appendix XV shows that the frequency of deliveries was greatest in the smallest number of packages, the one-package delivery being the most frequent of all. Lack of correlation between either of these factors and the delivery time is shown in Appendices XVI and XVII. At first thought it would be expected that delivery time would increase noticeably with the total weight of the shipment. A study of the figures shown in Appendix XVI will indicate that this is not true of the range which was covered in detail. To be sure, the largest delivery time was on the largest shipment, but on the other hand, delivery times as long as 17 minutes were observed for shipments under 100 pounds, and times as short as 6 minutes, for deliveries over 1,000 pounds. A trend may be noticed, however, in that a larger percentage of deliveries under 100 pounds were made in shorter times than those over 100 pounds. It is obvious that no charge other than one based on

weight can be made for this service, even though there is only a slight correlation. When the number of packages per delivery is considered, there is found to be an even less consistent effect on time. The tabulation of this data is shown in Appendix XVII. The longest delivery time of all, 25 minutes, was for two packages, the great delay being caused by inadequate facilities for receiving, while 26 packages, the largest number, were delivered in only 6 minutes. These two examples, together with a study of the tabulation in Appendix XXVI, show the complete lack of dependence of time on the number of packages being delivered, and the consequent impossibility of setting up any kind of a rate system based on this element. The natural assumption would be that service charges should be based on weight unless some factor should be found to affect the time (and through that the cost) enough to warrant variations in this basic weight charge. From this discussion it can be seen that the type of delivery does not affect the time in any manner consistent enough to have charges based on this variation.

Size of Shipment

A second element affecting the problem, and one which bears a close relation to the first, is the matter of size of delivery, (See Appendix XXIII for range covered) where this size is large enough so that the

number of stops that a truck will have to make to deliver its entire load is materially affected. Normally there will be a number of small packages to each customer in a truck load, and about 20 to 30 stops will have to be made. This is approximately the average number of stops made on the trips on which we took personal observations. A certain percentage of the total time is required for driving. If, however, the size of orders becomes much larger so that a truck need make only two or three stops, there will be an obvious reduction in the percentage of which driving time is of the total. This matter was not covered at all from personal observation, but the fact is shown by the practices of two of the larger companies in setting up their rates. One company reduces the pickup or delivery charges per hundred pounds 20% on loads between 5,000 and 10,000 pounds to or from one address with no reduction under 5,000 pounds. When the shipment is over 10,000, a reduction of 40% is made. Another company has a system which amounts to the same thing. In its lowest price pickup and delivery zone, the charge is 10¢ per hundred pounds on shipments under 2,000 pounds, 8¢ per hundred, between 2,000 and 10,000 pounds, 6¢ between 10,000 and 15,000, and 5¢ per hundred pounds for shipments over 15,000 pounds. Reductions in higher rate zones are proportional. There is slight difference

between these two. In the second, the 20% reduction comes at 2,000 pounds, while the 40% reduction covers the 10,000 to 15,000 range. A further reduction occurs at the 15,000 pound mark. The similarity of these two schedules, both of them based on intelligent study of costs, shows that there is a very definite relation between the size of the shipment and the delivery problems. In this connection the size of the truck must be considered.

The larger the truck used, the more it will be possible to carry loads which will take a long time to load and unload in proportion to the time required to move from one store door to another. This is not necessarily true, so that there is no basic way in which costs are affected in a reasonable way for a rate basis.

Traffic Conditions

Traffic conditions and road conditions vary with the hour of the day, and together with it constitute three elements which affect the problem. These are so tied up with each other that they should not be discussed separately. Each of these elements was recorded on the original collection of data and tabulated on the record of all deliveries, (Appendix XXVI). In Appendix XVIII is shown a chart giving the proportionate number of times light, medium, or heavy traffic was encountered. It might be judged from this graph that a very definite

standard was set up defining exactly the differences between these conditions, but this is not the case; it was a matter of opinion only. The traffic was considered light when the truck could run through the streets unhindered except by traffic lights or by a momentary maneuver of another vehicle, medium, when streets were filled with vehicles, but could not be called blocked because the traffic moved slightly at regular intervals, and heavy, when there were extended periods in which there was no movement, this condition being due to other causes than traffic lights. It can be seen that traffic was seldom heavy enough to cause any trouble, and therefore cannot be said to affect the total time necessary to complete a delivery to any appreciable extent. A small amount of time must be allotted to this cause but it is small and need not be considered. Furthermore, this running time is unpredictable.

Traffic delays are most certainly the cause of waste time, and even though there is no definite way in which they could be made to affect rates, yet the time so wasted must be spread over all deliveries. Suggestions made by drivers, shown in Appendix XIX, show how this could be cut down by the use of small trucks. Road conditions constitute an element which might affect the problem

of delivery seriously, but did not in this case. Heavy snow always results in slowing up traffic and blocking streets, and delivery alleys, to which access is desired. Time needed to traverse streets in this condition cannot be charged to the customer, unless the alley is blocked, when a special charge can be made, to take care of the additional cost.

Accurate data on the movement of traffic in different hours is shown in Appendix XX. The total number of trucks crossing the indicated boundaries of downtown Boston in the periods noted in June of 1927 and 1932 is shown. Boston is unusual in that the metropolitan area extends to a considerable area beyond that shown on the map, and in fact includes other municipalities. Whatever truck movement was taking place in the downtown part of the city proper would be reflected in a similar movement throughout the metropolitan district. For this reason the number of trucks crossing these boundaries will vary directly with the movement within the area itself, and with the traffic density. A study of the figures presented will show the variations of density in the downtown area. There can be seen to be two peaks, both of them rather flat, one occurring at about 10 A.M., and the other at about 3 P.M. Activity starts in earnest at about the time of the first peak and gradually stops toward the noon hour when most deliveries

are finished. Most of these deliveries are of goods that have come by night travel from distant cities. The afternoon peak is caused mostly by pickup service, and dropped off almost completely at six o'clock, the hour when stores close up and all goods must be collected at the freight terminal for packing in the large trucks for inter-city delivery. That these peaks do represent different service can be seen through the obvious fact that persons receiving freight will want it delivered the first thing in the morning, while if they are shipping it, they will want to be allowed as much time as possible to collect every article which should be shipped, thus causing the afternoon pickup rush. That most of the trucks in this count are engaged in local business is seen when it is considered that most intercity trucking leaves its origin after 6 o'clock and arrives at its destination before 7 A. M. the next day. Both of these curves are remarkably flat. During the entire working day from eight to five-thirty, there was not more than a 25% variation in the count, except in the hour from 12 to 1. This is not a significant variation, so that even if it could be shown that traffic caused serious enough delays to affect costs appreciably, there would be no variation due to time of day which could be put into the rates. Furthermore, this would be unfair to the customers, who are not

responsible for conditions outside of their own premises. An attempt has therefore been made in this section to show that time of day, as it causes variations in traffic conditions, and condition of the streets traveled, as regards both motor vehicles and natural phenomena, do not affect the total time for delivery sufficiently for variations dependent on them to be incorporated into the rates.

Location of Customer

Another element which might conceivably have sufficient effect on the delivery problem so that it might be used as a basis for rates is the locale of the customer. Differences of locale, naturally, arise mainly from differences in distance from the terminal, but there are also differences of locale arising from the location of the customers' places of business on different streets located at the same distance from the terminal. This would mainly be reflected in different degrees of traffic concentration. It has already been shown that this is an element which does not affect the problem in a manner which would enable the effect to be translated into variations in rates. There is, however, another effect which comes from differences in locale. That is the kind of street the establishment is located on. In uncongested districts, where property is not so valuable, the streets can be wide, and difficulties of delivery are very slight. In the

parts of town where property is valuable, particularly in Boston, the tendency has been to have very narrow streets and even narrower side-walks. Often, too, the trucks will have to force an entry into a small and possibly blocked alley. Some of these conditions are those which can be helped by the customer. He is naturally not to blame for the district in which he is located; he is, however, to blame for a blocked alley. This condition will show that he is not receiving goods fast enough to let the trucks get away and new ones come into the platform. He should be penalized for this. (The matter is discussed more fully under conditions of delivery). We find, therefore, that except as locale affects the actual condition at the entrance to the customer's establishment it cannot enter into the problem significantly for lack of any fair basis for variations in the rates. The problem of delivery conditions will be discussed later under a separate heading.

Delivery Conditions

Delivery conditions, especially as they affect the time required for completion of delivery, constitute one of the most important elements in this problem of how delivery time is affected in significant enough ways to cause rate variations. It has been seen in this section already that most of the other elements in the problem are not significant except as they affect the delivery conditions. A study of the original data chart, Appendix XXVI, shows that delivery time is approximately equal to

the running time. If costs depend on time, we have here a significant amount of the costs, approximately 50%, being run up when the truck is standing still. In the next division of this section we will attempt to show the grounds for the 50% of the cost which arises from running time; here, we will attempt to allocate to its various causes the other half of the time when the truck is standing still. The data chart shows most of the material under this topic in a form which cannot be adequately be reduced to a graph or other form of tabulation. Appendix XXI does however give a list of all delivery occurrences and conditions encountered according to the frequency with which each took place. The large data chart must be used to find how the time of delivery varied with the severity of these elements. It can be seen that in a large proportion of the times there were no important factors which delayed delivery time appreciably, this being true in nearly half of the cases. Most of the causes for trouble were the fault of the receiver and could have been corrected by him. Not only were some of the deliveries above the first floor, but in some cases it was necessary to wait for a considerable time before the elevator could be used. Other delays were caused by the necessity for the driver to go to some remote corner of the building to collect money due. The elevator may be inoperative during this collection thus causing the same delay to the driver

attempting to make the next delivery, and in any case, the truck is standing in the doorway or at the delivery platform to keep the next one from coming in. In only 7 of these deliveries was the delay caused by blocking of the public street, a factor beyond the control of the customer. We have shown in this section that delivery time is not primarily on the weight of shipment, number of packages, or other elements external to the customer. It is obvious, therefore, that the most important cause is the delay brought about after the truck has reached or attempted to reach the delivery or platform. Several companies have adopted the rule of charging extra for service which takes place under these conditions. In the 1934 edition of the Motor Truck Red Book and Directory are contained suggestions on this very matter. There is recommendation that an extra charge of 10¢ per hundred pounds, with a minimum charge of 25¢ be made in all cases where delivery cannot take place on the street level and within 25 feet of the tail-gate of the truck. This is not an attempt to cover the actual cost of such service. It is rather in the nature of a fine or penalty, which purports to curtail the existence of such situations. There is no one of these which could not be prevented by the customer. For example, even if he is located on the fifth floor of a building,

he can come down to the street level to receive the shipment and pay for it, if that is necessary, when he is notified that it has arrived. Most buildings have some sort of building service which could be employed for this purpose. If regulations such as these were lived up to, the customers would find the service very much improved. They would be able to make a considerable dent in the 50% of the total time which is wasted in idle truck time, and less time would be allowed for both deliveries and pickups.

A condition of delivery which causes trouble on occasions arises when the consignee does not or cannot accept the shipment. This may, of course, be the fault of the carrier company through failure to follow well known rules of particular companies who, for example, never accept deliveries after certain specified hours. These rules, however, are usually understood by the truck operator, and the more usual cause for trouble arises from the consignee himself. Either he has changed his rules so that the hours for delivery are different, or else the entrance is blocked, and access to it is impossible. It is obvious that a special charge should be made when these conditions exist. The truckman should not be required to wait or to return a second time to the

store. An equitable settlement of this problem would be to place a charge in the nature of a fine or penalty on top of the regular tariff whenever, through no fault of the driver or company, a delivery cannot be made at first attempt. Congestion in the street, or similar difficulty not under the control of the consignee, must not be included in conditions bringing on this charge. This charge should be the same as that for irregular delivery, 10¢ per hundred pounds, minimum charge of 25¢, for each re-delivery. This charge has already been incorporated into the general tariff regulations by some companies.

Delivery Distance

The last element to be discussed is distance. This is the matter about which there is the greatest contention. Some companies do not pay very much attention to it and do not make much of an effort towards an equitable disposition of the problem. The result is that some customers which obviously cost the companies much less for pick-up and delivery must pay as much as those which cost much more. On what grounds can the matter be settled? It has been shown that excluding the present problem of distance, the only element which can be incorporated into the rates is the matter of delivery conditions.

If variations on the basis of distance are made, no matter by what method, there will be objectors. Establishments located near the terminal will feel entitled to lower rates than those further away or located in areas less accessible. Consider, however, the truck driver as he starts out from the terminal with a load to be delivered. It is up to this driver to map out the most easily covered route. If he was to follow the suggestions of customers, he would have to draw concentric circles around the terminal on a map, and take the places of business of customers in the order of distance, measured in straight lines, from the terminal. This would obviously be a foolish procedure. The driver must figure out how to get to all the addresses given in the shortest time, and do this consistently if he wants to keep his job. He must know where the one-way streets are, and which end of particular streets the numbers are located, so he will know at what cross street to turn in. Most drivers follow very circuitous routes, which have been determined with some little forethought. The care which they have taken in this matter shown in the record of their suggestions, Appendix XIX. One driver particularly wished to see more efficiency in the terminals so packages could be placed on the trucks

in the correct order for easy delivery. Such a system as this does not leave much room for the complaints of the customer "just down the street" who feels he can be reached most easily, should be reached the first, and should be charged the least. It may be that according to the route the driver has laid out this customer will be the last attended to.

Average speed between deliveries has not been computed. It is about five miles per hour, however. A glance at Appendix VIII will show that at this speed the cost of truck operation per hour is considerably less than at greater speeds. There is bound to come a time when the distance of the customer desiring pick-up or delivery service from the terminal is great enough, and the district in which he is located enough removed from the central density of traffic, so the driving time necessary to reach the establishment will be a larger part of the total time than it is for service in the heart of the city. Also the factory or other place of business if in an outlying town, will probably not be close to other places desiring service, and the truck will have to go far from its accustomed route to make the delivery or pick-up. When these conditions begin to occur, there is a different problem from the one of the man

"down the street". Distance must be considered in making up the rate. Obviously the only equitable basis for doing this is by zones. These zones must include contiguous territory. For example, the first zone around a Boston terminal must include all of downtown Boston, which is the area in which the circuitous routes are made. No division of territory could be considered equitable if one of these winding routes crossed over into a higher priced territory and then returned to the central zone. The definitions of this central zone are very varying as made by different companies. The results of the investigation on this subject are shown on the large map, Appendix XXVII. The different areas outlined represent different truckmen's opinions as to the point at which the time needed for delivery is noticeable increased due only to the distance. Other factors which might increase the time and which have been disposed of in this section must be eliminated.

The opinions of five different persons on this subject are shown on this map. Both extremes of thought are represented. The boundary marked in red, that of company B, shows the territory covered by a company which feels that the time of delivery is sufficiently constant only in the district usually

known as Boston proper for rated to be unvariable. The blue boundary is the recommendation of the Motor Truck Rate Bureau of Massachusetts. It includes the entire city section of the metropolitan district. The green boundary shows the corporate limits of Boston. It represents an agreement between railroads who will give pick-up and delivery service to any part of the municipality in which the terminal is located. The brown and yellow boundaries are of approximately the same area. They include all territory whose main business lies in Boston and which is commonly called the metropolitan district, although the official boundaries of this district are somewhat different.

CONCLUSIONS

The discussion of the elements which has been produced shows clearly that there are many variables in the delivery problem. It is quite obvious that each variable cannot be taken into account for each delivery or each pick-up, since every one of these stops is different from any other one. Any rate system which would take all these variables into account, and thus produce the absolutely accurate cost of the delivery, would be so complicated as to be entirely worthless. Thus the rates must be set so that the least disadvantage will be incurred from each of the elements. It is to this end that our discussion has been drawn, and there remains only to combine these separate conclusions into the most feasible final decision.

There is no doubt that the delivery and pick-up rates can be separated from the line haul rates without causing any difficulty to the customer or the truckman. That this sort of differentiation would be of value is quite certain. If the customer chose to attack the rate charged on his freight because he believed that he was being overcharged for the pick-up and delivery service, the challenge could be directed at the charge attached for this service

instead of the entire rate including the line haul charge. Thus any problem of this sort would be simplified materially, both for the carrier and the customer.

The important question of the method to be employed in varying the delivery charge must now be answered. The previous discussion of the elements has shown clearly that the cost varies as the size of shipment, and rate should take this fact into account. The traffic conditions, road conditions, distance, and other similar items are too variable to allow a special charge for these on each delivery. Therefore, the charges for these elements must be consolidated into a single charge. The simplest mode of accomplishment for this problem is quite clearly the zoning method. By the use of the zoning method it is possible to allow for the distances, the traffic and road conditions in a slight measure, and any special consideration such as tunnel expense, etc. Thus, the delivery rate should be composed of a definite set of charges, made by weight of the shipment, which are effective within a certain zone or set of zones.

These conclusions, however, have been drawn only on those elements which cannot be avoided, and

over which the carrier or the customer has very little control. The largest single time waste has not been touched. This waste is in the delivery time after the truck has arrived at the customer's door. It has been shown how and where this waste originates. The problem is then the manner in which either this waste can be reduced or the carrier receive compensation for the waste. The method which several companies have just put into effect appears to be the one which incorporates the most practical advantages over any others. This is the plan of making an extra charge for any deliveries which cannot be made directly from the platform of the truck without entailing any further effort by the truckman. The truckman is compensated for his waste effort and there is a real inducement for the customer to have the proper delivery facilities. It is unnecessary to discuss the pros and cons of this plan here since the entire plan has been covered thoroughly in another part of the report. It should be recorded, however, that this plan is the easiest to operate and would tend to cause less dissension among the customers than any other.

The combination of these three ideas then provides the final basis for the delivery rate. The rate

thus produced is easy to determine for each shipment, allows the carrier a fair return as well as giving certain beneficial opportunities to the customers, and does not give rise to unfair discrimination.

RECOMMENDATIONS

As a result of the foregoing conclusions we make the following recommendations.

1. The line haul and service (pick-up and delivery) charges should be computed separately. The tariff should be provided with a separate rate scale for each charge.
2. The service charges should be made proportional to the weight of the shipment.
3. The service charges should be made constant within certain definite zones to be defined in the rules and regulations appended to the tariff.
4. An extra charge of 10¢ per hundred pounds with a minimum of 25¢ should be assessed if collection or delivery cannot be made on the street level within 25 feet of the tail-gate of the truck.
5. If, for any reason beyond the carrier's control, a shipment is not accepted when tendered for delivery, and a re-delivery must be made, an additional charge of 10¢ per hundred pounds with a minimum of 25¢ should be assessed for each re-delivery.

