

# SIMPLIFICATION OF HIGHWAY TRAFFIC

WILLIAM PHELPS ENO



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# SIMPLIFICATION OF HIGHWAY TRAFFIC

BY

WILLIAM PHELPS ENO

Yale B. A. 1882, M. A. 1923; Chevalier de l'Ordre National de la Legion d'honneur 1925; Honorary Member of the Traffic Squad Benevolent Association of the Police Department of the City of New York; Membre Honoraire du Chambre Syndicale des Cochers et Chauffeurs de Voitures de Place de la Seine; Honorary Vice-President of National Highway Traffic Association; formerly Chairman of the Citizens Street Traffic Committee of New York City; Honorary President of the Highway Traffic Association of the State of New York; Organizer and Director of the Home Defense League of the District of Columbia during the World War; Chairman of the Advisory Board of the Highways Transport Committee of the U. S. Council of National Defense and Chairman of the Division of Transportation of the War Industries Board, etc.

*It can be set down as a traffic axiom that familiarity by the Public with the General Highway Traffic Police Regulations is the Key to effective and economical traffic management. There is no substitute. It is easy to control a trained army but next to impossible to regulate a mob.*

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THE ENO FOUNDATION FOR HIGHWAY TRAFFIC REGULATION, INC.

*I dedicate this book*

*to the Memory of*

*Sophie Irene Loeb*

*A great humanitarian. No road was too long for her to travel. No task too great for her to undertake. May her example inspire those she has left behind.*

## **A Few Hints for Those Who Are Trying to Save Lives, Time and Money by Traffic Regulation**

Standardize the General Highway Traffic Police Regulations as printed on pages 8-13 in this book!

Make all local highway traffic police regulations as uniform as possible!

All traffic regulations must be clear, or they will not be understood; reasonable, or they will not be obeyed; short, or they will not be read, and if they are not read, how can they be anything but useless?

The Council of National Defense Code revised to October 30, 1928, originally the official police code of New York, has all these qualifications. It has been in operation since October 30, 1903. It has been successful wherever used to a degree never attained when departed from in principle!

Don't try to regulate too much or you will complicate instead of regulate!

Don't refuse to profit by the past experience of others!

Adopt tried methods first and improve on them afterwards if you can!

Adopt a reasonable speed rate limit, to be reduced materially at crosswalks, crossroads, sideroads to the right, and in making turns.

The secret of successful and economical traffic regulation is found only in the education of the people to be regulated in the regulations they are expected to follow!

Use simple, inexpensive methods first! Beware of skillful salesmen of mechanical traffic lights operated from a distance automatically or by an operator who is unable to watch the traffic he is trying to control. Such a method confuses and complicates instead of simplifies. It reduces the traffic capacity of a street by unequal distribution of vehicles and increases danger instead of safety.

## INTRODUCTION

After many years of study of the movement of traffic in other countries I began active work in New York in 1899 and ten years afterwards published my first book on the subject, entitled, "Street Traffic Regulation." My second book, "Le Problème de la Circulation," was published in French in 1912, "Science of Highway Traffic Regulation" in 1920 and "Fundamentals of Highway Traffic Regulation" in 1926. These last two books were translated into Japanese and published in 1927 by the Police Department of Tokyo.

The present book "Simplification of Highway Traffic" is more or less a revision and rearrangement of selected matter contained in the other four books with some articles, papers and drawings which have not appeared before. It also gives reasons why it is desirable to avoid certain things, the most important being a detailed traffic ordinance which tends to confuse and prevent standardization and, second, the use of mechanical traffic signal lights operated from a distant point from which the operator cannot see the traffic which he is attempting to control.

In order that my work may be carried on more effectually during my lifetime and in perpetuity, in 1922, I formed the Eno Foundation for Highway Traffic Regulation, Inc. Realizing that it is impossible to tell in advance whether or not an object for which an organization was created may not be cared for more effectively in some other way, or perhaps not all of its income be required for the original purpose, I have arranged so that it lies within the power of the Directors of the organization to devote any part of the money not needed for highway traffic regulation to other useful purposes which meet their approval but which are reasonably limited in accordance with my desires.

It may be added that the income available for carrying on this work is sufficient for the Foundation's present purposes and that the capital assured to it through investments made and already in the possession of the Foundation will suffice after my death, for the Foundation to function as an independent organization or as an integral part of a university.

Although I personally do not expect in the near future to write another book, material is being collected and kept for publication when the Directors of the Eno Foundation think it will be useful.

WILLIAM PHELPS ENO.

March 30, 1929.

*"The science of highway traffic regulation consists in the knowledge of how to regulate the movement of vehicles and pedestrians so that they interfere with one another as little as possible and are enabled to go from point to point in the shortest time compatible with safety"*

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\* The death of Sophie Irene Loeb is a great loss to the Foundation as she had been active in its work for many years.