APPENDICES

APPENDIX I

MOTOR CARRIER ACT

[PUBLIC—No. 255—74TH CONGRESS]

[S. 1629]

AN ACT

To amend the Interstate Commerce Act, as amended, by providing for the regulation of the transportation of passengers and property by motor carriers operating in interstate or foreign commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Interstate Commerce Act, as amended, herein referred to as "Part I", is hereby amended by inserting at the beginning thereof the caption "part I", and by substituting for the words "this Act", wherever they occur, the words "this part", but such part I may continue to be cited as the "Interstate Commerce Act", and said Interstate Commerce Act is hereby further amended by adding the following part II:

"PART II

"SHORT TITLE

"SEC. 201. This part may be cited as the 'Motor Carrier Act, 1935'.

"DECLARATION OF POLICY AND DELEGATION OF JURISDICTION

"SEC. 202. (a) It is hereby declared to be the policy of Congress to regulate transportation by motor carriers in such manner as to recognize and preserve the inherent advantages of, and foster sound economic conditions in, such transportation and among such carriers in the public interest; promote adequate, economical, and efficient service by motor carriers, and reasonable charges therefor, without unjust discriminations, undue preferences or advantages, and unfair or destructive competitive practices; improve the relations between, and coordinate transportation by and regulation of, motor carriers and other carriers; develop and preserve a highway transportation system properly adapted to the needs of the commerce of the United States and of the national defense; and cooperate with the several States and the duly authorized officials thereof and with any organization of motor carriers in the administration and enforcement of this part.

"(b) The provisions of this part apply to the transportation of passengers or property by motor carriers engaged in interstate or foreign commerce and to the procurement of and the provision of facilities for such transportation, and the regulation of such transportation, and of the procurement thereof, and the provision of facilities therefor, is hereby vested in the Interstate Commerce Commission.

"(c) Nothing in this part shall be construed to affect the powers of taxation of the several States or to authorize a motor carrier to

do an intrastate business on the highways of any State, or to interfere with the exclusive exercise by each State of the power of regulation of intrastate commerce by motor carriers on the highways thereof.

“ DEFINITIONS

“ SEC. 203. (a) As used in this part—

“(1) The term ‘person’ means any individual, firm, copartnership, corporation, company, association, or joint-stock association; and includes any trustee, receiver, assignee, or personal representative thereof.

“(2) The term ‘board’ or ‘State board’ means the commission, board, or official (by whatever name designated in the laws of a State) which, under the laws of any State in which any part of the service in interstate or foreign commerce regulated by this part is performed, has or may hereafter have jurisdiction to grant or approve certificates of public convenience and necessity or permits to motor carriers, or otherwise to regulate the business of transportation by motor vehicles, in intrastate commerce over the highways of such State.

“(3) The term ‘Commission’ means the Interstate Commerce Commission.

“(4) The term ‘joint board’ means any special board constituted as provided in section 205 of this part.

“(5) The term ‘certificate’ means a certificate of public convenience and necessity issued under this part to common carriers by motor vehicle.

“(6) The term ‘permit’ means a permit issued under this part to contract carriers by motor vehicle.

“(7) The term ‘license’ means a license issued under this part to a broker.

“(8) The term ‘State’ means any of the several States and the District of Columbia.

“(9) The term ‘express company’ means any common carrier by express subject to the provisions of part I.

“(10) The term ‘interstate commerce’ means commerce between any place in a State and any place in another State or between places in the same State through another State, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, or water.

“(11) The term ‘foreign commerce’ means commerce between any place in the United States and any place in a foreign country, or between places in the United States through any foreign country, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, or water.

“(12) The term ‘highway’ means the roads, highways, streets, and ways in any State.

“(13) The term ‘motor vehicle’ means any vehicle, machine, tractor, trailer, or semitrailer propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property, but does not include any vehicle, locomotive, or car operated exclusively on a rail or rails.

“(14) The term ‘common carrier by motor vehicle’ means any person who or which undertakes, whether directly or by a lease or any

other arrangement, to transport passengers or property, or any class or classes of property, for the general public in interstate or foreign commerce by motor vehicle for compensation, whether over regular or irregular routes, including such motor vehicle operations of carriers by rail or water, and of express or forwarding companies, except to the extent that these operations are subject to the provisions of part I.

“(15) The term ‘contract carrier by motor vehicle’ means any person, not included under paragraph (14) of this section, who or which, under special and individual contracts or agreements, and whether directly or by a lease or any other arrangement, transports passengers or property in interstate or foreign commerce by motor vehicle for compensation.

“(16) The term ‘motor carrier’ includes both a common carrier by motor vehicle and a contract carrier by motor vehicle.

“(17) The term ‘private carrier of property by motor vehicle’ means any person not included in the terms ‘common carrier by motor vehicle’ or ‘contract carrier by motor vehicle’, who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent, or bailment, or in furtherance of any commercial enterprise.

“(18) The term ‘broker’ means any person not included in the term ‘motor carrier’ and not a bona fide employee or agent of any such carrier, who or which, as principal or agent, sells or offers for sale any transportation subject to this part, or negotiates for, or holds himself or itself out by solicitation, advertisement, or otherwise as one who sells, provides, furnishes, contracts, or arranges for such transportation.

“(19) The ‘services’ and ‘transportation’ to which this part applies include all vehicles operated by, for, or in the interest of any motor carrier irrespective of ownership or of contract, express or implied, together with all facilities and property operated or controlled by any such carrier or carriers and used in the transportation of passengers or property in interstate or foreign commerce or in the performance of any service in connection therewith.

“(20) The term ‘interstate operation’ means any operation in interstate commerce.

“(21) The term ‘foreign operation’ means any operation in foreign commerce.

“(b) Nothing in this part, except the provisions of section 204 relative to qualifications and maximum hours of service of employees and safety of operation or standards of equipment shall be construed to include (1) motor vehicles employed solely in transporting school children and teachers to or from school; or (2) taxicabs, or other motor vehicles performing a bona fide taxicab service, having a capacity of not more than six passengers and not operated on a regular route or between fixed termini; or (3) motor vehicles owned or operated by or on behalf of hotels and used exclusively for the transportation of hotel patrons between hotels and local railroad or other common carrier stations; or (4) motor vehicles operated, under authorization, regulation, and control of the Secretary of the Interior, principally for the purpose of transporting persons in and about

the national parks and national monuments; or (4a) motor vehicles controlled and operated by any farmer, and used in the transportation of his agricultural commodities and products thereof, or in the transportation of supplies to his farm; or (4b) motor vehicles controlled and operated by a cooperative association as defined in the Agricultural Marketing Act, approved June 15, 1929, as amended; or (5) trolley busses operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service; or (6) motor vehicles used exclusively in carrying livestock, fish (including shell fish), or agricultural commodities (not including manufactured products thereof); or (7) motor vehicles used exclusively in the distribution of newspapers; nor, unless and to the extent that the Commission shall from time to time find that such application is necessary to carry out the policy of Congress enunciated in section 202, shall the provisions of this part, except the provisions of section 204 relative to qualifications and maximum hours of service of employees and safety of operation or standards of equipment apply to: (8) The transportation of passengers or property in interstate or foreign commerce wholly within a municipality or between contiguous municipalities or within a zone adjacent to and commercially a part of any such municipality or municipalities, except when such transportation is under a common control, management, or arrangement for a continuous carriage or shipment to or from a point without such municipality, municipalities, or zone, and provided that the motor carrier engaged in such transportation of passengers over regular or irregular route or routes in interstate commerce is also lawfully engaged in the intrastate transportation of passengers over the entire length of such interstate route or routes in accordance with the laws of each State having jurisdiction; or (9) the casual, occasional, or reciprocal transportation of passengers or property in interstate or foreign commerce for compensation by any person not engaged in transportation by motor vehicle as a regular occupation or business.

"GENERAL DUTIES AND POWERS OF THE COMMISSION

"SEC. 204 (a) It shall be the duty of the Commission—

"(1) To regulate common carriers by motor vehicle as provided in this part, and to that end the Commission may establish reasonable requirements with respect to continuous and adequate service, transportation of baggage and express, uniform systems of accounts, records, and reports, preservation of records, qualifications and maximum hours of service of employees, and safety of operation and equipment.

"(2) To regulate contract carriers by motor vehicle as provided in this part, and to that end the Commission may establish reasonable requirements with respect to uniform systems of accounts, records, and reports, preservation of records, qualifications and maximum hours of service of employees, and safety of operation and equipment.

"(3) To establish for private carriers of property by motor vehicle, if need therefor is found, reasonable requirements to promote safety of operation, and to that end prescribe qualifications and maximum hours of service of employees, and standards of equipment. In the

event such requirements are established, the term 'motor carrier' shall be construed to include private carriers of property by motor vehicle in the administration of sections 204 (d) and (e); 205; 220; 221; 222 (a), (b), (d), (f), and (g); and 224.

"(4) To regulate brokers as provided in this part, and to that end the Commission may establish reasonable requirements with respect to licensing, financial responsibility, accounts, records, reports, operations, and practices of any such person or persons.

"(5) For the purpose of carrying out the provisions pertaining to safety, the Commission may avail itself of the assistance of any of the several research agencies of the Federal Government having special knowledge of any such matter, to conduct such scientific and technical researches, investigations, and tests as may be necessary to promote the safety of operation and equipment of motor vehicles as provided in this part; the Commission may transfer to such agency or agencies such funds as may be necessary and available to make this provision effective.

"(6) To administer, execute, and enforce all other provisions of this part, to make all necessary orders in connection therewith, and to prescribe rules, regulations, and procedure for such administration; and

"(7) To inquire into the organization of motor carriers and brokers and into the management of their business, to keep itself informed as to the manner and method in which the same is conducted, and to transmit to Congress, from time to time, such recommendations as to additional legislation relating to such carriers or brokers as the Commission may deem necessary.

"(b) The provisions of any code of fair competition for any industry embracing motor carriers or for any subdivision thereof approved pursuant to the National Industrial Recovery Act or any present or future Act amendatory thereof, or supplementary thereto, or in substitution therefor, which is in conflict or inconsistent with any action under the provisions of this part, shall have no force or effect after this section becomes effective.

"(c) The Commission may from time to time establish such just and reasonable classifications of brokers or of groups of carriers included in the term 'common carrier by motor vehicle', or 'contract carrier by motor vehicle', as the special nature of the services performed by such carriers or brokers shall require; and such just and reasonable rules, regulations, and requirements, consistent with the provisions of this part, to be observed by the carriers or brokers so classified or grouped, as the Commission deems necessary or desirable in the public interest.

"(d) Upon complaint in writing to the Commission by any person, State board, organization, or body politic, or upon its own initiative without complaint, the Commission may investigate whether any motor carrier or broker has failed to comply with any provision of this part, or with any requirement established pursuant thereto. If the Commission, after notice and hearing, finds upon any such investigation that the motor carrier or broker has failed to comply with any such provision or requirement, the Commission shall issue an appropriate order to compel the carrier or broker to comply therewith. Whenever the Commission is of opinion that

any complaint does not state reasonable grounds for investigation and action on its part, it may dismiss such complaint.

“(e) After a decision, order, or requirement has been made by the Commission in any proceeding under this part, any party thereto may make application to the Commission for reconsideration or rehearing of the same, or of any matter determined therein, and it shall be lawful for the Commission in its discretion to grant such reconsideration or a rehearing if sufficient reason therefor be made to appear. Applications for reconsideration or rehearing shall be governed by such general rules as the Commission may prescribe. No such application shall excuse any motor carrier or broker from complying with or obeying any decision, order, or requirement of the Commission, or operate in any manner to stay or postpone the enforcement thereof, without the special order of the Commission. If, after such reconsideration or rehearing, it shall appear that the original decision, order, or requirement is in any respect unjust or unwarranted, the Commission may reverse, change, or modify the same accordingly. Any decision, order, or requirement made after such reconsideration or rehearing shall be subject to the same provisions as an original decision, order, or requirement.

“(f) The provisions of sections 14 and 16 (13) of part I, relating to reports, decisions, schedules, contracts, and other public records, shall apply in the administration of this part.

“ADMINISTRATION

“SEC. 205. (a) Excepting a matter which is referred to a joint board as hereinafter provided, any matter arising in the administration of this part requiring a hearing shall be heard and decided by the Commission, or shall, by order of the Commission, be referred to a member or examiner of the Commission for hearing and the recommendation of an appropriate order thereon. With respect to such matter the member or examiner shall have all the rights, duties, powers, and jurisdiction conferred by this part upon the Commission, except that the order recommended by such member or examiner shall be subject to the following provisions of this paragraph. Any order recommended by the member or examiner with respect to such matter shall be in writing and be accompanied by the reasons therefor, and shall be filed with the Commission. Copies of such recommended order shall be served upon the persons specified in paragraph (f), who may file exceptions thereto, but if no exceptions are filed within 20 days after service upon such persons, or within such further period as the Commission may authorize, such recommended order shall become the order of the Commission and become effective, unless within such period the order is stayed or postponed by the Commission. Where exceptions are filed as herein provided it shall be the duty of the Commission to consider the same and, if sufficient reason appears therefor, the Commission shall grant such review or make such orders or hold or authorize such further hearings or proceedings in the premises as may be necessary or proper to carry out the purposes of this part, or the Commission may, on its own motion, review any such matter and take action thereon as if exceptions thereto had been

filed. The Commission, after review upon the same record or as supplemented by a further hearing, shall decide the matter and make appropriate order thereon.

“(b) The Commission shall, when operations of motor carriers or brokers conducted or proposed to be conducted involve not more than three States, and the Commission may, in its discretion, when operations of motor carriers or brokers conducted or proposed to be conducted involve more than three States, refer to a joint board for appropriate proceedings thereon, any of the following matters arising in the administration of this part with respect to such operations: Applications for certificates, permits, or licenses; the suspension, change, or revocation of such certificates, permits, or licenses; applications for the approval and authorization of consolidations, mergers, and acquisitions of control or operating contracts; complaints as to violations by motor carriers or brokers of the requirements established under section 204 (a); and complaints as to rates, fares, and charges of motor carriers or the practices of brokers: *Provided, however,* That if the Commission is prevented by legal proceedings from referring a matter to a joint board, it may determine such matter as provided in paragraph (a) of this section. The Commission, in its discretion, may also refer to a joint board any investigation and suspension proceeding or other matter not specifically mentioned above which may arise under this part. The joint board to which any such matter is referred shall be composed solely of one member from each State within which the motor-carrier or brokerage operations involved in such matter are or are proposed to be conducted: *Provided,* That the Commission may designate an examiner or examiners to advise with and assist the joint board under such rules and regulations as it may prescribe. In acting upon matters so referred joint boards shall be vested with the same rights, duties, powers, and jurisdiction as are hereinbefore vested in members or examiners of the Commission while acting under its orders in the administration of this part. Orders recommended by joint boards shall be filed with the Commission, and shall become orders of the Commission and become effective in the same manner, and shall be subject to the same procedure, as provided in the case of orders recommended by members or examiners under this section.

“(c) Whenever there arises in the administration of this part any matter that the Commission is required to refer to a joint board, or that the Commission determines, in its discretion, to refer to a joint board, the Commission shall, if no joint board eligible to consider said matter is in existence, create a joint board to consider the matter when referred, and to recommend appropriate order thereon. The Commission shall prescribe rules governing meetings and procedure of joint boards and may, in the event of legal proceedings preventing reference to a joint board, determine the matter as provided in paragraph (a) of this section. Except as hereinafter provided, a joint board shall consist of a member from each State in which the motor carrier or brokerage operations involved are or are proposed to be conducted. The member from any such State shall be nominated by the board of such State from its own membership or otherwise; or if there is no board in such State or if the

board of such State fails to make a nomination when requested by the Commission, then the Governor of such State may nominate such member. The Commission is authorized to appoint as a member upon the joint board any such nominee approved by it. If both the Board and the Governor of any State shall fail to nominate a joint board member when requested, then the joint board shall be constituted without a member from such State, if members for two or more States shall have been nominated and approved by the Commission. All decisions and recommendations by joint boards shall be by majority vote. If the board of each State from which a member of a joint board is entitled to be appointed shall waive action on any matter referred to such joint board, or if any joint board fails or refuses to act, or is unable to agree upon any matter submitted to it within forty-five days after the matter is referred to it or such other period as the Commission may authorize, or if a member shall not be nominated for more than one State (except only when the operations proposed shall be into or through territory foreign to the United States), then such matter shall be decided as in the case of any matter not required to be referred to a joint board. When any proceeding required to be referred to a joint board shall involve operations of a motor carrier conducted or proposed to be conducted into or through territory foreign to the United States, if a single State shall be involved, or if only one State shall make nomination of a joint board member through its Governor or State board, then the Commission, in such case, may receive from that State the nomination of not more than three members and may appoint such nominees to constitute the joint board. Members of joint boards when administering the provisions of this part shall receive such allowances for travel and subsistence expenses as the Commission shall provide. A joint board shall continue in existence for the consideration of matters referred to it by the Commission until such time as its existence may be terminated by the Commission. A substitution of membership upon a joint board from any State may be made at any time by nomination and appointment in the same manner as an original nomination and appointment.

“(d) Where practicable and as the Commission may by rule or order direct, hearings by any member, examiner, or joint board upon any matter referred to him or to such board shall be held at such places within the United States as are convenient to the parties.

“(e) So far as may be necessary for the purposes of this part, the Commission and the members and examiners thereof and joint boards shall have the same power to administer oaths, and require by subpoena the attendance and testimony of witnesses and the production of books, papers, tariffs, contracts, agreements, and documents, and to take testimony by deposition, relating to any matter under investigation, as the Commission has in a matter arising under part I; and any person subpoenaed or testifying in connection with any matter under investigation under this part shall have the same rights, privileges, and immunities and be subject to the same duties, liabilities, and penalties as though such matter arose under part I, unless otherwise provided in this part.

“(f) In accordance with rules prescribed by the Commission, reasonable notice shall be afforded, in connection with any proceeding

under this part, to interested parties and to the board of any State, or to the governor if there be no board, in which the motor-carrier operations involved in the proceeding are or are proposed to be conducted, and opportunity for hearing and for intervention in connection with any such proceeding shall be afforded to all interested parties.

“(g) The Commission is authorized to confer with or to hold joint hearings with any authorities of any State in connection with any matter arising in any proceedings under this part. The Commission is also authorized to avail itself of the cooperation, services, records, and facilities of such State authorities as fully as may be practicable, in the enforcement or administration of any provision of this part. From any space in the Interstate Commerce Commission Building not required by the Commission, the Government authority controlling the allocation of space in public buildings shall assign for the use of the national organization of the State commissions and of their representatives suitable office space and facilities which shall be at all times available for the use of joint boards created under this part and for members and representatives of such boards cooperating with the Commission or with any other Federal commission or department under this or any other Act; and if there be no such suitable space in the Interstate Commerce Commission Building, the same shall be assigned in some other building in convenient proximity thereto.