OBJECTS OF THE FOUNDATION: Standardization of The C. N. D. (Council of National Defense) Code of General Highway Traffic Regulations with Safe Rules for Pedestrians; Uniformity of Special Regulations; permits for drivers of private vehicles and licenses for drivers of public vehicles valid anywhere and to be granted only after official physical and mental examination, satisfactory references as to character and practical demonstration of ability to drive safely; ample bond or approved liability insurance to be furnished by or for every driver of a motor vehicle; one registration number good anywhere; standardization of traffic signs, lines and other traffic guides, lights, sound, drivers' hand, semaphore and other signals, traffic officers' signals to drivers and pedestrians; special training of traffic officers; traffic safety to be taught in schools and courses in traffic problems and transportation in universities; suppression of unnecessary noises on highways and simplification of motor vehicle taxation.

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Copies of this book can be had from the Eno Foundation for Highway Traffic Regulation, Inc., Saugatuck, Fairfield County, Connecticut, or through your bookseller. Price, \$5.00 cloth binding, \$3.50 heavy paper binding, special rates to universities, schools, police departments and traffic committees on application.

The plates for printing the **GENERAL HIGHWAY TRAFFIC POLICE REGULATIONS**, with name of city inserted, can be obtained from Byron S. Adams, 512 11th Street, Washington, D. C., at a cost of \$12.00 per set of six plates. This same firm can do the printing of them if desired and also furnish them in placard form.

# Simplification of Highway Traffic\*

## *PART I*

### GENERAL HIGHWAY TRAFFIC REGULATION

#### The A. B. C. of Traffic Authority, Education, Enforcement

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#### DIVISION A

##### **AUTHORITY.**

The Police regulate traffic on the highways. Therefore the General Highway Traffic Police Regulations (the ancient Rules of the Road brought up to date) and also such local regulations as may be adopted should all be Police Regulations, never ordinances.

The authority necessary may be given through an enabling clause in the City Charter or through an enabling ordinance. There should be no detailed ordinance of any kind on traffic. The enabling ordinance should include the usual revoking clause to get rid of any conflicting ordinances if any such exist. Police regulations can be easily changed whereas it is a difficult and slow process to revise or revoke an ordinance.

I have made several attempts to formulate a model ordinance suitable for standardization, one being published in "The American City" October 1924, another in a pamphlet entitled, "Suggestions on Traffic Control for Consideration at the National Conference on Street and Highway Safety" December 1924 and the last is to be found in "Fundamentals of Highway Traffic Regulation" published 1926.

After these attempts of my own in which I have carefully excluded everything I thought might have to be changed in the future and close scrutiny of the many attempts of others including the one proposed by the National Con-

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\* At the end of this book, beginning with p. 140, will be found an Appendix with an Historical Synopsis of the Development of Highway Traffic Regulation since 1899. This historical synopsis is really a story of the development of traffic put in narrative form and in it will be found a good many particulars and details which are not contained in the earlier part of the book and which may be interesting to the general reader as well as to the student of traffic.

ference on Street and Highway Safety, recently published, I have come definitely to the conclusion that it is impossible to formulate a traffic ordinance that goes into detail and that does not contain anything that is not likely to have to be changed. The proposed ordinance framed by the National Conference on Street and Highway Safety is full of detail much of which will certainly have to be changed, besides mixing in with the General Regulations, regulations which are suitable only for local application. In my opinion, *the adoption of such a detailed ordinance as has been offered by the National Conference on Street and Highway Safety would do more to delay the development and standardization of traffic regulation than anything that has so far been suggested.* What we need is not to increase complication but to encourage simplification and sanity in traffic regulation.

It is just as important to start with a good foundation in traffic as it is to build a good foundation before erecting a house. If students of traffic in future will start with this in view they may avoid a great deal of the trouble that I have experienced since I began active work on traffic thirty years ago.

I am therefore going to give you a general synopsis of some of my experiences with detailed traffic ordinances and traffic police regulations during this long period.

On January 5, 1901, I published in the form of an ordinance a proposed set of General Highway Traffic Regulations entitled "Rules of the Road Revised." This proposed ordinance was introduced in February 1903 to the Board of Aldermen of New York City by Jacob Cantor, then President of the Borough of Manhattan but unfortunately before the wrong committee. Opposition to my ordinance developed through an alderman who had presented an ordinance bearing a striking resemblance to mine but he got his before the right committee. My ordinance met with the approval of Seth B. Low, then Mayor, and Major General Francis V. Greene, then Police Commissioner, but through the activities of the aforesaid alderman it was held up with no apparent hope of its being passed.