“(h) Any final order made under this part shall be subject to the same right of relief in court by any party in interest as is now provided in respect to orders of the Commission made under part I: *Provided*, That, where the Commission, in respect of any matter arising under this part, shall have issued a negative order solely because of a supposed lack of power, any such party in interest may file a bill of complaint with the appropriate District Court of the United States, convened under the Urgent Deficiency Appropriations Act, October 22, 1913, and such court, if it determines that the Commission has such power, may enforce by writ of mandatory injunction the Commission's taking of jurisdiction.

“(i) All the provisions of section 17 of part I shall apply to all proceedings under this part.

“(j) No member or examiner of the Commission or member of a joint board shall hold any official relation to, or own any securities of, or be in any manner pecuniarily interested in, any motor carrier or in any carrier by railroad, water, or other form of transportation.

“(k) The Commission is authorized to employ, and to fix the compensation of, such experts, assistants, special agents, examiners, attorneys, and other employees as in its judgment may be necessary or advisable for the convenience of the public and for the effective administration of this part.

“APPLICATION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

“SEC. 206. (a) No common carrier by motor vehicle subject to the provisions of this part shall engage in any interstate or foreign operation on any public highway, or within any reservation under the exclusive jurisdiction of the United States, unless there is in force

with respect to such carrier a certificate of public convenience and necessity issued by the Commission authorizing such operations: *Provided, however,* That, subject to section 210, if any such carrier or predecessor in interest was in bona fide operation as a common carrier by motor vehicle on June 1, 1935, over the route or routes or within the territory for which application is made and has so operated since that time, or if engaged in furnishing seasonal service only, was in bona fide operation on June 1, 1935, during the season ordinarily covered by its operation, except in either instance as to interruptions of service over which the applicant or its predecessor in interest had no control, the Commission shall issue such certificate without requiring further proof that public convenience and necessity will be served by such operation, and without further proceedings, if application for such certificate is made to the Commission as provided in paragraph (b) of this section and within one hundred and twenty days after this section shall take effect, and if such carrier was registered on June 1, 1935, under any code of fair competition requiring registration, the fact of registration shall be evidence of bona fide operation to be considered in connection with the issuance of such certificate. Otherwise the application for such certificate shall be decided in accordance with the procedure provided for in section 207 (a) of this part and such certificate shall be issued or denied accordingly. Pending the determination of any such application the continuance of such operation shall be lawful: *And provided further,* That this paragraph shall not be so construed as to require any such carrier lawfully engaged in operation solely within any State to obtain from the Commission a certificate authorizing the transportation by such carrier of passengers or property in interstate or foreign commerce between places within such State if there be a board in such State having authority to grant or approve such certificates and if such carrier has obtained such certificate from such board. Such transportation shall, however, be otherwise subject to the jurisdiction of the Commission under this part.

“(b) Application for certificates shall be made in writing to the Commission, be verified under oath, and shall be in such form and contain such information and be accompanied by proof of service upon such interested parties as the Commission shall, by regulation, require. Any person, not included within the provisions of paragraph (a) of this section, who or which is engaged in transportation in interstate or foreign commerce as a common carrier by motor vehicle when this section takes effect may continue such operation for a period of one hundred and twenty days thereafter without a certificate and, if application for such certificate is made to the Commission within such period, the carrier may, under such regulations as the Commission shall prescribe, continue such operation until otherwise ordered by the Commission.

“ISSUANCE OF CERTIFICATE

“SEC. 207. (a) Subject to section 210, a certificate shall be issued to any qualified applicant therefor, authorizing the whole or any part of the operations covered by the application, if it is found that the applicant is fit, willing, and able properly to perform the service proposed and to conform to the provisions of this part and the

requirements, rules, and regulations of the Commission thereunder, and that the proposed service, to the extent to be authorized by the certificate, is or will be required by the present or future public convenience and necessity; otherwise such application shall be denied: *Provided, however,* That no such certificate shall be issued to any common carrier of passengers by motor vehicle for operations over other than a regular route or routes, and between fixed termini, except as such carriers may be authorized to engage in special or charter operations.

“(b) No certificate issued under this part shall confer any proprietary or property rights in the use of the public highways.

“TERMS AND CONDITIONS OF CERTIFICATE

“SEC. 208. (a) Any certificate issued under section 206 or 207 shall specify the service to be rendered and the routes over which, the fixed termini, if any, between which, and the intermediate and off-route points, if any, at which, and in case of operations not over specified routes or between fixed termini, the territory within which, the motor carrier is authorized to operate; and there shall, at the time of issuance and from time to time thereafter, be attached to the exercise of the privileges granted by the certificate such reasonable terms, conditions, and limitations as the public convenience and necessity may from time to time require, including terms, conditions, and limitations as to the extension of the route or routes of the carrier, and such terms and conditions as are necessary to carry out, with respect to the operations of the carrier, the requirements established by the Commission under section 204 (a) (1) and (6): *Provided, however,* That no terms, conditions, or limitations shall restrict the right of the carrier to add to his or its equipment and facilities over the routes, between the termini, or within the territory specified in the certificate, as the development of the business and the demands of the public shall require.

“(b) A common carrier by motor vehicle operating under any such certificate may occasionally deviate from the route over which, and/or the fixed termini between which, it is authorized to operate under the certificate, under such general or special rules and regulations as the Commission may prescribe.

“(c) Any common carrier by motor vehicle transporting passengers under a certificate issued under this part may transport in interstate or foreign commerce to any place special or chartered parties under such rules and regulations as the Commission shall have prescribed.

“(d) A certificate for the transportation of passengers may include authority to transport in the same vehicle with the passengers, newspapers, baggage of passengers, express, or mail, or to transport baggage of passengers in a separate vehicle.

“PERMITS FOR CONTRACT CARRIERS BY MOTOR VEHICLE

“SEC. 209. (a) No person shall engage in the business of a contract carrier by motor vehicle in interstate or foreign commerce on any public highway or within any reservation under the exclusive jurisdiction of the United States unless there is in force with respect to

such carrier a permit issued by the Commission, authorizing such person to engage in such business: *Provided*, That, subject to section 210, if any such carrier or a predecessor in interest was in bona fide operation as a contract carrier by motor vehicle on July 1, 1935, over the route or routes or within the territory for which application is made and has so operated since that time, or, if engaged in furnishing seasonal service, only, was in bona fide operation on July 1, 1935, during the season ordinarily covered by its operations, except in either instance as to interruptions of service over which the applicant or its predecessor in interest had no control, the Commission shall issue such permit, without further proceedings, if application for such permit is made to the Commission as provided in paragraph (b) of this section and within one hundred and twenty days after this section shall take effect and if such carrier was registered on July 1, 1935, under any code of fair competition requiring registration, the fact of registration shall be evidence of bona fide operation to be considered in connection with the issuance of such permit. Otherwise the application for such permit shall be decided in accordance with the procedure provided for in paragraph (b) of this section and such permit shall be issued or denied accordingly. Pending determination of any such application the continuance of such operation shall be lawful. Any person, not included within the foregoing provisions of this paragraph, who or which is engaged in transportation as a contract carrier by motor vehicle when this section takes effect, may continue such operation for a period of one hundred and twenty days thereafter without a permit and, if application for such permit is made within such period, the carrier may, under such regulations as the Commission shall prescribe, continue such operation until otherwise ordered by the Commission: *Provided further*, That nothing in this part shall be construed to repeal, amend, or otherwise modify any Act or Acts relating to national parks and national monuments under the administrative jurisdiction of the Secretary of the Interior, or to withdraw such authority or control as may by law be held by the Secretary of the Interior with respect to the admission and operation of motor vehicles in any national park or national monument of the United States.

“(b) Applications for such permits shall be made to the Commission in writing, be verified under oath, and shall be in such form and contain such information and be accompanied by proof of service upon such interested parties as the Commission may, by regulations, require. Subject to section 210, a permit shall be issued to any qualified applicant therefor authorizing in whole or in part the operations covered by the application, if it appears from the applications or from any hearing held thereon, that the applicant is fit, willing, and able properly to perform the service of a contract carrier by motor vehicle, and to conform to the provisions of this part and the lawful requirements, rules, and regulations of the Commission thereunder, and that the proposed operation, to the extent authorized by the permit, will be consistent with the public interest and the policy declared in section 202 (a) of this part; otherwise such application shall be denied. The Commission shall specify in the permit the business of the contract carrier covered thereby and the scope thereof

and shall attach to it, at the time of issuance, and from time to time thereafter, such reasonable terms, conditions, and limitations consistent with the character of the holder as a contract carrier as are necessary to carry out, with respect to the operations of such carrier, the requirements established by the Commission under section 204 (a) (2) and (6): *Provided, however*, That no terms, conditions, or limitations shall restrict the right of the carrier to substitute or add contracts within the scope of the permit, or to add to his or its equipment and facilities, within the scope of the permit, as the development of the business and the demands of the public may require.

“ DUAL OPERATION

“ SEC. 210. No person, after January 1, 1936, shall at the same time hold under this part a certificate as a common carrier and a permit as a contract carrier authorizing operation for the transportation of property by motor vehicle over the same route or within the same territory, unless for good cause shown the Commission shall find that such certificate and permit may be held consistently with the public interest and with the policy declared in section 202 (a) of this part.

“ BROKERAGE LICENSES

“ SEC. 211. (a) No person shall for compensation sell or offer for sale transportation subject to this part or shall make any contract, agreement, or arrangement to provide, procure, furnish, or arrange for such transportation or shall hold himself or itself out by advertisement, solicitation, or otherwise as one who sells, provides, procures, contracts, or arranges for such transportation, unless such person holds a broker's license issued by the Commission to engage in such transactions: *Provided, however*, That no such person shall engage in transportation subject to this part unless he holds a certificate or permit as provided in this part. In the execution of any contract, agreement, or arrangement to sell, provide, procure, furnish, or arrange for such transportation, it shall be unlawful for such person to employ any carrier by motor vehicle who or which is not the lawful holder of an effective certificate or permit issued as provided in this part: *And provided further*, That the provisions of this paragraph shall not apply to any carrier holding a certificate or a permit under the provisions of this part or to any bona fide employee or agent of such motor carrier, so far as concerns transportation to be furnished wholly by such carrier or jointly with other motor carriers holding like certificates or permits, or with a common carrier by railroad, express, or water.

“(b) A brokerage license shall be issued to any qualified applicant therefor, authorizing the whole or any part of the operations covered by the application, if it is found that the applicant is fit, willing, and able properly to perform the service proposed and to conform to the provisions of this part and the requirements, rules, and regulations of the Commission thereunder, and that the proposed service, to the extent to be authorized by the license, is, or will be consistent with the public interest and the policy declared in section 202 (a) of this part; otherwise such application shall be denied.

Any broker in operation when this section takes effect may continue such operation for a period of one hundred and twenty days thereafter without a license, and if application for such license is made within such period, the broker may, under such regulations as the Commission shall prescribe, continue such operations until otherwise ordered by the Commission.

“(c) The Commission shall prescribe reasonable rules and regulations for the protection of travelers or shippers by motor vehicle, to be observed by any person holding a brokerage license, and no such license shall be issued or remain in force unless such person shall have furnished a bond or other security approved by the Commission, in such form and amount as will insure financial responsibility and the supplying of authorized transportation in accordance with contracts, agreements, or arrangements therefor.

“(d) The Commission and its special agents and examiners shall have the same authority as to accounts, reports, and records, including inspection and preservation thereof, of any person holding a brokerage license issued under the provisions of this section, that they have under this part with respect to motor carriers subject thereto.

“SUSPENSION, CHANGE, REVOCATION, AND TRANSFER OF CERTIFICATES, PERMITS, AND LICENSES

“SEC. 212. (a) Certificates, permits, and licenses shall be effective from the date specified therein, and shall remain in effect until terminated as herein provided. Any such certificate, permit, or license may, upon application of the holder thereof, in the discretion of the Commission, be amended or revoked, in whole or in part, or may upon complaint, or on the Commission's own initiative, after notice and hearing, be suspended, changed, or revoked, in whole or in part, for willful failure to comply with any provision of this part, or with any lawful order, rule, or regulation of the Commission promulgated thereunder, or with any term, condition, or limitation of such certificate, permit, or license: *Provided, however,* That no such certificate, permit, or license shall be revoked (except upon application of the holder) unless the holder thereof willfully fails to comply, within a reasonable time, not less than ninety days, to be fixed by the Commission, with a lawful order of the Commission, made as provided in section 204 (d), commanding obedience to the provision of this part, or to the rule or regulation of the Commission thereunder, or to the term, condition, or limitation of such certificate, permit, or license, found by the Commission to have been violated by such holder.

“(b) Except as provided in section 213, any certificate or permit may be transferred, pursuant to such rules and regulations as the Commission may prescribe.

“CONSOLIDATION, MERGER, AND ACQUISITION OF CONTROL

“SEC. 213. (a) It shall be lawful, under the conditions specified below, but under no other conditions, for two or more motor carriers which are not also carriers by railroad to consolidate or merge their properties, or any part thereof, into one corporation for the ownership, management, and/or operation of the properties theretofore

in separate ownership; or for any such motor carrier or two or more such carriers jointly, to purchase, lease, or contract to operate the properties, or any part thereof, of another such carrier; or for any such motor carrier or two or more such carriers jointly, to acquire control of another such carrier through purchase of its stock; or for a person which is not a motor carrier or a carrier by railroad, or express, or water to acquire control of two or more motor carriers through ownership of their stock; or for any such person which has control of one or more motor carriers to acquire control of another such carrier through ownership of its stock; or for a carrier by railroad, express, or water to consolidate, or merge with, or acquire control of, any motor carrier or to purchase, lease, or contract to operate its properties, or any part thereof.

“(1) Whenever a consolidation, merger, purchase, lease, operating contract, or acquisition of control is proposed under this section, the carrier or carriers or the person seeking authority therefor shall present an application to the Commission, and thereupon the Commission shall notify the Governor of each State in which any part of the properties or operations of the carriers involved in the proposed transaction is situated, and also such carriers and the applicant or applicants, and other parties known to have a substantial interest in the proceeding of the time and place for a public hearing. If after such hearing the Commission finds that the transaction proposed will be consistent with the public interest and that the conditions of this section have been or will be fulfilled, it may enter an order approving and authorizing such consolidation, merger, purchase, lease, operating contract, or acquisition of control, upon such terms and conditions as it shall find to be just and reasonable and with such modifications as it may prescribe: *Provided, however,* That if a carrier other than a motor carrier is an applicant, or any person which is controlled by such a carrier other than a motor carrier or affiliated therewith within the meaning of section 5 (8) of part I, the Commission shall not enter such an order unless it finds that the transaction proposed will promote the public interest by enabling such carrier other than a motor carrier to use service by motor vehicle to public advantage in its operations and will not unduly restrain competition.

“(2) Whenever a person which is not a motor carrier is authorized, by an order entered under subparagraph (1) of this section, to acquire control of any such carrier or of two or more such carriers, such person thereafter shall, to the extent provided by the Commission, for the purposes of section 204 (a) (1), and section 220 (a) and (b), relating to accounts, records, and reports, and to the inspection of facilities and records, including the penalties applicable in the case of violations thereof, be subject to the provisions of this part.

“(b) (1) It shall be unlawful for any person, except as provided in paragraph (a), to accomplish or effectuate, or to participate in accomplishing or effectuating, the control or management in a common interest of any two or more motor carriers which are not also carriers by railroad, however such result is attained, whether directly or indirectly, by use of common directors, officers, or stockholders, a holding or investment company or companies, a voting trust or

trusts, or in any other manner whatsoever. It shall be unlawful to continue to maintain control or management accomplished or effectuated after the enactment of this part and in violation of this paragraph. As used in this paragraph, the words "control or management" shall be construed to include the power to exercise control or management.

"(2) The Commission is hereby authorized, upon complaint or upon its own initiative without complaint, but after notice and hearing, to investigate and determine whether any person is violating the provisions of paragraph (b) (1) of this section. If the Commission finds after such investigation that such person is violating the provisions of such paragraph, it shall by order require such person to take such action consistent with the provisions of this part as may be necessary, in the opinion of the Commission, to prevent further violation of such provisions.

"(3) For the purposes of this section, wherever reference is made to control, it is immaterial whether such control is direct or indirect.

"(c) The district courts of the United States shall have jurisdiction upon the application of the Commission, alleging a violation of any of the provisions of this section or disobedience of any order issued by the Commission thereunder by any person, to issue such writs of injunction or other proper process, mandatory or otherwise, as may be necessary to restrain such person from violation of such provision or to compel obedience to such order.

"(d) The Commission may from time to time, for good cause shown, make such orders, supplemental to any order made under paragraphs (a) or (b), as it may deem necessary or appropriate.

"(e) Except where a carrier other than a motor carrier is an applicant or any person which is controlled by such a carrier or carriers by railroad or affiliated therewith within the meaning of section 5 (8) of part I, the provisions of this section requiring authority from the Commission for consolidation, merger, purchase, lease, operating contract, or acquisition of control shall not apply where the total number of motor vehicles involved is not more than twenty.

"(f) The carriers and any person affected by any order made under the foregoing provisions of this section shall be, and they are hereby, relieved from the operation of the 'antitrust laws', as designated in section 1 of the Act entitled 'An Act to supplement existing laws against unlawful restraints, and monopolies, and for other purposes', approved October 15, 1914, and of all other restraints or prohibitions by or imposed under authority of law, State or Federal, insofar as may be necessary to enable them to do anything authorized or required by such order.

" ISSUANCE OF SECURITIES

"SEC. 214. Common or contract carriers by motor vehicle, corporations organized for the purpose of engaging in transportation as such carriers, and corporations authorized by order entered under section 213 (a) (1) to acquire control of any such carrier, or of two or more such carriers, shall be subject to the provisions of paragraphs 2 to 11, inclusive, of section 20a of part I of this Act (including penalties applicable in cases of violations thereof): *Provided, however,* That said provisions shall not apply to such

carriers or corporations where the par value of the securities to be issued, together with the par value of the securities then outstanding, does not exceed \$500,000. In the case of securities having no par value, the par value for the purpose of this section shall be the fair market value as of the date of their issue: *Provided further,* That the exemption in section 3 (a) (6) of the 'Securities Act, 1933' is hereby amended to read as follows: '(6) Any security issued by a common or contract carrier, the issuance of which is subject to the provisions of section 20a of the Interstate Commerce Act, as amended;'

" SECURITY FOR THE PROTECTION OF THE PUBLIC

"SEC. 215. No certificate or permit shall be issued to a motor carrier or remain in force, unless such carrier complies with such reasonable rules and regulations as the Commission shall prescribe governing the filing and approval of surety bonds, policies of insurance, qualifications as a self-insurer or other securities or agreements, in such reasonable amount as the Commission may require, conditioned to pay, within the amount of such surety bonds, policies of insurance, qualifications as a self-insurer or other securities or agreements, any final judgment recovered against such motor carrier for bodily injuries to or the death of any person resulting from the negligent operation, maintenance, or use of motor vehicles under such certificate or permit, or for loss or damage to property of others. The Commission may, in its discretion and under such rules and regulations as it shall prescribe, require any such common carrier to file a surety bond, policies of insurance, qualifications as a self-insurer, or other securities or agreements, in a sum to be determined by the Commission, to be conditioned upon such carrier making compensation to shippers and/or consignees for all property belong¹ to shippers and/or consignees, and coming into the possession of such carrier in connection with its transportation service. Any carrier which may be required by law to compensate a shipper and/or consignee for any loss, damage, or default for which a connecting motor common carrier is legally responsible shall be subrogated to the rights of such shipper and/or consignee under any such bond, policies of insurance, or other securities or agreements, to the extent of the sum so paid.