Meantime, the Police Department was finding it impossible to regulate traffic satisfactorily, until in 1903, when I made an examination of the City Charter<sup>1</sup> and discovered that the Police Department already had sufficient power to regulate traffic without recourse to the Board of Aldermen through Section 315 of the City Charter which reads as follows:

"It is hereby made the duty of the Police Department and Force \* \* \*

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<sup>1</sup> Examination of the Penal and Sanitary Codes made at the same time revealed that each of these codes has clauses that strengthens the provisions of the City Charter. (Street Traffic Regulation 1909.)

to regulate the movement of teams and vehicles in streets, squares, parks and public places.”

I thereupon embodied the provisions of my proposed ordinance in the form of a set of General Highway Traffic Police Regulations and took it to the Police Commissioner who upon being shown Section 315 of the Charter signed the regulations the same day, October 30, 1903. These Police Regulations, except for a short interval in 1906, (See Street Traffic Regulation 1909) with periodical revisions have continued to control traffic in the city of New York for twenty-five years (1903-1928).

These Police Regulations were printed in the Police Manual, also in folder form for distribution, and in placard form for stables, garages and other public buildings.

Meantime, the Alderman had been pressing his ordinance and on December 14, 1903, the Police Commissioner wrote me that the Mayor and he had both approved the ordinance, “since we had succeeded in getting it somewhat amended” and stating that other changes which I had recommended could be made in a subsequent amendment. The ordinance passed on December 14, 1903.

The first two revisions of the Police Regulations on traffic for New York were made in 1908; they were adopted in Louisville and Lexington, Kentucky and in Boston in 1908; were twice revised for New York in 1909; again in 1910; were adopted in Detroit in 1911; and in Indianapolis in 1912. They were made the official Highway Traffic Regulations of Paris July 10, 1912.<sup>1</sup>

<sup>1</sup> In the spring of 1909 the New York Regulations as printed in “Street Traffic Regulation,” were translated into French by order of Louis Lépine, Préfet of Police at that time. This translation was submitted to me and I supposed it was to be adopted forthwith. Before I left Paris I received a letter from a member of the Municipal Council who owned or controlled two daily papers, asking me to send him all data that I had on traffic which I willingly did and in fact had it translated for him. Shortly after returning to America I learned from letters and newspaper clippings that the work was not progressing satisfactorily and in the spring of 1910 I returned to Paris to find that this Municipal Councilor had prepared a book on traffic which was largely devoted to showing how bad the things were which I had recommended and the second part, in advocating their adoption. I discovered on going to the Préfecture de Police that this same man had gotten a traffic ordinance adopted based on the Regulations in my book. I consulted with the three great driving syndicates and found that they were all opposed to the ordinance of the Municipal Councilor but in favor of my Traffic Police Regulations. The driving syndicates had already asked the Police Department to get rid of the ordinance and substitute my Traffic Police Regulations and so it was that I met with a very enthusiastic reception by these syndicates numbering over 200,000 members. The details of the controversy are too long to go into here, but it will not take too much space to say that we began a winning fight before I returned to America that autumn, 1910. I realized however that I must make strenuous efforts if I expected to succeed, so I wrote a new book on traffic, “Le Problème de la Circulation,” which I had translated into French and published in Paris, June, 1912, 10,000 copies being distributed by the Préfecture de Police and the drivers’ syndicates. The regulations were made the official Highway Traffic Police Regulations (Réglements concernant la Circulation sur la Voie Publique) of Paris, on July 10, 1912, and still continue in more or less revised form to control traffic in Paris and other French cities.

The Regulations were adopted Feb. 15, 1913, in Philadelphia; Stamford, Conn., October 7, 1913; New Orleans, February 11, 1914; revised again for New York, April 3, 1914; adopted in New Britain, Conn., April 10, 1914. In 1915, they were adopted in over one hundred boroughs in the state of Pennsylvania; revised again for New York, March 18, 1915. They were adopted for standardization by the Highways Transport Committee of the Council of National Defense May 8, 1919, again revised under the title of "Council of National Defense (C. N. D.) Code of General Highway Traffic Regulations with Safety Directions for Pedestrians, Dec. 25, 1922." The C. N. D. Code was again revised January 1, 1926, and the latest revision is published in this book.

I apologize for going into particulars. It is because in recommending others, as strongly as I do, to beware of detailed ordinances on traffic I wish to show that my reasons are based on painful experience extending over many years of intensive effort. In a word then, my advice is, if you have a City Charter, are going to revise one you already have, or adopt a new one, that a clause be put in it something like Section 315 of the New York City Charter, revised to read as follows:

It is hereby made the duty of the Police Department and Force to direct, control, restrict and regulate in the interest of public safety, health and convenience the movement of pedestrian, animal and vehicular traffic of every kind in highways, parks and public places through the adoption of the Council of National Defense Code of General Highway Traffic Police Regulations and its subsequent authorized revisions and of such local police regulations as are deemed by it necessary for the purpose.

The provisions of a City Charter have precedence over ordinances. An ordinance cannot interfere with provisions of a Charter but it properly can go a little further. If there is a provision in the charter there is no strong reason for an ordinance on traffic. If, however, there is no provision in the City Charter, an ordinance should be adopted with practically the same wording as given for the charter except perhaps authorization to the police department to use such traffic guides as signs, dummy cops, pavement markings, etc., as may seem desirable for the control of traffic and to employ traffic engineers who have specialized in road traffic to assist in laying out traffic plans, framing local regulations and recommending to competent authorities such physical changes as may facilitate the regulation of traffic.

*Authority for the regulation of traffic should be put squarely up to the police department which does the regulating.*

A detailed ordinance has no more business in traffic regulation than a police regulation has in the Constitution of the United States.

## DIVISION B

### EDUCATION

#### **The Council of National Defense Code of General Highway Traffic Police Regulations**

GENERAL HIGHWAY TRAFFIC POLICE REGULATIONS are those which are ample for the largest city and not superfluous for the smallest village. They are, in fact, the ancient "Rules of the Road" developed for modern requirements. The history of their development has been as follows:

Before 1903, there was practically no attempt made to regulate traffic anywhere, except in British cities, but even these had not, and London, at least, still has not a set of printed general highway traffic regulations. In these cities, however, traffic was well controlled, due to the fact that both drivers and pedestrians for generations, had known and obeyed without question the time-honored rules of the road and the police were well trained.

It was realized that we could not wait as England had, for the traditions of generations to control traffic, so the only thing to do was to hasten the education of the public by printed general regulations—short, concise and reasonable—amply distributed in folder form and posted in placard form for the information of drivers and pedestrians.

An active campaign in New York was begun in January, 1900, but it was not until October 30, 1903, that the printed regulations were officially adopted by the police department. The improvement in traffic conditions was immediate.

The General Regulations were revised many times and brought up to date in 1919 by the Highways Transport Committee of the Council of National Defense. When the Council of National Defense ceased to exist, these regulations were handed by legislation over to the United States Department of Agriculture and lodged with the Bureau of Public Roads. Subsequently they were referred to the Highway Education Board, a semi-official, co-ordinating organization, on which the Bureau of Public Roads is represented by the Chief of the Bureau. At a National Conference on Education for Highway Engineering and Highway Transport called at Washington by the Highway Education Board in October, 1922, a special committee on questions of teaching principles of highway traffic submitted the following recommendations. These were approved and adopted by the Conference on October 27, 1922.

"The Committee believes that a study of the underlying principles of the best practice in relation to traffic regulation and safety



is of fundamental importance. The Committee, therefore, recommends that the Highway Education Board ask The Eno Foundation for Highway Traffic Regulation, Inc., to take up these problems as a continuation of the work of the Council of National Defense for the investigation, codification, publication and standardization of general highway traffic regulations; thus insuring continuity and permanency in the study of these important problems.

Respectfully submitted,

H. J. Hughes, Chairman, Dean, School of Engineering, Harvard University;

John J. Tigert, United States Commissioner of Education;

Chas. J. Bennett, State Highway Commissioner of Connecticut;

George Diehl, President, American Automobile Association;

Stephen James, Highway Education Board, Washington, D. C.;

H. S. Jordan, National Automobile Chamber of Commerce;

William Phelps Eno, Chairman, Board of Directors, Eno Foundation for Highway Traffic Regulation, Inc.;

Pyke Johnson, Secretary, Highways Committee, N. A. C. C.;

John C. Long, Educational Secretary, N. A. C. C.;

E. A. Baughman, Commissioner of Motor Vehicles, Baltimore, Md.;

Dr. James W. Inches, Commissioner of Police, Detroit, Mich.;

George M. Graham, Vice-President, Chandler Motor Car Co.;

William E. Metzger, President, Columbia Motor Car Co.;

L. V. Coleman, Director, Safety Institute of America;

W. H. Cameron, Executive Secretary, National Safety Council;

Dr. W. M. Marston, Professor of Psychology, American University;

James Madden, North Jersey Auto Club;

Professor C. J. Tilden, Chairman, Division of Engineering, Yale University;

Dean J. W. Votey, University of Vermont;

J. C. Mills, The Steffenguide Co., Columbus, Ohio;

C. B. Buck, Chief Engineer, Delaware State Highway Department."

THE GENERAL HIGHWAY TRAFFIC POLICE REGULATIONS, thus assigned to the continuous care of the Eno Foundation, form a police code known as the Council of National Defense (C. N. D.) Code.