" RATES, FARES, AND CHARGES OF COMMON CARRIERS BY MOTOR VEHICLE

"SEC. 216. (a) It shall be the duty of every common carrier of passengers by motor vehicle to establish reasonable through routes with other such common carriers and to provide safe and adequate service, equipment, and facilities for the transportation of passengers in interstate or foreign commerce; to establish, observe, and enforce just and reasonable individual and joint rates, fares, and charges, and just and reasonable regulations and practices relating thereto, and to the issuance, form, and substance of tickets, the carrying of personal, sample, and excess baggage, the facilities for transportation, and all other matters relating to or connected with the transportation of passengers in interstate or foreign commerce; and in case of such joint rates, fares, and charges, to establish just, reason-

¹ So in original.

able, and equitable divisions thereof as between the carriers participating therein which shall not unduly prefer or prejudice any of such participating carriers.

“(b) It shall be the duty of every common carrier of property by motor vehicle to provide safe and adequate service, equipment, and facilities for the transportation of property in interstate or foreign commerce; to establish, observe, and enforce just and reasonable rates, charges, and classifications, and just and reasonable regulations and practices relating thereto and to the manner and method of presenting, marking, packing, and delivering property for transportation, the facilities for transportation, and all other matters relating to or connected with the transportation of property in interstate or foreign commerce.

“(c) Common carriers of property by motor vehicle may establish reasonable through routes and joint rates, charges, and classifications with other such carriers or with common carriers by railroad and/or express and/or water; and common carriers of passengers by motor vehicle may establish reasonable through routes and joint rates, fares, or charges with common carriers by railroad and/or water. In case of such joint rates, fares, or charges it shall be the duty of the carriers parties thereto to establish just and reasonable regulations and practices in connection therewith, and just, reasonable, and equitable divisions thereof as between the carriers participating therein which shall not unduly prefer or prejudice any of such participating carriers.

“(d) It shall be unlawful for any common carrier by motor vehicle engaged in interstate or foreign commerce to make, give, or cause any undue or unreasonable preference or advantage to any particular person, port, gateway, locality, or description of traffic in any respect whatsoever, or to subject any particular person, port, gateway, locality, or description of traffic to any unjust discrimination or any undue or unreasonable prejudice or disadvantage in any respect whatsoever: *Provided, however*, That this paragraph shall not be construed to apply to discriminations, prejudice or disadvantage to the traffic of any other carrier of whatever description.

“(e) Any person, State board, organization, or body politic may make complaint in writing to the Commission that any such rate, fare, charge, classification, rule, regulation, or practice, in effect or proposed to be put into effect, is or will be in violation of this section or of section 217. Whenever, after hearing, upon complaint or in an investigation on its own initiative, the Commission shall be of the opinion that any individual or joint rate, fare, or charge, demanded, charged, or collected by any common carrier or carriers by motor vehicle or by any common carrier or carriers by motor vehicle in conjunction with any common carrier or carriers by railroad and/or express, and/or water for transportation in interstate or foreign commerce, or any classification, rule, regulation, or practice whatsoever of such carrier or carriers affecting such rate, fare, or charge or the value of the service thereunder, is or will be unjust or unreasonable, or unjustly discriminatory or unduly preferential or unduly prejudicial, it shall determine and prescribe the lawful rate, fare, or charge or the maximum or minimum, or maximum and minimum rate, fare, or charge thereafter to be

observed, or the lawful classification, rule, regulation, or practice thereafter to be made effective and the Commission shall, whenever deemed by it to be necessary or desirable in the public interest, after hearing, upon complaint or upon its own initiative without a complaint, establish through routes and joint rates, fares, charges, regulations, or practices, applicable to the transportation of passengers by common carriers by motor vehicle, or the maxima or minima, or maxima and minima, to be charged, and the terms and conditions under which such through routes shall be operated: *Provided, however*, That nothing in this part shall empower the Commission to prescribe, or in any manner regulate, the rate, fare, or charge for intrastate transportation, or for any service connected therewith, for the purpose of removing discrimination against interstate commerce or for any other purpose whatever.

“(f) Whenever, after hearing, upon complaint or upon its own initiative, the Commission is of opinion that the divisions of joint rates, fares, or charges, applicable to the transportation in interstate or foreign commerce of passengers or property by common carriers by motor vehicle or by such carriers in conjunction with common carriers by railroad and/or express, and/or water are or will be unjust, unreasonable, inequitable, or unduly preferential or prejudicial as between the carriers parties thereto (whether agreed upon by such carriers, or any of them, or otherwise established), the Commission shall by order prescribe the just, reasonable, and equitable divisions thereof to be received by the several carriers, and in cases where the joint rate, fare, or charge was established pursuant to a finding or order of the Commission and the divisions thereof are found by it to have been unjust, unreasonable, or inequitable, or unduly preferential or prejudicial, the Commission may also by order determine what would have been the just, reasonable, and equitable divisions thereof to be received by the several carriers, and require adjustment to be made in accordance therewith. The order of the Commission may require the adjustment of divisions between the carriers, in accordance with the order, from the date of filing the complaint or entry of order of investigation or such other date subsequent as the Commission finds justified and, in the case of joint rates prescribed by the Commission, the order as to divisions may be made effective as a part of the original order.

“(g) Whenever there shall be filed with the Commission any schedule stating a new individual or joint rate, fare, charge, or classification for the transportation of passengers or property by a common carrier or carriers by motor vehicle, or by any such carrier or carriers in conjunction with a common carrier or carriers by railroad and/or express, and/or water in interstate or foreign commerce, or any rule, regulation, or practice affecting such rate, fare, or charge, or the value of the service thereunder, the Commission is hereby authorized and empowered upon complaint of any interested party or upon its own initiative at once and, if it so orders, without answer or other formal pleading by the interested carrier or carriers, but upon reasonable notice, to enter upon a hearing concerning the lawfulness of such rate, fare, or charge, or such rule, regulation, or practice, and pending such hearing and the decision thereon the Commission, by filing with such schedule and

delivering to the carrier or carriers affected thereby a statement in writing of its reasons for such suspension, may suspend the operation of such schedule and defer the use of such rate, fare, or charge, or such rule, regulation, or practice, for a period of ninety days and if the proceeding has not been concluded and a final order made within such period the Commission may, from time to time, extend the period of suspension by order, but not for a longer period in the aggregate than one hundred and eighty days beyond the time when it would otherwise go into effect; and after hearing, whether completed before or after the rate, fare, charge, classification, rule, regulation, or practice goes into effect, the Commission may make such order with reference thereto as would be proper in a proceeding instituted after it had become effective. If the proceeding has not been concluded and an order made within the period of suspension, the proposed change of rate, fare, or charge, or classification, rule, regulation, or practice, shall go into effect at the end of such period: *Provided*, That this paragraph shall not apply to any initial schedule or schedules filed by any such carrier in bona fide operation when this section takes effect.

“(h) In any proceeding to determine the justness or reasonableness of any rate, fare, or charge of any such carrier, there shall not be taken into consideration or allowed as evidence or elements of value of the property of such carrier, either good will, earning power, or the certificate under which such carrier is operating; and in applying for and receiving a certificate under this part any such carrier shall be deemed to have agreed to the provisions of this paragraph, on its own behalf and on behalf of all transferees of such certificate.

“(i) In the exercise of its power to prescribe just and reasonable rates for the transportation of passengers or property by common carriers by motor vehicle the Commission shall give due consideration, among other factors, to the inherent advantages of transportation by such carriers to the effect of rates upon the movement of traffic by such carriers; to the need, in the public interest, of adequate and efficient transportation service by such carriers at the lowest cost consistent with the furnishing of such service; and to the need of revenues sufficient to enable such carriers, under honest, economical, and efficient management, to provide such service.

“(j) Nothing in this section shall be held to extinguish any remedy or right of action not inconsistent herewith.

“TARIFFS OF COMMON CARRIERS BY MOTOR VEHICLE

“SEC. 217. (a) Every common carrier by motor vehicle shall file with the Commission, and print, and keep open to public inspection, tariffs showing all the rates, fares, and charges for transportation, and all services in connection therewith, of passengers or property in interstate or foreign commerce between points on its own route and between points on its own route and points on the route of any other such carrier, or on the route of any common carrier by railroad and/or express and/or water, when a through route and joint rate shall have been established. Such rates, fares, and charges shall be stated in terms of lawful money of the United States. The tariffs

required by this section shall be published, filed, and posted in such form and manner, and shall contain such information, as the Commission by regulations shall prescribe; and the Commission is authorized to reject any tariff filed with it which is not in consonance with this section and with such regulations. Any tariff so rejected by the Commission shall be void and its use shall be unlawful.

“(b) No common carrier by motor vehicle shall charge or demand or collect or receive a greater or less or different compensation for transportation or for any service in connection therewith between the points enumerated in such tariff than the rates, fares, and charges specified in the tariffs in effect at the time; and no such carrier shall refund or remit in any manner or by any device, directly or indirectly, or through any agent or broker or otherwise, any portion of the rates, fares, or charges so specified, or extend to any person any privileges or facilities for transportation in interstate or foreign commerce except such as are specified in its tariffs: *Provided*, That the provisions of sections 1 (7) and 22 (1) of part I shall apply to common carriers by motor vehicles subject to this part.

“(c) No change shall be made in any rate, fare, charge, or classification, or any rule, regulation, or practice affecting such rate, fare, charge, or classification, or the value of the service thereunder, specified in any effective tariff of a common carrier by motor vehicle, except after 30 days' notice of the proposed change filed and posted in accordance with paragraph (a) of this section. Such notice shall plainly state the change proposed to be made and the time when such change will take effect. The Commission may, in its discretion and for good cause shown, allow such change upon notice less than that herein specified or modify the requirements of this section with respect to posting and filing of tariffs either in particular instances or by general order applicable to special or peculiar circumstances or conditions.

“(d) No common carrier by motor vehicle, unless otherwise provided by this part, shall engage in the transportation of passengers or property unless the rates, fares, and charges upon which the same are transported by said carrier have been filed and published in accordance with the provisions of this part.

“SCHEDULES OF CONTRACT CARRIERS BY MOTOR VEHICLE

“SEC. 218. (a) It shall be the duty of every contract carrier by motor vehicle to file with the Commission, publish, and keep open for public inspection, in the form and manner prescribed by the Commission, schedules or, in the discretion of the Commission, copies of contracts containing the minimum charges of such carrier for the transportation of passengers or property in interstate or foreign commerce, and any rule, regulation, or practice affecting such charges and the value of the service thereunder. No such contract carrier, unless otherwise provided by this part, shall engage in the transportation of passengers or property in interstate or foreign commerce unless the minimum charges for such transportation by said carrier have been published, filed, and posted in accordance with the provisions of this part. No reduction shall be made in any such charge either directly or by means of any change in any rule, regula-

tion, or practice affecting such charge or the value of service thereunder, except after thirty days' notice of the proposed change filed in the aforesaid form and manner; but the Commission may, in its discretion and for good cause shown, allow such change upon less notice, or modify the requirements of this paragraph with respect to posting and filing of such schedules or copies of contracts, either in particular instances, or by general order applicable to special or peculiar circumstances or conditions. Such notice shall plainly state the change proposed to be made and the time when such change will take effect. No such carrier shall demand, charge, or collect a less compensation for such transportation than the charges filed in accordance with this paragraph, as affected by any rule, regulation, or practice so filed, or as may be prescribed by the Commission from time to time, and it shall be unlawful for any such carrier, by the furnishing of special services, facilities, or privileges, or by any other device whatsoever, to charge, accept, or receive less than the minimum charges so filed or prescribed: *Provided*, That any such carrier or carriers, or any class or group thereof, may apply to the Commission for relief from the provisions of this paragraph, and the Commission may, after hearing, grant such relief to such extent and for such time, and in such manner as in its judgment is consistent with the public interest and the policy declared in section 202 (a) of this part.

“(b) Whenever, after hearing upon complaint or its own initiative, the Commission finds that any charge of any contract carrier or carriers by motor vehicle, or any rule, regulation, or practice of any such carrier or carriers affecting such charge, or the value of the service thereunder, for the transportation of passengers or property in interstate or foreign commerce, contravenes the policy declared in section 202 (a) of this part, the Commission may prescribe such minimum charge, or such rule, regulation, or practice as in its judgment may be necessary or desirable in the public interest and to promote the policy declared in said section. Such minimum charge, or such rule, regulation, or practice, so prescribed by the Commission, shall give no advantage or preference to any such carrier in competition with any common carrier by motor vehicle subject to this part, which the Commission may find to be undue or inconsistent with the public interest and the policy declared in said section, and the Commission shall give due consideration to the cost of the services rendered by such carriers and to the effect of such minimum charge, or such rules, regulations, or practices, upon the movement of traffic by such carriers. All complaints shall state fully the facts complained of and the reasons for such complaint and shall be made under oath.

“(c) Whenever there shall be filed with the Commission by any such contract carrier any schedule or contract stating a reduced charge directly, or by means of any rule, regulation, or practice, for the transportation of passengers or property in interstate or foreign commerce, the Commission is hereby authorized and empowered upon complaint of interested parties or upon its own initiative at once and, if it so orders, without answer or other formal pleading by the interested party, but upon reasonable notice, to enter upon a hearing concerning the lawfulness of such charge, or such rule,

regulation, or practice, and pending such hearing and the decision thereon the Commission, by filing with such schedule or contract and delivering to the carrier affected thereby a statement in writing of its reasons for such suspension, may suspend the operation of such schedule or contract and defer the use of such charge, or such rule, regulation, or practice, for a period of ninety days, and if the proceeding has not been concluded and a final order made within such period the Commission may, from time to time, extend the period of suspension, but not for a longer period in the aggregate than one hundred and eighty days beyond the time when it would otherwise go into effect; and after hearing, whether completed before or after the charge, or rule, regulation, or practice goes into effect, the Commission may make such order with reference thereto as would be proper in a proceeding instituted after it had become effective. If the proceeding has not been concluded and an order made within the period of suspension, the proposed change in any charge or rule, regulation, or practice shall go into effect at the end of such period: *Provided*, That this paragraph shall not apply to any initial schedule or schedules, or contract or contracts, filed by any such carrier in bona fide operation when this section takes effect.

“RECEIPTS OR BILLS OF LADING

“SEC. 219. The provisions of section 20 (11)* of part I shall apply with like force and effect to receipts or bills of lading of common carriers by motor vehicle.

“ACCOUNTS, RECORDS, AND REPORTS

“SEC. 220. (a) The Commission is hereby authorized to require annual, periodical, or special reports from all motor carriers, to prescribe the manner and form in which such reports shall be made, and to require from such carriers specific answers to all questions upon which the Commission may deem information to be necessary. Such reports shall be under oath whenever the Commission so requires. The Commission may also require any motor carrier to file with it a true copy of each or any contract, agreement, or arrangement between such carrier and any other carrier or person in relation to any traffic affected by the provisions of this part, to which he or it may be a party.

“(b) The Commission may, in its discretion, prescribe the forms of any and all accounts, records, and memoranda to be kept by motor carriers and the length of time such accounts, records, and memoranda shall be preserved, including the accounts, records, and memoranda of the movement of traffic, as well as of the receipts and expenditures of money. The Commission or its duly authorized special agents or examiners shall at all times have access to all lands, buildings, or equipment of motor carriers used in connection with interstate or foreign operation and also all accounts, records, and memoranda, including all documents, papers, and correspondence now or hereafter existing, and kept, or required to be kept, by motor carriers. The special agents or examiners of the Commission shall have authority under its order to inspect and examine any and all such lands, buildings, equipment, accounts, records, and memoranda,

including all documents, papers, and correspondence now or hereafter existing and kept or required to be kept by such carriers. This provision shall apply to receivers of carriers and to operating trustees and, to the extent deemed necessary by the Commission, to persons having control, direct or indirect, over or affiliated with any motor carrier.

“(c) As used in this section the term ‘motor carriers’ includes brokers.

“ORDERS, NOTICES, AND SERVICE OF PROCESS

“SEC. 221. (a) It shall be the duty of every motor carrier to file with the board of each State in which it operates under a certificate or permit issued under this part, and with the Commission, a designation in writing of the name and post-office address of a person upon whom or which service of notices or orders may be made under this part. Such designation may from time to time be changed by like writing similarly filed. Service of notices or orders in proceedings under this part may be made upon a motor carrier by personal service upon it or upon the person so designated by it, or by registered mail addressed to it or to such person at the address filed. In default of such designation, service of any notice or order may be made by posting in the office of the secretary or clerk of the board of the State wherein the motor carrier maintains headquarters and in the office of the secretary of the Commission. Whenever notice is given by mail as provided herein the date of mailing shall be considered as the time when notice is served.

“(b) Except as otherwise provided in this part, all orders of the Commission shall take effect within such reasonable time as the Commission may prescribe and shall continue in force until its further order, or for a specified period of time, according as shall be prescribed in the order, unless the same shall be suspended or modified or set aside by the Commission, or be suspended or set aside by a court of competent jurisdiction.

“(c) Every motor carrier shall also file with the board of each State in which it operates a designation in writing of the name and post-office address of a person in such State upon whom process issued by or under the authority of any court having jurisdiction of the subject matter may be served in any proceeding at law or equity brought against such carrier. Such designation may from time to time be changed by like writing similarly filed. In the event such carrier fails to file such designation, service may be made upon any agent of such motor carrier within such State.

“(d) As used in this section, the term ‘motor carriers’ includes brokers.

“UNLAWFUL OPERATION

“SEC. 222. (a) Any person knowingly and willfully violating any provision of this part, or any rule, regulation, requirement, or order thereunder, or any term or condition of any certificate, permit, or license, for which a penalty is not otherwise herein provided, shall, upon conviction thereof, be fined not more than \$100 for the first offense and not more than \$500 for any subsequent offense. Each day of such violation shall constitute a separate offense.

“(b) If any motor carrier or broker operates in violation of any provision of this part (except as to the reasonableness of rates, fares, or charges and the discriminatory character thereof), or any rule, regulation, requirement, or order thereunder, or of any term or condition of any certificate or permit, the Commission or its duly authorized agent may apply to the district court of the United States for any district where such motor carrier or broker operates, for the enforcement of such provision of this part, or of such rule, regulation, requirement, order, term, or condition; and such court shall have jurisdiction to enforce obedience thereto by a writ of injunction or by other process, mandatory or otherwise, restraining such carrier or broker, his or its officers, agents, employees, and representatives from further violation of such provision of this part or of such rule, regulation, requirement, order, term, or condition and enjoining upon it or them obedience thereto.

“(c) Any person, whether carrier, shipper, consignee, or broker, or any officer, employee, agent, or representative thereof, who shall knowingly offer, grant, or give, or solicit, accept, or receive any rebate, concession, or discrimination in violation of any provision of this part, or who by means of any false statement or representation, or by the use of any false or fictitious bill, bill of lading, receipt, voucher, roll, account, claim, certificate, affidavit, deposition, lease, or bill of sale, or by any other means or device, shall knowingly and willfully assist, suffer or permit any person or persons, natural or artificial, to obtain transportation of passengers or property subject to this part for less than the applicable rate, fare, or charge, or who shall knowingly and willfully by any such means or otherwise fraudulently seek to evade or defeat regulation as in this part provided for motor carrier or brokers, shall be deemed guilty of a misdemeanor and upon conviction thereof be fined not more than \$500 for the first offense and not more than \$2,000 for any subsequent offense.

“(d) Any special agent or examiner who divulges any fact or information which may come to his knowledge during the course of the examination of the accounts, records, and memoranda of motor carriers or brokers as provided in section 220 (b), except as he may be directed by the Commission or by a court of competent jurisdiction or judge thereof, shall be subject, upon conviction in any court of the United States of competent jurisdiction, to a fine of not more than \$5,000 or imprisonment for a term not exceeding two years, or both.

“(e) It shall be unlawful for any motor carrier or broker engaged in interstate or foreign commerce or any officer, receiver, trustee, lessee, agent, or employee of such carrier, broker, or person, or for any other person authorized by such carrier, broker, or person to receive information, knowingly to disclose to, or permit to be acquired by any person other than the shipper or consignee without the consent of such shipper or consignee, any information concerning the nature, kind, quantity, destination, consignee, or routing of any property tendered or delivered to such motor carrier or broker for such transportation, which information may be used to the detriment or prejudice of such shipper or consignee, or which may improperly disclose his business transactions to a competitor; and

it shall also be unlawful for any person to solicit or knowingly receive any such information which may be so used.

"(f) Nothing in this part shall be construed to prevent the giving of such information in response to any legal process issued under the authority of any court, or to any officer or agent of the Government of the United States or of any State, Territory, or District thereof, in the exercise of his power, or to any officer or other duly authorized person seeking such information for the prosecution of persons charged with or suspected of crimes or to another carrier or broker, or its duly authorized agent, for the purpose of adjusting mutual traffic accounts in the ordinary course of business of such carriers or brokers.

"(g) Any motor carrier, or broker, or any officer, agent, employee, or representative thereof who shall willfully fail or refuse to make a report to the Commission as required by this part, or to keep accounts, records, and memoranda in the form and manner approved or prescribed by the Commission, or shall knowingly and willfully falsify, destroy, mutilate, or alter any such report, account, record, or memorandum, or shall knowingly and willfully file any false report, account, record, or memorandum, shall be deemed guilty of a misdemeanor and upon conviction thereof be subject for each offense to a fine of not less than \$100 and not more than \$5,000.

" COLLECTION OF RATES AND CHARGES

" SEC. 223. No common carrier by motor vehicle shall deliver or relinquish possession at destination of any freight transported by it in interstate or foreign commerce until all tariff rates and charges thereon have been paid, except under such rules and regulations as the Commission may from time to time prescribe to govern the settlement of all such rates and charges, including rules and regulations for weekly or monthly settlement, and to prevent unjust discrimination or undue preference or prejudice: *Provided*, That the provisions of this paragraph shall not be construed to prohibit any such carrier from extending credit in connection with rates and charges on freight transported for the United States, for any department, bureau, or agency thereof, or for any State or Territory, or political subdivision thereof, or for the District of Columbia. Where any common carrier by motor vehicle is instructed by a shipper or consignor to deliver property transported by such carrier to a consignee other than the shipper or consignor, such consignee shall not be legally liable for transportation charges in respect of the transportation of such property (beyond those billed against him at the time of delivery for which he is otherwise liable) which may be found to be due after the property has been delivered to him, if the consignee (a) is an agent only and had no beneficial title in the property, and (b) prior to delivery of the property has notified the delivering carrier in writing of the fact of such agency and absence of beneficial title, and, in the case of shipment reconsigned or diverted to a point other than that specified in the original bill of lading, has also notified the delivering carrier in writing of the name and address of the beneficial owner of the property. In such cases the shipper or consignor, or, in the case of a shipment so reconsigned or diverted, the beneficial owner shall be liable for

such additional charges, irrespective of any provisions to the contrary in the bill of lading or in the contract under which the shipment was made. If the consignee has given to the carrier erroneous information as to who is the beneficial owner, such consignee shall himself be liable for such additional charges, notwithstanding the foregoing provisions of this paragraph. On shipments reconsigned or diverted by an agent who has furnished the carrier with a notice of agency and the proper name and address of the beneficial owner, and where such shipments are refused or abandoned at ultimate destination, the said beneficial owner shall be liable for all legally applicable charges in connection therewith.

" IDENTIFICATION OF INTERSTATE CARRIERS

" SEC. 224. The Commission is hereby authorized, under such rules and regulations as it shall prescribe, to require the display by motor carriers upon each motor vehicle operated under a certificate or permit issued by the Commission, suitable identification plate or plates, to provide for the issuance of such plates, and to require the payment by such carriers of the reasonable cost thereof. All moneys so collected shall be paid into the Treasury of the United States. Any substitution, transfer, or use of any such identification plate or plates, except such as may be duly authorized by the Commission, is hereby prohibited and shall be unlawful.

" INVESTIGATION OF MOTOR VEHICLE SIZES, WEIGHTS, AND SO FORTH

" SEC. 225. The Commission is hereby authorized to investigate and report on the need for Federal regulation of the sizes and weight of motor vehicles and combinations of motor vehicles and of the qualifications and maximum hours of service of employees of all motor carriers and private carriers of property by motor vehicle; and in such investigation the Commission shall avail itself of the assistance of all departments or bureaus of the Government and of any organization of motor carriers having special knowledge of any such matter.

" SEPARABILITY OF PROVISIONS

" SEC. 226. If any provision of this part, or the application thereof to any person, or commerce, or circumstance, is held invalid, the remainder of the part, and part, and the application of such provision to other persons, or commerce, or circumstances, shall not be affected thereby.

" TIME EFFECTIVE

" SEC. 227. (a) This part (except this section, which shall become effective immediately upon approval) shall take effect and be in force on and after the 1st day of October 1935: *Provided, however*, That the Commission shall, if found by it necessary or desirable in the public interest, by general or special order, postpone the taking effect of any provision of this part to such time after the 1st day of October 1935, as the Commission shall prescribe, but not beyond the 1st day of April 1936."

Approved August 9, 1935.

APPENDIX II

QUESTIONNAIRE FOR USE OF MOTOR TRUCKS

Responses	Number	%	Tonnage	%
Responses	35,468	100	112,142,038	100
Simpler Classification of Rates	5,664	16	28,185,610	25
Cheaper Packing		21	30,522,851	27
Stoor-door Pick-up		51	60,293,671	54
Store-door Delivery		65	74,933,479	67
Cheaper Total Cost		53	74,671,901	67
Faster Service		65	82,302,031	73
More Flexible or Convenient Service		43	68,512,668	61
Late Acceptance of Shipments		21	29,512,565	26
Less Damage or Loss to Freight		11	16,018,451	14
Personal Friendship or Interest		3	3,230,367	3

From:

"Merchandise Traffic Report" by Joseph B. Eastman,
Federal Coordinator of Transportation

APPENDIX III

DATA SHEET

This form was used to collect the necessary data while riding on the trucks. The sheet needs no explanation as it is quite simple.

Type and make of truck
Capacity
Company

Terminal location
Milage at terminal

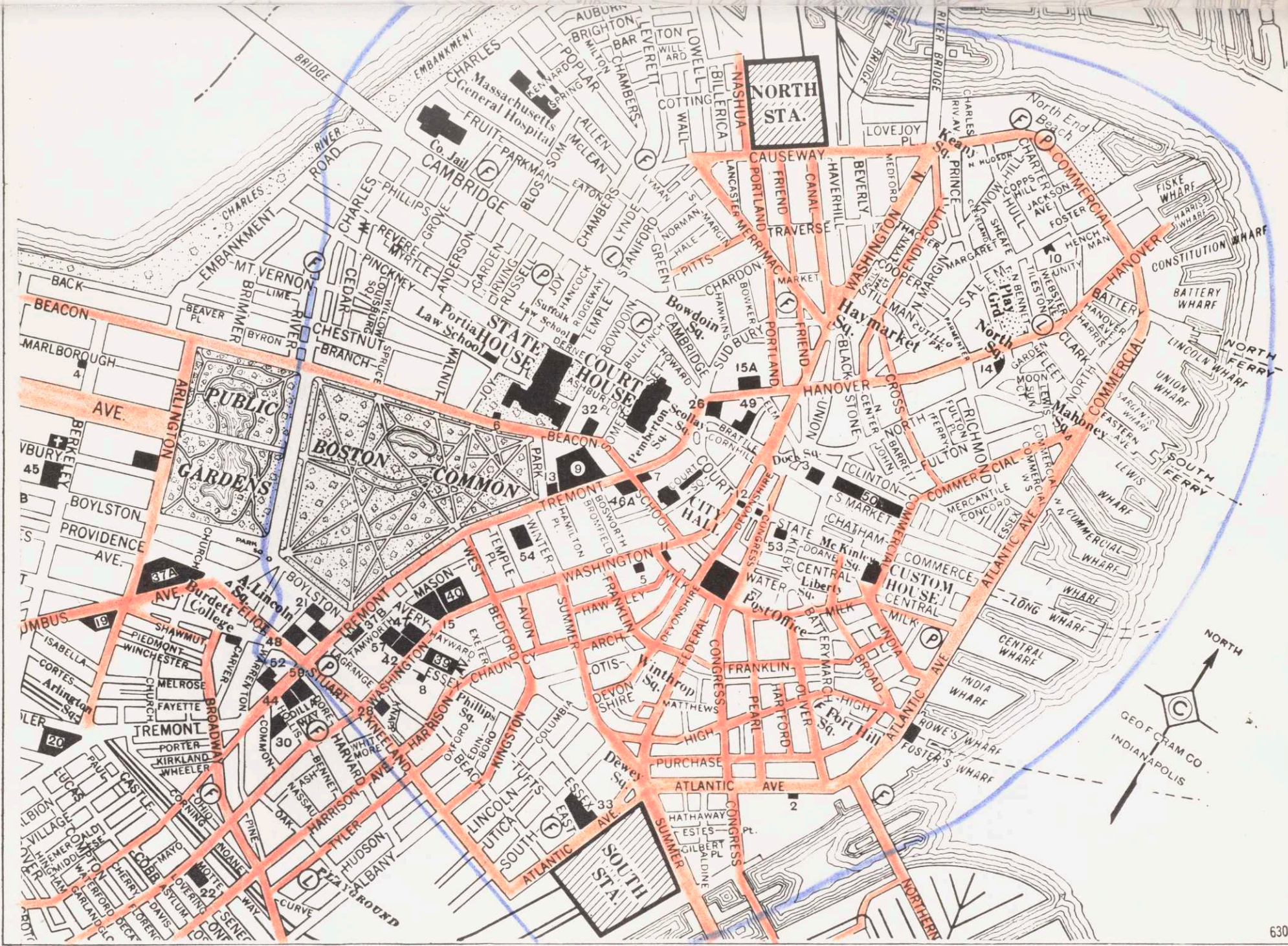
					Road Conditions
					Traffic Conditions
					Pass Time Arrive
					Distance
					Address
					Size of Shipment
					Time of Leaving
					Remarks

APPENDIX IV

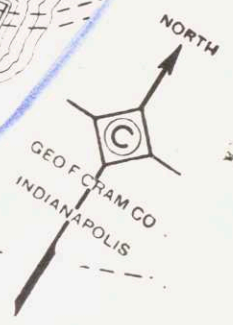
Traffic Map

The lines in red on the following map show the streets on which we have traveled in trucks. It will be noticed that almost all of the business district has been covered. Those areas which have not been covered, such as the one in the northwestern part of the map, are almost entirely residential. Therefore there would be very little reason to be making trips into those areas.

The area bounded by the blue line is the one that was used for the traffic count the results of which are shown graphically in Appendix XX. A count was taken of all of the trucks that crossed in or out of the area. The results of this count are tabulated in Appendix XX.



A
B
C
D
E
F
G
H
I
J



11 12 13 14 15 16 17 18 19 20 21

APPENDIX V

Rate Scale

This scale is one of several typical types found in motor freight tariffs. Usually a scale is made for each class of freight handled, excluding certain special commodity rates which are listed separately.

FIRST CLASS RATES IN CENTS PER 100 POUNDS

Rates do not apply on local trucking performed within limits of any Municipality named in this tariff.

M I L E S	Weight of Shipments in Pounds																					
	0 - 100	101 - 1,000	1,001 - 2,000	2,001 - 3,000	3,001 - 4,000	4,001 - 5,000	5,001 - 6,000	6,001 - 7,000	7,001 - 8,000	8,001 - 9,000	9,001 - 10,000	10,001 - 11,000	11,001 - 12,000	12,001 - 13,000	13,001 - 14,000	14,001 - 15,000	15,001 - 16,000	16,001 - 17,000	17,001 - 18,000	18,001 - 19,000	19,001 - 20,000	Over 20,000
0 to 5	.31	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.11	.10	.09	.08	.07	.07	.07	.07	.07	.07	.07
Over 5 to 10	.33	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.11	.10	.09	.08	.08	.08	.08	.08	.08	.08
Over 10 to 15	.34	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.11	.10	.09	.09	.09	.09	.09	.09	.09
Over 15 to 20	.36	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.11	.10	.10	.10	.10	.10	.10	.10
Over 20 to 25	.37	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.11	.11	.11	.11	.11	.11	.11
Over 25 to 30	.39	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.12	.12	.12	.12	.12	.12	.12
Over 30 to 35	.41	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.13	.13	.13	.13	.13	.13	.13
Over 35 to 40	.42	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.14	.14	.14	.14	.14	.14	.14
Over 40 to 45	.43	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.15	.15	.15	.15	.15	.15
Over 45 to 50	.45	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.15	.15	.15	.15	.15	.15
Over 50 to 55	.46	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.16	.16	.16	.16	.16
Over 55 to 60	.48	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.16	.16	.16	.16	.16
Over 60 to 65	.49	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.17	.17	.17	.17
Over 65 to 70	.51	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.17	.17	.17	.17
Over 70 to 75	.52	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.18	.18	.18
Over 75 to 80	.54	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.18	.18	.18
Over 80 to 85	.55	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.19	.19
Over 85 to 90	.57	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.19	.19
Over 90 to 95	.59	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20	.20
Over 95 to 100	.60	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20
Over 100 to 105	.60	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21	.20
Over 105 to 110	.61	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22	.21
Over 110 to 115	.63	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23	.22
Over 115 to 120	.64	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23
Over 120 to 125	.66	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.24
Over 125 to 130	.67	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25
Over 130 to 135	.69	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26
Over 135 to 140	.70	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27
Over 140 to 145	.72	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28
Over 145 to 150	.73	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29
Over 150 to 155	.75	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30
Over 155 to 160	.76	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31
Over 160 to 165	.78	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32
Over 165 to 170	.79	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33
Over 170 to 175	.81	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34
Over 175 to 180	.82	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35
Over 180 to 185	.84	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36
Over 185 to 190	.85	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37
Over 190 to 195	.87	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38
Over 195 to 200	.88	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39
Over 200 to 205	.90	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40
Over 205 to 210	.90	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40
Over 210 to 215	.91	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41
Over 215 to 220	.93	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42
Over 220 to 225	.94	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44	.43
Over 225 to 230	.96	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.44
Over 230 to 235	.97	.65	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45
Over 235 to 240	.99	.66	.65	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46
Over 240 to 245	1.00	.67	.66	.65	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47
Over 245 to 250	1.02	.68	.67	.66	.65	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48

Unless graduate scale is contained in this tariff, the charges appearing in column "0-100" will apply as minimum charges.

APPENDIX VI

Class Rates

This chart shows the relative amounts of the various classes in a typical tariff.