No general highway traffic police regulations have been issued in this country or elsewhere which have not had the New York regulations as their ancestor, but unfortunately, committees or police officials have been allowed to tinker with them so that, with few exceptions, the regulations are in complicated form, much too long, often unreasonable, and lacking in clearness. The C. N. D. Code as revised to October 30, 1928, should be standardized throughout the country and protected against unauthorized changes. As noted herein, ample provision is made for such periodical improvement and revision as may be found

necessary. This is the only way by which uniform general traffic police regulations can be obtained and maintained.

General highway traffic police regulations, to be effective, must be short or they will not be read, clear or they will not be understood, reasonable or they will not be obeyed. Failure to make them short, clear and reasonable<sup>1</sup> has so often made traffic regulation abortive that it is time to have them standardized and beyond the meddling hands of inexperienced officials and committees.

The C. N. D. Code should be put into effect everywhere without change but with provision for the consideration of suggested improvements at meetings to be called when necessity arises. The regulations as they stand, revised to October 30, 1928, have been worked over by dozens of committees and hundreds of individuals during more than thirty years and no hurried further revision should be attempted as it would simply create delay and cause confusion.

The worst mistake of all, however, is to put traffic regulations in the form of an ordinance which so many of our cities have done. Police regulations are susceptible of reasonably quick change whereas to change an ordinance takes a long time and if a change is made it is usually done by individuals or committees unfamiliar with the subject.

While the Highways Transport Committee of the Council of National Defense was responsible for bringing the General Highway Traffic Police Regulations up to date in 1918 and 1919 it followed the plan of getting advice and suggestions on them from any who were interested. With this responsibility transferred to the Eno Foundation for Highway Traffic Regulation, Inc., the same plan will be followed and revisions of the regulations made from time to time as they are found necessary. Constructive suggestions are always welcomed at the office of the Foundation.

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<sup>1</sup> The length and complexity of regulations issued in many of our cities have tended to retard the education of both drivers and pedestrians in the regulations which they are expected to follow. One of our cities, and perhaps the one which should set the example, above all others, has adopted a set of regulations printed in pamphlet form containing about thirteen thousand words in small print. Surely only a very few people will read these and even if most of them could be induced to do so they would not be able to understand them.

EDUCATION IS THE KEY TO REGULATION

## C. N. D. (Council of National Defense) CODE of GENERAL HIGHWAY TRAFFIC POLICE REGULATIONS

ADOPTED AS STANDARD BY THE COUNCIL OF NATIONAL DEFENSE MAY 8, 1919.  
TRANSFERRED TO THE U. S. BUREAU OF PUBLIC ROADS AND REFERRED TO THE  
HIGHWAYS EDUCATION BOARD OCT. 27, 1922; OFFICIALLY REVISED TO OCT. 30, 1928

ISSUED BY THE CITY OF.....192.....

### DEFINITIONS.

**HIGHWAY**—any Street or Road used as a public thoroughfare.

**ROADWAY**—that part of a highway or park for the use of vehicles.

**CURB**—the edge of a roadway, marked or understood.

**SIDEWALK**—that part of a highway or park for the use of pedestrians.

**CROSSWALK**—that part of a roadway, marked or understood, upon which pedestrians should cross.

**REFUGE**—that part of a roadway from which all vehicles are excluded.

**PROHIBITED ZONE**—that part of a roadway from which pedestrians and all vehicles, except tram cars, are excluded.

**RESTRICTED ZONE**—that part of a roadway on which pedestrians are allowed but from which all vehicles except tram cars are excluded.

**DANGER ZONE**—any part of a roadway not a refuge or a cross walk.

**TRAFFIC WHIRLPOOL**—that part of a roadway at an intersection or junction of highways bounded by curbs and crosswalks.

**LIMIT LINES**—boundaries of stationing areas, refuges, prohibited, restricted, or danger zones, crosswalks, etc.

**VEHICLES**—any conveyances, including horses. Hand or foot-propelled conveyances and skaters are regarded as vehicles when on a roadway but as pedestrians when on a sidewalk, crosswalk, or refuge.

**HORSE**—any saddle or harness animal.

**TRAM CAR**—any public service vehicle confined to rails on roadway.

**DRIVER**—any person in control of a vehicle.

**LIVE VEHICLES**—those whose drivers are present, and prepared to move vehicles.

**DEAD VEHICLES**—those whose drivers are absent or unable to move vehicles.

**TO STATION**—to stand vehicles on roadway in ranked or parked position.

**RANKED VEHICLES**—those stationed in file, parallel to curb.

**PARKED VEHICLES**—those stationed parallel to one another, at angle to curb.

**ONE-WAY TRAFFIC**—traffic restricted to one direction.

SAFETY FIRST, LAST AND ALWAYS

READ CAREFULLY

UNDERSTAND FULLY

**THE POLICE ARE THE OFFICIAL REGULATORS**

The following Regulations for vehicles (including tram cars in so far as their being on rails will permit) *shall be observed by their drivers* who shall promptly comply with all police orders given by voice, hand or whistle, semaphore or signal light, as to starting, stopping, slowing, approaching or departing from any place, the manner of taking up or setting down passengers and the loading or unloading of anything.

If a traffic officer's signal conflicts with an automatic signal, obey the officer.

Vehicular or pedestrian traffic may be halted or diverted by the police to avoid congestion or to promote safety and convenience.

**GENERAL REGULATIONS FOR VEHICLES**

**ARTICLE I. RECKLESS DRIVING IS UNLAWFUL AND INCLUDES:**

SECTION 1. Driving any vehicle when not legally qualified to do so, or when intoxicated, or when for any other reason not competent to drive properly.

SEC. 2. Driving any vehicle when it is not under practical control, *especially at crosswalks, cross roads and side roads on the right.*

SEC. 3. Driving any vehicle without due courtesy and consideration for the safety, convenience and rights of pedestrians, equestrians and bicyclists, whether on city streets, suburban highways or country roads.

SEC. 4. Failing to exercise due care in crossing or entering the traffic of another roadway—*bearing in mind that it is obligatory not to interrupt the traffic of the more important thoroughfare unnecessarily.*

SEC. 5. Exceeding a reasonable, considerate and safe speed rate under existing conditions or the speed rate established by law.

SEC. 6. Violating any of the following Regulations so as to cause danger or failing to take *every reasonable precaution* for safety or to obey any order of a traffic officer or any direction indicated by official traffic sign, semaphore, signal light or limit line.

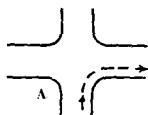
**ART. II. PASSING, TURNING, AND KEEPING NEAR CURB.**

SECTION 1. A vehicle passing or being passed by another shall not occupy more than *its fair share* of the roadway.

SEC. 2. A vehicle meeting another shall pass to the right.

SEC. 3. A vehicle overtaking another shall pass to the left, but must not interfere with traffic from the opposite direction, nor pull over to the right before entirely clear of the overtaken vehicle—but in overtaking a tram car pass to the right, except in an emergency, pass to the left, with *due caution after observing traffic from opposite direction.*

SEC. 4. A vehicle turning into a roadway to the right shall keep close to the right-hand curb, (See A)



**EXTRA CARE ON SLIPPERY PAVEMENT**

CARE AT CROSSWALKS

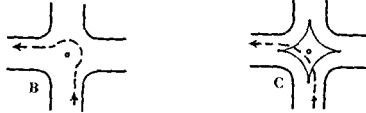
TURN SLOWLY AND CAREFULLY

SLOW AT INTERSECTIONS

KEEP NEAR RIGHT-HAND CURB

## DRIVERS SHOULD AID IN REGULATION

SEC. 5. A vehicle turning into a roadway to the left if rotary traffic is in effect shall pass around the central point of intersection of the two roadways. (See B) but where rotary traffic is not in effect it shall pass between the central point of intersection and the arc of the circle (See C).



SEC. 6. A slow moving vehicle shall keep as near as practicable to the right hand curb—*the slower the speed the nearer the curb.*

SEC. 7. A vehicle loitering or cruising for fares shall proceed fast enough *not to impede following traffic.*

SEC. 8. A vehicle on a roadway divided longitudinally by a parkway, walk, sunkenway, viaduct, refuge, or cab stand, shall keep to the right of such division.

SEC. 9. A vehicle passing around a circle, oval or other form of centralized obstruction, shall keep to the right of such obstruction.

SEC. 10. A vehicle shall give *ample room* to bicyclists and skaters and pass them with care.

## ART. III. STATIONING, STOPPING, FOLLOWING, BACKING.

## ALL VEHICLES

SECTION 1. A vehicle may be stationed on any roadway and for any length of time, provided it does not interfere with the *rights of others*, and subject to the following sections of this Article, unless prohibited from so doing or limited as to time by an official traffic sign or local regulation.

SEC. 2. If stalls for ranked vehicles are marked, any vehicle occupying one of them shall stop with the center of its front wheels on the *front line* of the stall.

SEC. 3. If stalls for parked vehicles are marked, any vehicle occupying one of them shall stop *entirely within it.*

SEC. 4. A vehicle shall not be stopped on a crosswalk, nor within an intersection, except in an emergency, nor with any part of its load extending beyond limit lines.

SEC. 5. A vehicle on a two-way traffic roadway shall stop at the right hand curb only, but not at all if preventing other vehicles from passing in *both directions* at the same time.