COMPUTATION OF CLASS RATES

When 1st class rate equals amount shown in column "1st": 2nd, 3rd, 4th and 5th classes are shown in columns so marked (reading left to right)

1st Class	2nd Class	3rd Class	4th Class	5th Class	1st Class	2nd Class	3rd Class	4th Class	5th Class
\$.01	\$.01	\$.02	\$.02	\$.03	\$.51	\$.61	\$.87	\$1.02	\$1.53
.02	.02	.03	.04	.06	.52	.62	.88	1.04	1.56
.03	.04	.05	.06	.09	.53	.64	.90	1.06	1.59
.04	.05	.07	.08	.12	.54	.65	.92	1.08	1.62
.05	.06	.08	.10	.15	.55	.66	.93	1.10	1.65
.06	.07	.10	.12	.18	.56	.67	.95	1.12	1.68
.07	.08	.12	.14	.21	.57	.68	.97	1.14	1.71
.08	.10	.14	.16	.24	.58	.70	.99	1.16	1.74
.09	.11	.15	.18	.27	.59	.71	1.00	1.18	1.77
.10	.12	.17	.20	.30	.60	.72	1.02	1.20	1.80
.11	.13	.19	.22	.33	.61	.73	1.04	1.22	1.83
.12	.14	.20	.24	.36	.62	.74	1.05	1.24	1.86
.13	.16	.22	.26	.39	.63	.76	1.07	1.26	1.89
.14	.17	.24	.28	.42	.64	.77	1.09	1.28	1.92
.15	.18	.25	.30	.45	.65	.78	1.10	1.30	1.95
.16	.19	.27	.32	.48	.66	.79	1.12	1.32	1.98
.17	.20	.29	.34	.51	.67	.80	1.14	1.34	2.01
.18	.22	.31	.36	.54	.68	.82	1.16	1.36	2.04
.19	.23	.32	.38	.57	.69	.83	1.17	1.38	2.07
.20	.24	.34	.40	.60	.70	.84	1.19	1.40	2.10
.21	.25	.36	.42	.63	.71	.85	1.21	1.42	2.13
.22	.26	.37	.44	.66	.72	.86	1.22	1.44	2.16
.23	.28	.39	.46	.69	.73	.88	1.24	1.46	2.19
.24	.29	.41	.48	.72	.74	.89	1.26	1.48	2.22
.25	.30	.42	.50	.75	.75	.90	1.27	1.50	2.25
.26	.31	.44	.52	.78	.76	.91	1.29	1.52	2.28
.27	.32	.46	.54	.81	.77	.92	1.31	1.54	2.31
.28	.34	.48	.56	.84	.78	.94	1.33	1.56	2.34
.29	.35	.49	.58	.87	.79	.95	1.34	1.58	2.37
.30	.36	.51	.60	.90	.80	.96	1.36	1.60	2.40
.31	.37	.53	.62	.93	.81	.97	1.38	1.62	2.43
.32	.38	.54	.64	.96	.82	.98	1.39	1.64	2.46
.33	.40	.56	.66	.99	.83	1.00	1.41	1.66	2.49
.34	.41	.58	.68	1.02	.84	1.01	1.43	1.68	2.52
.35	.42	.59	.70	1.05	.85	1.02	1.44	1.70	2.55
.36	.43	.61	.72	1.08	.86	1.03	1.46	1.72	2.58
.37	.44	.63	.74	1.11	.87	1.04	1.48	1.74	2.61
.38	.46	.65	.76	1.14	.88	1.06	1.50	1.76	2.64
.39	.47	.66	.78	1.17	.89	1.07	1.51	1.78	2.67
.40	.48	.68	.80	1.20	.90	1.08	1.53	1.80	2.70
.41	.49	.70	.82	1.23	.91	1.09	1.55	1.82	2.73
.42	.50	.71	.84	1.26	.92	1.10	1.56	1.84	2.76
.43	.52	.73	.86	1.29	.93	1.12	1.58	1.86	2.79
.44	.53	.75	.88	1.32	.94	1.13	1.60	1.88	2.82
.45	.54	.76	.90	1.35	.95	1.14	1.61	1.90	2.85
.46	.55	.78	.92	1.38	.96	1.15	1.63	1.92	2.88
.47	.56	.80	.94	1.41	.97	1.16	1.65	1.94	2.91
.48	.58	.82	.96	1.44	.98	1.18	1.67	1.96	2.94
.49	.59	.83	.98	1.47	.99	1.19	1.68	1.98	2.97
.50	.60	.85	1.00	1.50	1.00	1.20	1.70	2.00	3.00

APPENDIX VII

BASIC TRUCK OPERATING COSTS
For Rate Making Purposes
Based on 300 Day Year
9 Hours Per Day

Registered Carrying Capacity		12 Ton	
Original Cost, Including Body		\$4400.00	
	Cost Per	Year	
		Day	
1.	Interest on Investment (a)	\$132.00	.44
2.	Public Liability Ins.	179.52	.60
3.	Fire and Theft Insurance	30.00	.10
4.	Cargo Insurance	50.00	.17
5.	Property Damage Insurance	147.00	.49
6.	Registration	60.00	.20
7.	Taxes, City or Town	116.96	.38
8.	Garage--includes Heat, Light & power	120.00	.40
9.	Accounting, Supervision, Rent, Solicitation	1500.00	5.00
10.	<u>TOTAL FIXED COSTS</u>		<u>\$7.78</u>
11.	AVERAGE FIXED COST PER HOUR - BASED ON 9 HOUR DAY		\$.865
	<u>PER MILE COST</u>		
12.	Depreciation - Maximum Miles and Years (b)		.03
13.	Repairs - Engine-Body-Paint-Rope-Canvas, etc.		.05
14.	Gasoline - Oil - Grease		.04
15.	Tires, Including Tire Repairs		.02
16.	<u>TOTAL PER MILE COST</u>		.14
17.	Add for Profit		.016
18.	<u>TOTAL MILEAGE COST AND PROFIT</u>		<u>\$1.156</u>
19.	Wages Per Hour, Including Workmen's Compensation Ins.		.63
20.	<u>TOTAL FIXED COST PER HOUR (Items 11 & 19)</u>		<u>\$1.495</u>
21.	Add for Profit Per hour (Items 11 & 19)		.165
22.	<u>TOTAL FIXED COST AND PROFIT</u>		<u>\$1.66</u>

To find Total Cost use items 16 and 20. To find Total Cost Plus Profit, use items 18 and 22.

- (a) Interest on Investment: Based on 3% over entire life of vehicle on purchase price.
- (b) Depreciation: 12 ton, based on 4 years or 150,000 miles.

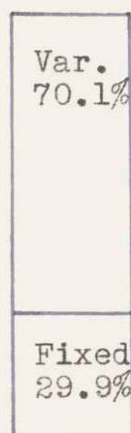
APPENDIX VIII

One hour of truck operation (12 ton vehicle)

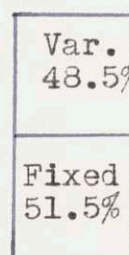
<u>Intracity</u>		<u>Intercity</u>	
Fixed costs	\$1.66	Fixed costs	\$1.66
Variable costs (10 mile @ .156)	<u>1.56</u>	Variable costs (25 miles @ .156)	<u>3.90</u>
TOTAL	\$3.22		\$5.56

All data taken from the costs prepared
by Mr. Hardy in Appendix VII.

Intracity



Intercity



APPENDIX IX

List of Operating Expense Accounts (General Freight Lines)
(November, 1931)Line-haul expenses

Item	Total	Average per ton
Superintendent transportation	\$ 81.25	\$0.03
Drivers	1,270.70	.48
Gas and oil	2,191.34	.81
Garage	499.82	.19
Packing	260.98	.10
Leased truck	517.33	.20
Repairs	472.50	.18
Shop labor	664.23	.25
Tires	934.36	.35
Depreciation	1,439.42	.56
Insurance	151.58	.05
Total	8,483.51	3.20
Less cost of terminal trucks	1,008.75	.58
Total	\$7,474.76	\$2.82

Terminal expenses

Station employees	7,437.00	2.80
Station expenses	639.34	.24
Terminal truck	1,008.75	.38
	<u>\$9,085.09</u>	<u>\$3.42</u>

Overhead (miscellaneous) expenses

Depreciation	40.75	.02
Claims	73.61	.03
General officers	350.00	.13
General office clerks	485.16	.18
Stationery and printing	323.20	.12
Insurance	273.36	.10
Taxes	911.33	.34
Legal	100.00	.04
Interest	326.83	.13
Miscellaneous & general	490.98	.18
Total Overhead	<u>\$3,375.22</u>	<u>\$1.27</u>

Traffic expenses

Payroll	521.59	.20
Advertising	3.50	
Traffic expense	184.71	.07
Total traffic	<u>709.80</u>	<u>.27</u>
Total overhead	3,375.22	1.27
Total traffic & overhead	<u>\$ 4,085.02</u>	<u>\$1.54</u>

These figures taken from "Principles of Motor Transportation",
by Ford K. Edwards - p.235.

APPENSIX X

COST BREAKDOWN

<u>Operating Expenses</u>	Per Mile	For the trip
Maintenance and repair	\$.025	\$3.75
Depreciation	.0077	1.155
<u>Transportation</u>	.0254	3.81
Driver's wages	.0254	3.81
Tires and tubes	.005	.75
Gas, Oil, and grease	.0239	3.585
Garage inspection and service	.001	.15
<u>General</u>		
Supervision	.005	.75
Insurance	.0014	.21
Licenses and taxes	.0145	2.175
	<u>.1089</u>	<u>16.335</u>
<u>Terminal costs</u>		
Freight handling twice @ 40¢ per ton		6.40
Pickup and delivery @ 13¢ per cwt.		<u>20.80</u>
All direct costs		43.535
Plus 25% of revenue for indirect costs		<u>16.00</u>
Total		59.535
Profit from trip		\$ 4.465

Note: These figures represent a run from Chicago to Madison, Wis., a distance of 150 miles, with a cargo of 8 tons of miscellaneous commodities bringing in 40 cents per hundred weight (average revenue) - \$64 for the lot.

Taken from an article on Keeshin Transcontinental Freight Lines, in Fortune, February 1936, p. 120.

APPENDIX XI

1931 - Operating cost per mile

A-Fixed Charges:	1. Interest	\$.0083	
	2. Insurance	.0176	
	3. Garage	.0080	
	4. Taxes	.0127	
			Per Mile \$.0466
B-Chauffeur's Wages			Per Mile .0679
C-Variable Costs:	1. Depreciation	.0500	
	2. Repairs	.0350	
	3. Tires	.0286	
	4. Fuel and Lubrication	.0416	
	5. Miscellaneous	.0100	
			Per Mile <u>.1652</u>
	Total Operating Cost Per Mile.....	\$.2797	
D-Terminal Cost	Per Truck Mile		.0950
TOTAL OPERATING AND TERMINAL COST PER TRUCK MILE			<u>\$.3747</u>
(Basis of yearly truck mileage 30,000)			

From: Motor Truck Red Book and Directory, 1934 Edition - p.71

APPENDIX XII

REVENUE BREAKDOWN

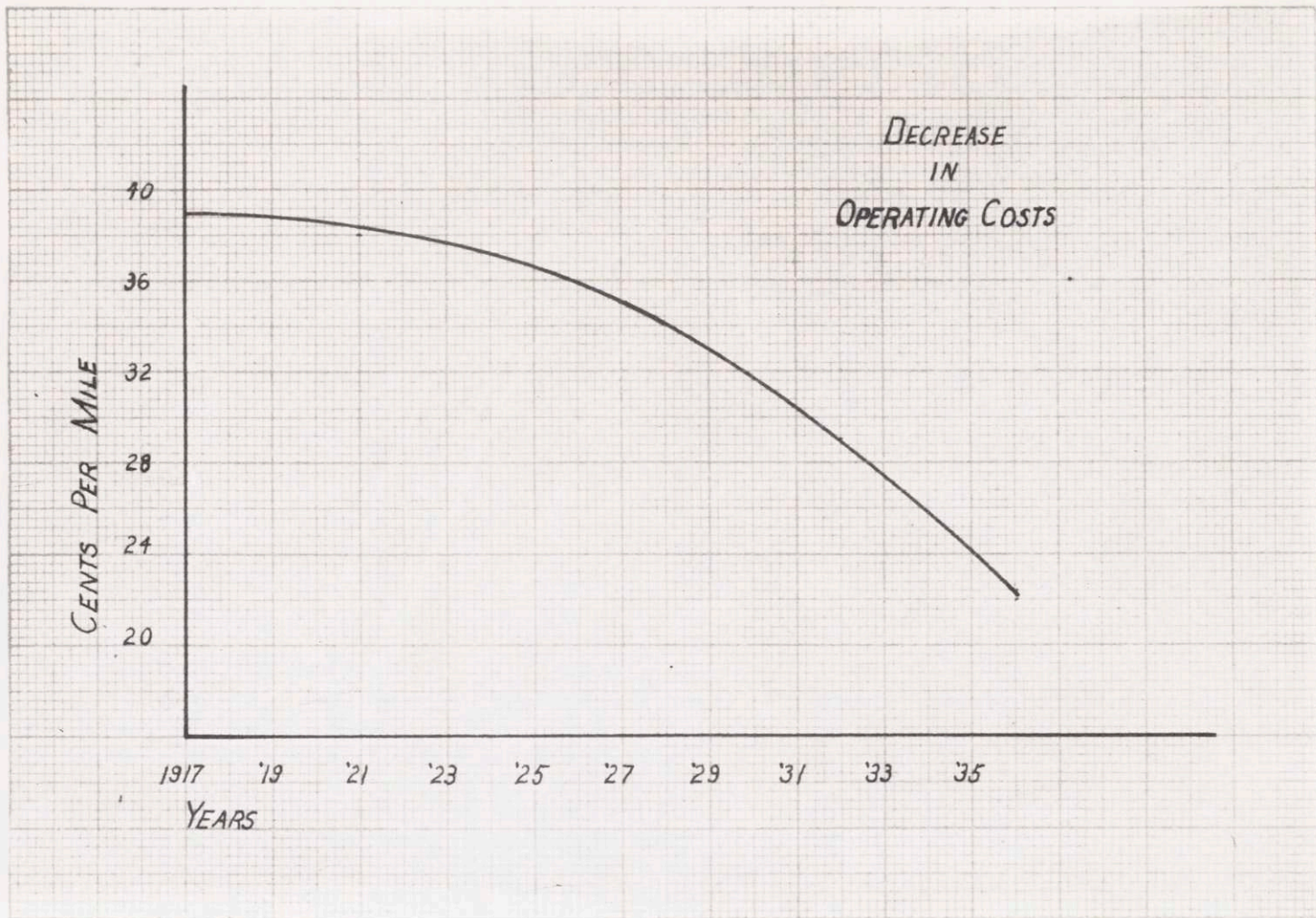
<u>Direct</u>	<u>Percentage</u>	<u>Gross Expenses</u>
Wages	49.38	\$2,962,800
Gasoline	8.53	511,800
Licenses and taxes*	7.24	434,400
Depreciation	4.54	272,400
Other	1.24	74,400
	<u>70.93</u>	<u>\$4,255,800</u>
<u>Indirect</u>		
Repairs-power equipment	3.30	198,000
Insurance	2.31	138,600
Railway ferry charges	3.33	199,800
Tires and tire repairs	2.09	125,400
Rent	1.16	69,600
Claims	.96	57,600
Others	1.74	104,400
	<u>14.89</u>	<u>893,400</u>
<u>Total operating expenses</u>	85.82	\$5,149,200
<u>Selling and administration</u>		
Miscellaneous selling expense	1.12	67,200
Telephone and telegraph	2.26	135,600
Office expense	2.01	120,600
Other	1.81	108,600
<u>Total selling and administration</u>	7.20	432,000
<u>Profit from operations</u>	6.98	418,800
	<u>100.00</u>	<u>\$6,000,000</u>

*Includes 4.81 per cent gasoline taxes, 2.43 per cent licensing and highway taxes.

APPENDIX XIII

DECREASE IN OPERATING COSTS

This chart shows the operating cost trend for the past nineteen (19) years. The figures for 1917 to 1932 were compiled by Mr. Irving Malkin, and those for 1933 to 1935 by the authors. The latter costs are undoubtedly not as accurate nor quite comparable with Mr. Malkin's but they serve to show the trend.



APPENDIX XIII

APPENDIX XIV

Depreciation charge (at even rate) - \$1100 per year
 (4 year life, original cost \$4400)

Cost per day (300 working days per year) \$3.67

Cost per hour (delivery trucks work an
 average of 8 hours a day maximum) \$.46

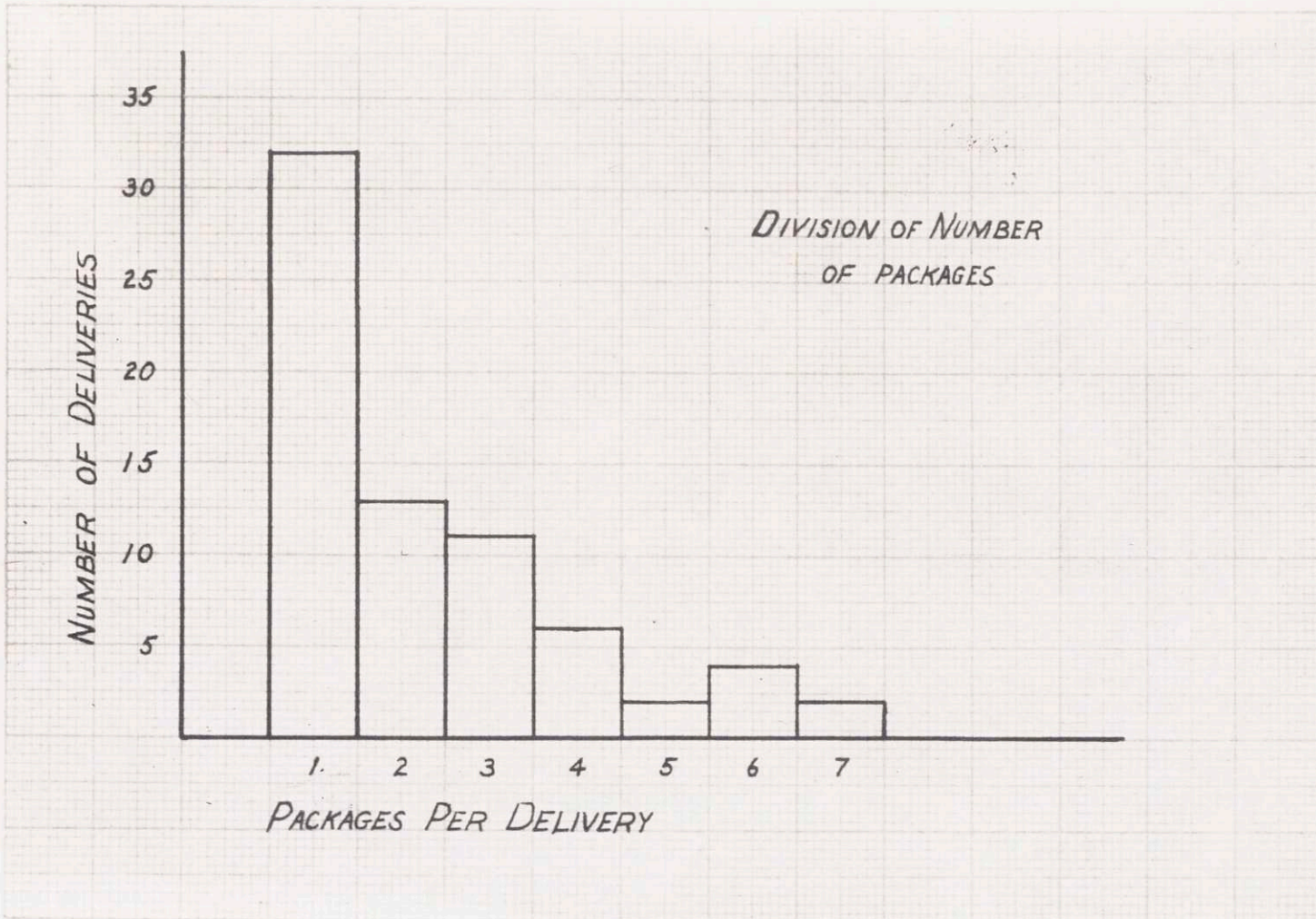
Fixed Charges (Appendix 5)	\$1.66	per hour
plus depreciation charge	.46	
TOTAL FIXED CHARGES	<u>\$2.12</u>	per hour

Variable Charges (Appendix 5)	.156	per mile
less depreciation charge	.03	
TOTAL VARIABLE CHARGES	<u>\$. 126</u>	per mile

TOTAL HOURLY COSTS

Fixed Charges	\$2.12	-	63%
Variable Charges - 10 miles @ .126	<u>\$1.26</u>	-	37%
TOTAL	\$3.38	-	100%

Calculations made as in Appendix VIII from data in Appendix VII.