SEC. 6. A vehicle on a one-way traffic roadway may stop at either curb, but not at all if preventing other vehicles from passing in *one direction.*

SEC. 7. A four-wheeled, horse-drawn vehicle backed up to the curb shall have its horses stand parallel to the curb, faced with the *direction of traffic.*

## DEAD VEHICLES MUST NOT OBSTRUCT TRAFFIC

SIGNAL STOPS AND TURNS

GO SLOW AT CROSSINGS

RESPECT RIGHTS OF OTHERS

CONSIDER CONVENIENCE OF ALL

**COOPERATION IS NECESSARY FOR RESULTS**

**LIVE VEHICLES**

SEC. 8. A vehicle stopped in front of an entrance to a building or transportation station, unless it be expeditiously loading or unloading, shall promptly **give place to an arriving vehicle.**

SEC. 9. A vehicle shall not follow another **too closely for safety**, nor follow fire apparatus, going to a fire, closer than 500 feet.

SEC. 10. A tram car shall not be stopped nearer to another tram car ahead than five feet.

SEC. 11. A vehicle shall not back to make a turn or in any way so occupy a roadway as to needlessly obstruct traffic.

**DEAD VEHICLES**

SEC. 12. A dead vehicle shall not be stationed within ten feet of a fire hydrant, nor in such a position as to prevent other stationed vehicles from moving away nor so as to obstruct moving traffic.

**ART. IV. OVERTAKING TRAM CARS.**

A vehicle overtaking a tram car, stopped or stopping to take up or set down passengers, shall **stop or pass very slowly**, carefully and considerately, not approaching said tram car nearer than eight feet (the width of a tram car).

**ART. V. RIGHT OF WAY FOR CERTAIN VEHICLES.**

SECTION 1. A vehicle **shall give** the right of way to any other vehicle approaching from its left, and to all vehicles of the police, water and health departments, public service emergency repair vehicles and ambulances approaching from any direction, **but this shall not relieve any approaching vehicle from consequences of carelessness.** (See Article I, Sections 2, 3, 4 and 5.)

SEC. 2. A vehicle, on the approach of fire apparatus, shall **move out of its way** or stop so as not to interfere with its passage.

SEC. 3. A vehicle in front of a tram car, upon signal, shall immediately **get off the rails.**

**ART. VI. SIGNALS.**

SECTION 1. Drivers must signal by hand or by some other effective method **before** starting, slowing, stopping or backing, and **before** turning, **especially to the left.**

SEC. 2. Drivers when approaching or entering a curve, highway intersection or junction or coming to the top of a hill, **if roadway is obscured**, must use sound signal effectively and go slow.

SEC. 3. Drivers when **crossing a crosswalk must go slow**, take care, and signal when necessary to insure safety.

SEC. 4. Police whistle signals mean:

**One Blast**—that approaching traffic shall stop **behind** crosswalks.

**Two Blasts**—that halted traffic shall proceed **with due care for pedestrians.**

**Three or more Blasts**—approach of fire apparatus or other danger.

SEC. 5. Vehicles must be equipped with lights, mirrors and sound signals as prescribed by law, but sound signals shall not be used except for necessary traffic warning. **A moderate speed will reduce need for noisy signals.**

**CARE — NOT NOISE — SPELLS SAFETY**

GIVE SIGNALS CLEARLY AND IN TIME ACCEPT RIGHT OF WAY

NEVER ASSUME IT BE SURE SIGNALS ARE UNDERSTOOD

ABOVE ALL USE COMMON SENSE AND CARE

ART. VII. RESTRICTIONS IN REGARD TO VEHICLES.

SECTION 1. A vehicle shall not be used when it is so constructed, enclosed, equipped or loaded as to be *dangerous* or *noisy*, to scatter its contents, retard traffic, or prevent the driver from having a *view sufficient for safety*; or when it is so loaded with iron or other material as to create loud noises while in transit, or when it is loaded with any material extending beyond its rear without being provided with a *red flag* by day and a *red light* at night on the rear end of the load.

SEC. 2. A vehicle unless confined to rails shall not tow more than one other vehicle without authorization by law or official permit, and the tow connection shall not be more than sixteen feet in length, and shall have a white flag attached to its center.

SEC. 3. A dead vehicle shall not be left in such a condition as to prevent its being moved *out of the way in case of emergency*, and if motor propelled it shall have its motor stopped and effectively secured against being started, its emergency brake set, and, if on a hill, its front wheels turned in the direction of the curb.

SEC. 4. A vehicle shall not be driven by anyone under the age permitted by law.

SEC. 5. No one shall hitch or hold on to any vehicle.

SEC. 6. No one shall ride upon the rear or on any other part of a vehicle without the driver's consent.

SEC. 7. Coasting is prohibited where dangerous.

SEC. 8. Opening a motor muffler cut-out on a highway within a city or village, or in the country within 500 feet of a dwelling, school, church or hospital is prohibited.