APPENDIX XV

APPENDIX XVI

DELIVERY TIME FOR SIZE OF SHIPMENT

0-100 Pounds	1-2-1-6-8-6-1-2-5-2-2-3-2-1-9-1-4-1-10-5-2-3-3-2	17-17 Minutes
100-200 "	2-1-3-4-3-5-4-5-7-2-5-4-4-2-11-13-1-1-3-1-6-1-3-	4-6-3-3 Minutes
200-300 "	2-4-7-3-3-3-2-	18 Minutes
300-400 "	5-9	Minutes
400-500 "	8-8-23-3-6-2-8	Minutes
500-600 "	10	Minutes
600-700 "	9-3-6-10-5-7	Minutes
700-800 "	3	Minutes
800-900 "	12	Minutes
900-1000 "	9	Minutes
1000 up "	25-10-11-17-6	Minutes

APPENDIX XVII

DELIVERY TIME VS: NUMBER OF PACKAGES PER SHIPMENT

1	Package	1-2-1-4-2-2-3-1-6-8-5-1-3-2-3-3-1-2-3-1-9-1-10- 5-4-2-3-7-2-5-3-	Minutes
2	"	3-25-5-2-11-2-1-6-4-1-3-1-17	Minutes
3	"	4-2-5-4-2-3-13-1-18-17-	Minutes
4	"	8-5-4-6-3-3-	Minutes
5	"	2-17-	Minutes
6	"	7-9-10-1-	Minutes
7	"	7-5-	Minutes
8	"	8-	Minutes
9	"	11	Minutes
10	"	3-6-2-3-6-	Minutes
11	"	8-5-10-10-	Minutes
13	"	9-	Minutes
14	"	12	Minutes
21	"	23	Minutes
23	"	9	Minutes
22	"	3	Minutes
26	"	6	Minutes

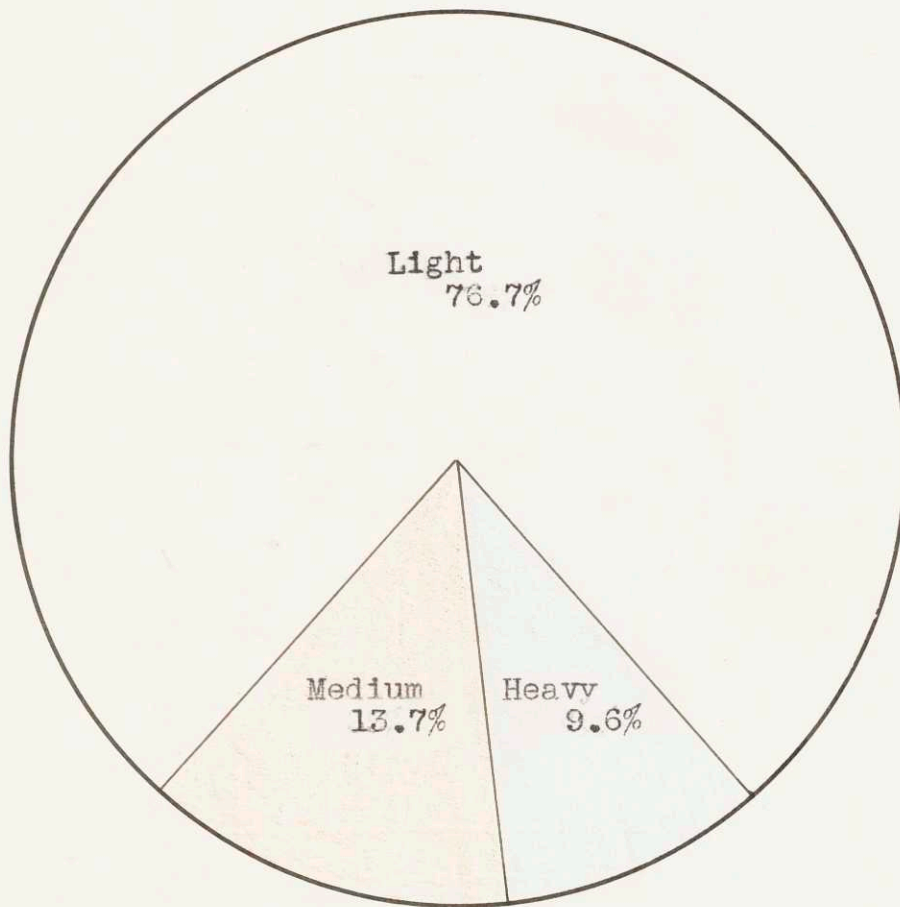
APPENDIX XVIII

TRAFFIC CONDITIONS FOR 73 DELIVERIES

Light	- - - - -	56
Medium	- - - - -	10
Heavy	- - - - -	7



PERCENTAGE DIVISION
OF
TRAFFIC CONDITIONS
FOR 73 DELIVERIES



APPENDIX XIXDrivers' Suggestion:

Of all the personnel connected with the trucking industry, the drivers are the ones that are the closest to the actual problem of store door delivery and pick up. By this we do not mean that the administration of charges for this service concerns the drivers in any way, but we do mean that the drivers know the causes of delay better than anyone else. Therefore, it seems that any suggestions they might have cannot be entirely neglected. Below are some of the more pertinent comments of drivers with whom we were associated.

One driver operating in the suburbs was rabid on the length of time that was required to make collections where the freight charges were collected at delivery. He suggested that there be a greater extension of credit by the trucking companies as a trial to find out if the money saved by cutting down the delivery time would be greater than that lost through the non-payment of the accounts. On his route, it was obvious that the time taken in making collections was the greater part of the stop time, and therefore the suggestion in his case was pertinent even though it might not be for other types of delivery.

Another driver, delivering in the heart of downtown Boston, insisted that the only vehicle feasible for store-door delivery and pick-up was a very light small capacity truck that would be easy to handle in heavy traffic. He felt that even though the truck would have to return to the terminal frequently to reload there would still be a saving in time, since the light truck could be manoeuvred through traffic more easily.

Still another driver made the suggestion that more adaptable trucks should be used. His contention was that when a small capacity truck was purchased by a trucking company they would put a tremendous body on it so that it could carry all of the light, bulky loads. Such a load, it seems, is not frequent. Thus the purpose of the small truck is defeated by the large body. On the other hand, if a high capacity truck is used for the bulky loads there is a waste in weight carrying ability. The solution that this driver had for the situation was to develop some sort of a truck that had a changeable body. Then the body of the truck could be adapted to the specific load that it had to carry. This arrangement has been used to a certain ^{EXTENT} in the form of the tractor semi-trailer,

but^{is} impracticable in transporting the lighter loads. In addition it is very difficult to handle in the heavy city traffic.

A fourth driver suggested that a great deal of time could be saved if more care were taken in the selection of the drivers. He claimed that a good driver could handle the truck in traffic and on the road in such a way that the saving in time and consequently expense would be a large factor. This driver had worked for many of the companies in Boston and New York and had noticed that on the heavy deliveries necessitating the use of a large truck the more experienced drivers were always the ones that finished first with their work. He added that this applied more in the case of the tractor semi-trailor device but nevertheless was applicable to all of the large trucks to a noticable extent and to all trucks to some extent. He himself was easily the best driver with whom we rode.

A comment on the part of one driver handling a three-ton Chevrolet truck was that the union rules concerning allotment of helpers was frequently the cause of expense to the trucking companies. It seems that the allotment of helpers is dependent on

the capacity of the truck rather than on some of the more pertinent factors that should be taken into consideration. This driver ventured the opinion that the helpers should be assigned according to the type of delivery in question. That is, if the route covered continually involves long carries or heavy packages there should be a helper regardless of the capacity of the truck. This seems logical except that there would be the difficulty of determining the type of delivery that needed the helper. This, in turn, would involve expense which might overbalance the saving thus incurred. In addition, this driver thought that the addition of more helpers to the existing force would increase the value of the service to the customers to such an extent that the increase in business would offset the additional wages that would have to be paid.

In the terminals there is considerable delay while the trucks are getting ready to depart for the day. Each driver is the boss over the loaders while his truck is being loaded. This is done so that the packages will get on the truck in such a way that they will be in the right order when the time comes to deliver at the store door. If the packages are not on the truck in the correct order, there is

always considerable time lost. Thus the drivers have to be very careful to see that the loads are properly arranged. One driver suggested that more efficiency in the terminal would allow faster loading and thus allow the drivers to get started sooner and gain the benefit of less traffic on the early start.

A driver in the New England Transportation Company suggested that the best solution to the problem of delivery and pickup was in the accurate definition of a store door. His claim was based on the fact that the customers insisted the drivers carry the package to any desired point in the building. In some cases this may be in the basement and sometimes on the fifth floor. Obviously, the cost of delivery to the customer who has a handy delivery platform is much less than to the one who must have his goods taken to the fifth floor. As a supplement to this suggestion, this driver observed that inasmuch as it would be impossible in some cases to leave a consignment in the street, there should be some sort of a charge for moving the goods any place beyond the specified "store door".

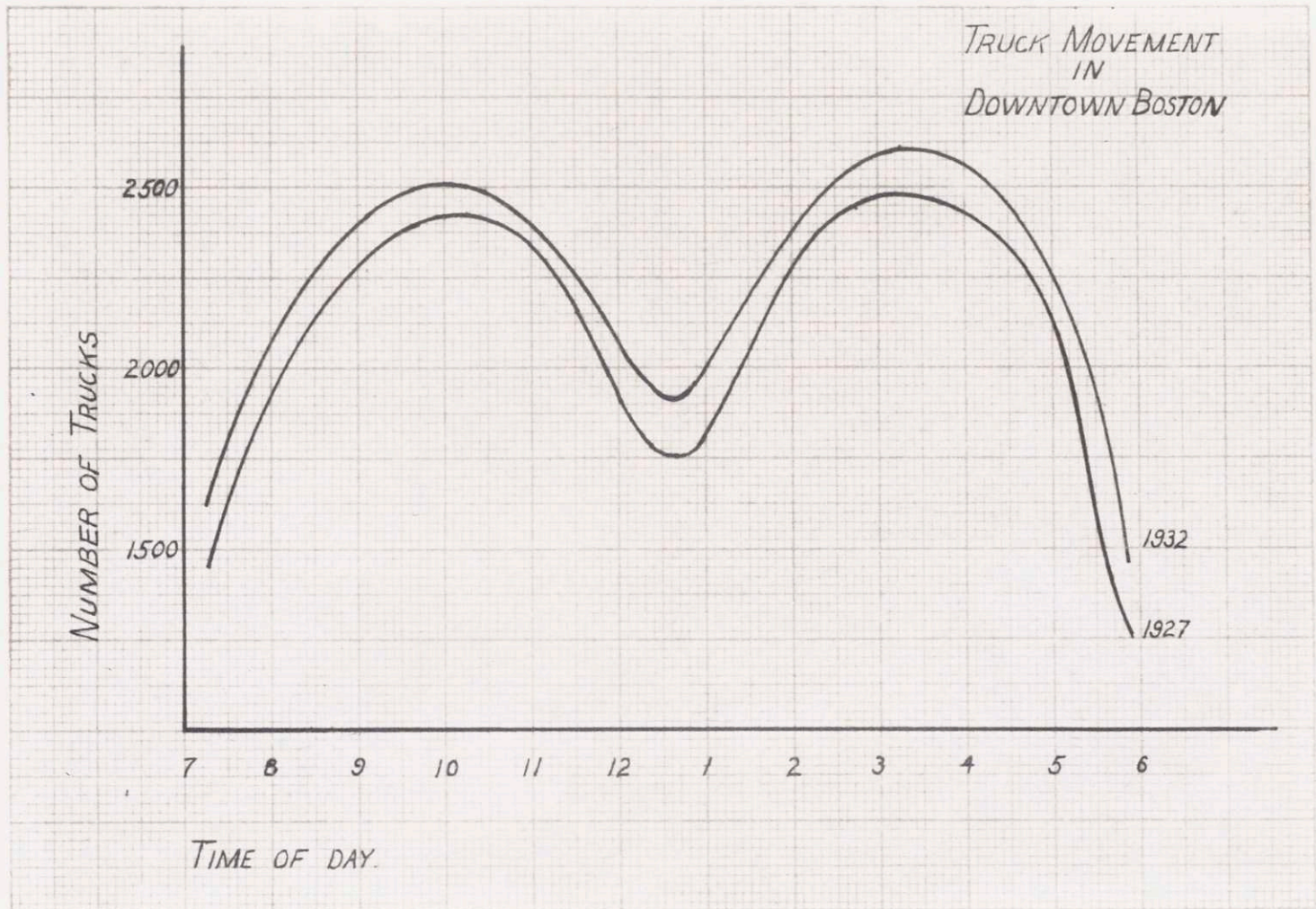
It is interesting to note that many valuable suggestions are made by the drivers. They are closest to the details of the situation and therefore are the ones that can most easily find the answers to the problems.

APPENDIX XX

Part of a traffic survey made by the Boston Traffic Commission in June 1927 and June 1932.

Total number of trucks crossing the indicated boundaries of downtown Boston during the specified half-hour periods:

	<u>PERIOD</u>	<u>1927</u>	<u>1932</u>
A.M.	7:00 - 7.30	1,440	1,628
	7.30 - 8.00	1,903	1,982
	8.00 - 8.30	2,058	2,314
	8.30 - 9.00	2,172	2,361
	9.00 - 9.30	2,399	2,428
	9.30 - 10.00	2,400	2,419
	10.00 - 10.30	2,424	2,498
	10.30 - 11.00	2,453	2,458
	11.00 - 11.30	2,422	2,424
	11.30 - 12.00	2,119	2,478
P.M.	12.00 - 12.30	1,883	2,134
	12.30 - 1.00	1,716	1,779
	1.00 - 1.30	2,070	2,015
	1.30 - 2.00	2,186	2,249
	2.00 - 2.30	2,389	2,353
	2.30 - 3.00	2,390	2,425
	3.00 - 3.30	2,588	2,598
	3.30 - 4.00	2,505	2,591
	4.00 - 4.30	2,352	2,568
	4.30 - 5.00	2,107	2,251
	5.00 - 5.30	1,822	1,933
	5.30 - 6.00	1,247	1,467
	6.00 - 6.30	737	981
	6.30 - 7.00	509	711
	7.00 - 7.30	347	586
	7.30 - 8.00	275	450
	8.00 - 8.30	232	382
	8.30 - 9.00	185	288
	9.00 - 9.30	171	259
	9.30 - 10.00	138	195
	10.00 - 10.30	125	168
	10.30 - 11.00	94	164
	11.00 - 11.30	78	148
	11.30 - 12.00	76	135
	<u>TOTAL</u>	<u>50,012</u>	<u>53,820</u>



APPENDIX XXI

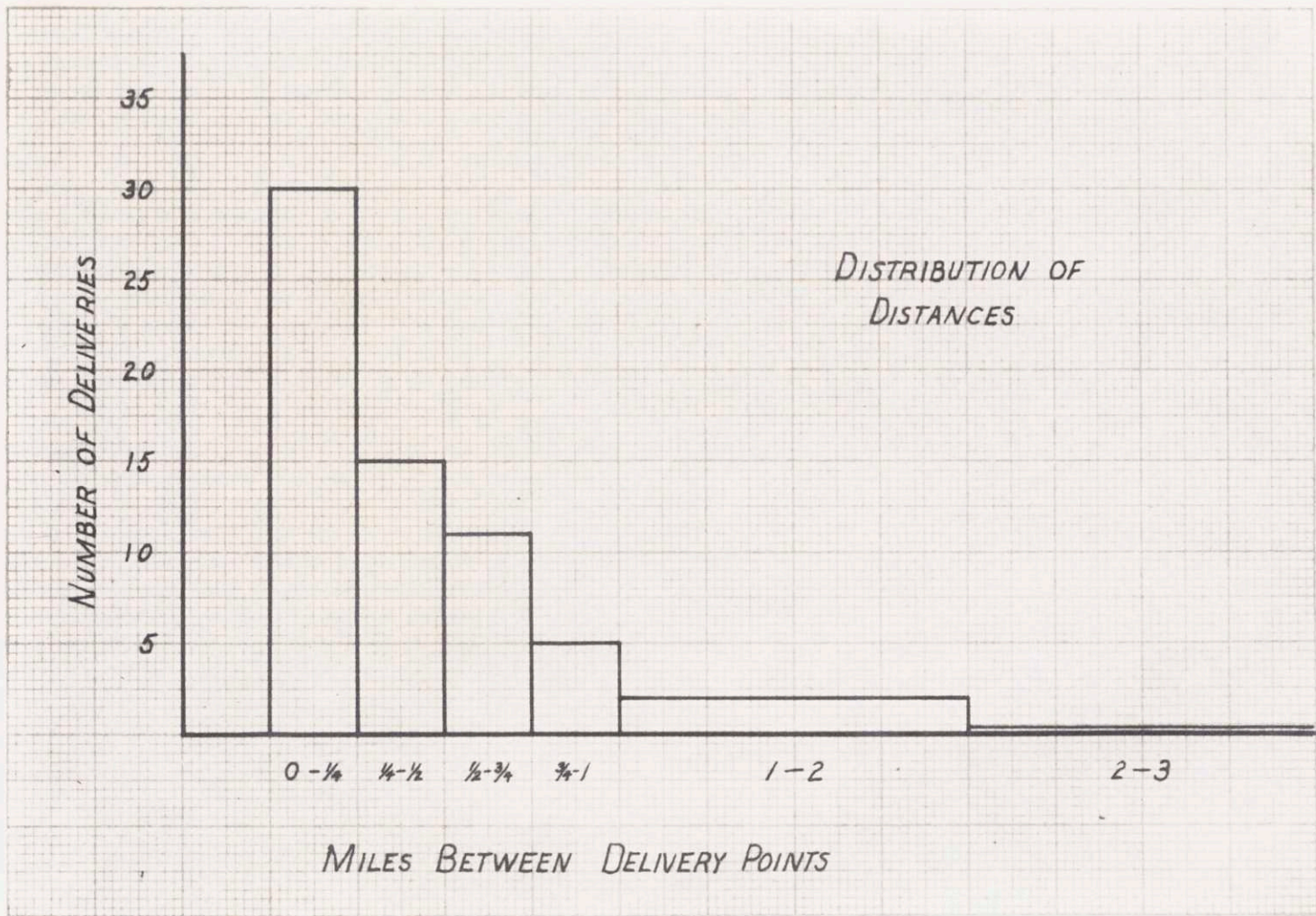
DELIVERY CONDITIONS

Total Number of deliveries	- - - - -	88
Easy Deliveries	- - - - -	39
Short Carry	- - - - -	6
Long Carry	- - - - -	4
Street Blocked	- - - - -	7
Entrance Blocked	- - - - -	5
Elevator Wait	- - - - -	5
Wrong Address	- - - - -	1
Cellar Delivery	- - - - -	3
Above First Floor	- - - - -	-10
Money Collection Delay	- - - - -	9
General Difficulty	- - - - -	5
No Delivery Entrance	- - - - -	2
Wait for Platform Truck	- - - - -	2
Delay To Arrange things on truck	- - - - -	1
Receiver Helped	- - - - -	2
Large delivery Space	- - - - -	3
Wait For Receiving Clerk	- - - - -	1

APPENDIX XXII

DISTRIBUTION OF DISTANCES

0- $\frac{1}{4}$	Miles	- - - - -	30 Deliveries
$\frac{1}{4}$ - $\frac{1}{2}$	"	- - - - -	15 "
$\frac{1}{2}$ - $\frac{3}{4}$	"	- - - - -	11 "
$\frac{3}{4}$ - 1	"	- - - - -	5 "
1-2	"	- - - - -	8 "
2-3	"	- - - - -	1 "
3-4	"	- - - - -	3 "
4-5	"	- - - - -	0 "
5-6	"	- - - - -	1 "
6-7	"	- - - - -	0 "
7-8	"	- - - - -	0 "
8-9	"	- - - - -	1 "
			75
	Total		

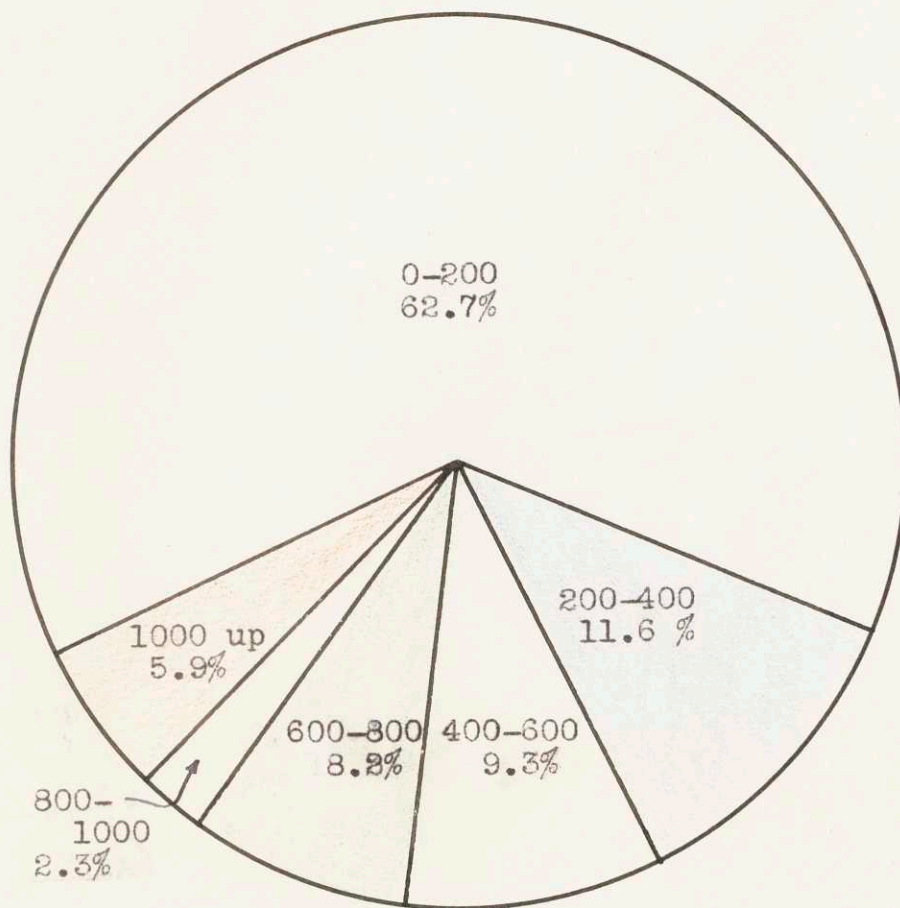


APPENDIX XXIII

DISTRIBUTION OF SHIPMENTS BY WEIGHT

0-200 pounds	- - - - -	54
200-400 "	- - - - -	10
400-600 "	- - - - -	8
600-800 "	- - - - -	7
800-1000 "	- - - - -	2
1000 up "	- - - - -	5 (1 over 2000)
Total deliveries	✓ ✓ ✓ ✓ ✓ - -	86

PERCENTAGE DISTRIBUTION
OF
SHIPMENTS BY WEIGHT



Weight in pounds

APPENDIX XXIV

INTERVIEWS

H. F. Reinhard	Mills Transfer Company
J. A. Cunningham	New Haven Railroad
Ira Nelson	Motor Truck Rate Bureau of Massachusetts, Inc.
W. H. Day	Boston Chamber of Commerce
C. B. Baldwin	United Shoe Machinery Company
Walter Nelson	New Haven Railroad
E. L. Hefron	Walker Freight Service
F. I. Hardy	Big Three, Inc.
Irving Malkin	Malkin Motor Freight Company
Sidney Irving	New England Transportation Company
Edward Barry	Big Three, Inc.
J. R. McAnanny	Boston & Maine Railroad

APPENDIX XXV

BIBLIOGRAPHY

Principles of Motor Transportation: Ford K. Edwards; McGraw Hill Book Company, 1933.

Fortune: Volume XIII, Number 2, February, 1936.

Motor Truck Red Book and Directory: 1934 Edition.

Railway Age: October, 1933.

Motor Truck Transportation: Domestic Commerce Series, No. 66, United States Printing Office, 1932.

M.I.T. Thesis: "Application of Store-door Delivery to Carload Freight"; J. Roulston, 1934.

pe.

Observations-Delivery conditions

Wait for elevator-wait

Street blocked

Delivered Downstairs

Track in entrance-wait platform

(truck)

Elevator room

Delivered Building

Wait for elevator and truck

No delivery entrance

Easy delivery

Collection

Wait for elevator

Wait for elevator

Wait for receiving clerk

Wait for door

Delivery & door locked - delay

Delivery platform congested - wait

Wait for elevator

Street blocked-carry bag 300 yards

100 yd. carry by helper

Load carry in building-jamboree

Exhaustion (trouble)

Large delivery space in back alley

2 min. wait before delivery

Delivery delay in building

Large delivery platform

Easy delivery

Easy delivery

Arrange things on truck

Receiver helped

Blocked alley-long carry

Easy delivery

Wait for delivery-receiver dis-

agreeable

No. of

packages

1

1

1

11

2

1

1

12

1

1

10

1

1

1

1

1

1

1

1

1

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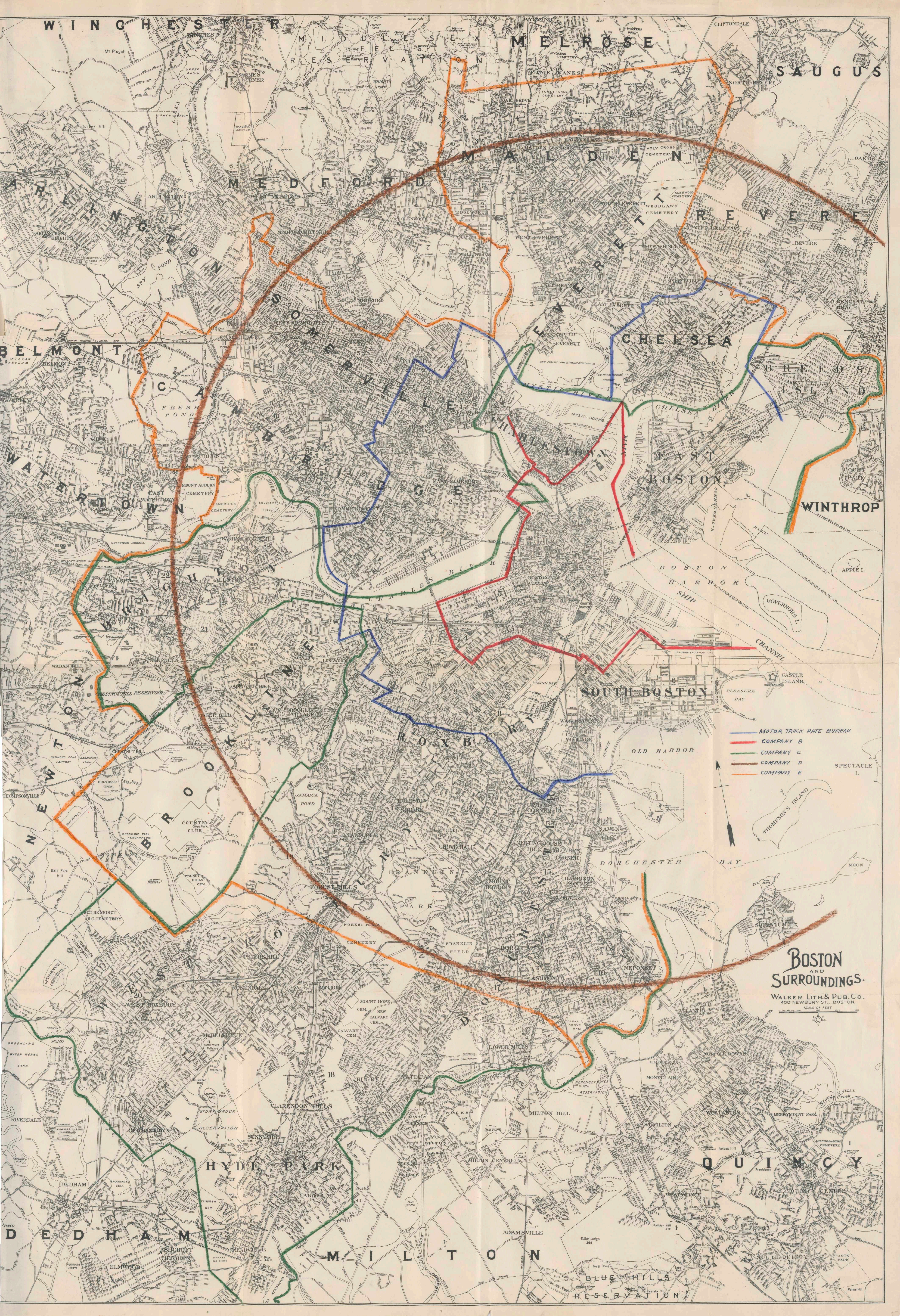
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APPENDIX

XXVI

Run No.	Time of Day	Location	Distance	Travel Time	Road Conditions	Traffic	Delivery Time	Size of Shipment	No. of Packages	Observations-Delivery Conditions
1	1.35 PM	177 Portland	.5	2Min.	Wet	Light	1	80 lbs	1	Excellent-No Wait- Collection
2	1.40	98 Friend	.33	2	Wet	Medium	2	120	1	Street blocked
3	1.45	330 Hanover	.75	5	Wet	Light	1	106	1	Delivered Downstairs
4	1.50	139 Cross	.25	2	Dry	Light	8	420	11	Truck in entrance-wait platform
5	2.00	Arch	1.00	6	Dry	Medium	3	104	2	(truck)
6	2.10	17 Milk	.25	5	Dry	Medium	4	150	1	Elevator
7	2.20	169 High	.50	2	Dry	Light	2	75	1	D
8	2.25	41 High	.25	1	Dry	Light	3			Deserted Building
9	2.30	71 Bedford	.15	3	Wet	Medium	9	600	13	Difficulty
10	9:55	177 Portland	.5	2	Dry	Light	2	200	1	
11	9:55	Causeway	.1	1	Wet	Light	8	400	4	Wait for elevator and truck
12	10:00	Nashua	0	0	Wet	Light	3	100	1	No delivery entrance
13	10:10	80 Canal	.15	2	Wet	Light	3	700	10	Easy delivery Coll
14	10:15	59 Pitts	.15	3	Wet	Light	5	100	4	Collection
15	10:20	Endicott	.20	1	Wet	Light	4		3	
16	10:25	Union	.15	1	Wet	Light	1	70	1	No trouble
17	10:30	Hawley	.75	9	Wet	Heavy	25	1300	2	Blocked alley-wait for elevator
18	11.00	40 Chauncey	.25	3	Wet	Medium	4	200	4	Cellar delivery by st. elevator
19	11:10	Rowe Place	.20	2	Wet	Light	5	120	2	Take to 6th floor-elevator
20	11:15	Harrison Ave.	.1	1	Wet	Light	7	120	6	Wait for receiving clerk
21	9.00	607 Atlantic	.6	4	Wet	Light	2	180	3	No delivery door
22	9.05	55 High	.1	2	Wet	Light	6	63	1	Elevator & door locked - Delay
23	9.15	470 Atlantic	.4	2	Wet	Light	23	465	21	Delivery platform congested - wait
24	9.40	80 Broad	.3	3	Wet	Light	9	910	23	Help given at elevator
25	9.50	Pearl	.3	2	Wet	Light	8	36	1	
26	10.00	85 Franklin	.3	8	Wet	Light	5	49	1	Street blocked-carry pkg 300 yards
27	10.10	9 Federal Ct.	.1	1	Wet	Light	1	35	1	100 yd. carry by helper
28	10.15	71 Bedford	.1	1	Wet	Light	5	130	3	Long carry in building-janitor
29	10.20	67 Kingston	0	0	-		4	158	1	Basement window (trouble)
30	10.25	104 Kingston	.2	4	Wet	Light	3	484	1	Large delivery space in back alley
31	10.30	South Sta.	.2	3	Wet	Light	2	56	2	
32	10.35	Kneeland	.2	2	Wet	Light	6	400	10	2 min. wait before delivery
33	10.45	Statler H.	.6	10	Wet	Heavy	12	805	14	Delivery delay in building
34	11.05	Stuart	.3	3	Wet	Light	7	238	7	Large delivery platform
35	11.15	287 Columbus	.2	2	Wet	Light	5	313	11	Easy delivery
36	11.25	100 Shawmut	.6	4	Wet	Light	4	100	3	Easy delivery
37	10.00	113 Huntington	3.0	20	Wet	Light	2	173	3	Easy delivery
38	10.20	Brookline Al.	.2	9	Wet	Light	2	445	10	Arrange things on trucks
39	10.30	1 Blandford	.8	3	Wet	Light	9	351	6	Receiver helped
40	10.45	144 Harvard (Bk)	2.5	11	Wet	Light	5	69	7	Blocked alley-long carry
41	11.10	Braintree	1.2	5	Wet	Light	3	682	22	Easy delivery
42	11.15	479 Cambridge	.5	3	Wet	Light	3	237	10	
43	11.35	Vassar	3.2	15	Wet	Light	10	2046	11	Wait for delivery-receivers dis-
44	11.45	Vassar	0	0	Wet	Light	6	693	26	Easy delivery (agreeable)
45	11.55	Broadway	1.6	4	Wet	Light	2	48	1	Short carry - not hard
46	12.00	Kendall Sq	1.0	5	Wet	Light	11	126	2	Easy delivery
47	12.20 PM	Pearson St	3.7	12	Wet	Light	2	49	2	Private house
48	12.35	Richdale	1.5	5	Wet	Light	3	208	1	Easy delivery
49	12.40	Harvey	1.1	5	Wet	Light	3	245	1	Easy delivery
50	1.00	Lincoln St	8.6	26	Wet	Light	3	84	3	Easy delivery
51	1.30	296 No Beacon	5.1	28	Wet	Light	8	--	--	
52	2.00	No Beacon	.8	3	Wet	Light	13	127	3	
53	2.15	1	1	6	Wet	Light	1	100	1	
54	2.25	848 Commonweal.	.6	2	Wet	Light	2	151	5	Prompt action
55	2.30	Blandford	.7	5	Wet	Light	10	540	6	Truck at delivery entrance-carry
56	9.30 AM	227 Purchase	.5	5	Dry	Medium	1	121	6	Easy delivery
57	9.35	200 High	.3	4	Dry	Medium	2	200	1	Truck in alley
58	9.40	130 High	.1	1	Dry	Light	3	134	1	Easy delivery
59	9.45	5 Carton	.05	3	Dry	Medium	1	148	1	Easy delivery
60	9.50	80 Broad	.3	3	Dry	Light	10	694	11	Collection delay for money-7 min.
61	10.05	59 Oliver	.2	2	Dry	Light	1	77	3	Easy delivery
62	10.05	138 Hartford	.1	2	Dry	Medium	11	1136	9	Wait for trucks in alley & money
63	10.20	114 Federal	.2	6	Dry	Light	9	84	1	Delay over delivery charge
64	10.40	10 Hawley	.3	2	Dry	Heavy	1	80	2	Easy delivery - touch collection
65	10.45	9 Chauncey	.1	2	Dry	Light	6	120	2	Short carry to door
66	10.55	507 Washington	.1	5	Dry	Heavy	4	60	2	Trucks blocking connecting street
67	11.00	Avon	.1	5	Dry	Heavy	17	1000	5	Wait for truck
68	11.00	Avon	0	0	Dry	-	1	36	1	Short carry
69	11.25	104 Kingston	.2	5	Dry	Heavy	1	107	2	Short carry
70	11.30	77 Bedford	.3	1	Dry	Light	10	84	1	5th floor-wait for money
71	11.40	25 Tyler	.4	4	Dry	Light	18	230	3	Delay over deliv. chrg for above st
72	12.05	136 Harrison	.1	1	Dry	Light	5	80	1	" " " " " "
73	12.10	16 Waterloo	.5	3	Dry	Medium	3	110	2	Easy Delivery
74	12.15	112 Shawmut	.1	1	Dry	Light	4	142	1	Wait for money
75	12.20	460 Washington	.8	8	Dry	Heavy	6	160	4	Carry around building
76				2			2	59	1	Short carry
77				1			1	46	2	Back alley
78				8			8	450	8	Long carry-tough job
79				3			3	53	4	Neat Delivery platform
80				3			3	65	1	Good delivery
81				7			7	660	1	Wait for money
82				2			2	29	1	Easy delivery
83				5			5	670	1	Easy delivery
84										
85										
86							3	105	1	Easy delivery
87							3	170	4	" pickup
88							6	1227	10	" pickup
							17	86	2	Long wait for freight to be prepared
							17	94	3	Wait for collection (pickup)

These entries are not significant for these runs since they were part of a suburban delivery route. Those shown, however, are significant.



- MOTOR TRUCK RATE BUREAU
- COMPANY B
- COMPANY C
- COMPANY D
- COMPANY E

BOSTON AND SURROUNDINGS.

WALKER LITH. & PUB. CO.
400 NEWBURY ST., BOSTON.

SCALE OF FEET