SEC. 9. Dense smoke from motors is prohibited.

ART. VIII. CONTROL, TREATMENT AND CONDITION OF HORSES.

SECTION 1. A horse shall not be unbridled nor left unattended on a highway or in an unenclosed area, without being safely fastened, unless harnessed to a vehicle with wheels so secured as to prevent the horse from moving faster than a walk.

SEC. 2. No one shall ride, drive or lead a horse on a slippery pavement, unless the horse is properly shod to prevent falling; over-load, over-drive, over-ride, ill-treat or unnecessarily whip any horse; crack or so use a whip as to excite any other person's horse, or so as to annoy, interfere with or endanger any person; or use a horse unless fit for its work, free from lameness or sores likely to cause pain, and without any vice or disease likely to cause accident, injury or infection.

SEC. 3. A horse, especially if he be led or ridden, shall be approached slowly and with extreme care and consideration, particularly by motor vehicles, and if the horse is frightened or unmanageable the motor vehicle and its engine shall be *stopped until the danger is passed*. Care shall also be taken *not to sound horn or open cut-out* when close behind a horse.

MOTORISTS MUST BE FAIR TO HORSES

OBSERVE RESTRICTIONS FULLY

AVOID DANGERS

HAVE DUE REGARD FOR SAFETY

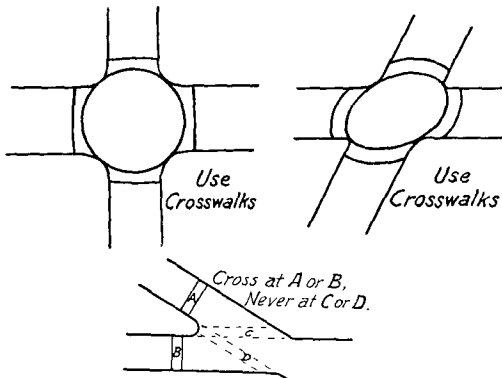
BE CONSIDERATE

STOP — LOOK — LISTEN

## SAFETY RULES FOR PEDESTRIANS

*The following Rules should be observed by pedestrians to insure safety and to avoid unnecessary interference with vehicular traffic:*

1. Keep to the right on sidewalk, crosswalk, roadway and passageway (but on highway without sidewalk, keep to left, so as to have clear view of approaching traffic).
2. Observe traffic before stepping from curb and keep off roadway except when crossing.
3. Cross roadway if reasonably possible on a crosswalk if lined off but if not lined off keep well back from intersection so as to have timely view of vehicles turning into the roadway you are crossing. See diagrams.



COMMIT TO MEMORY

LIVES DEPEND ON IT

4. Keep out of traffic whirlpools, except to cross them on crosswalks marked with signs and limit lines.
5. Watch for traffic officer's signal and heed traffic signs and limit lines.
6. Stand on sidewalk or on refuge while waiting for a tram car or bus.
7. Face and step towards front of tram car when alighting.
8. When necessary to pass behind a tram car or other vehicle, watch out for approaching traffic.
9. On alighting from a tram car or other vehicle, observe traffic before moving.
10. Enter and leave tram car stop refuge at crosswalk only.
11. Do not stand in the middle of a sidewalk but on one side and out of the way of other pedestrians.
12. Do not loiter on a crosswalk or before a public entrance.
13. When sidewalks are narrow use the one on the right.
14. Do not walk more than two abreast on a crosswalk or congested sidewalk, nor more than three abreast on any part of any highway.
15. Hand or foot propelled conveyances and skaters *when on roadway* must observe the **GENERAL REGULATIONS FOR VEHICLES**; but when on *refuge, sidewalk or crosswalk*, they must observe the **SAFETY RULES FOR PEDESTRIANS**.

SPECIAL VIGILANCE AT NIGHT



### Explanations of the C. N. D. Code

The first set of these printed regulations was called "Rules for Driving" and was officially adopted by the New York Police Department on October 30, 1903. The name has been changed from time to time in New York as new editions have been printed.

When the regulations were adopted for standardization by the Highways Transport Committee of the Council of National Defense they were called "General Highway Traffic Regulations with Directions for Drivers and Pedestrians." Since then, the name has been changed to "Council of National Defense Code of General Highway Traffic Police Regulations" abbreviated to C. N. D. Code.

Under Definition (6) I have used the term "Refuge" instead of "Safety Zone" as being shorter. It is used in practically all foreign countries where refuges were used many years before they were adopted in this country.

Under Definition (14) I have used the word "tram car" (abbreviation, "tram") instead of "street car" which ceases to be a street car when on its own right of way. "Tram" has always been used in all English-Speaking countries except the United States and is beginning to be used here as it is in France and in other European and South American countries.

You will remember that not so many years ago "horse car" was the usual term; then we had "cable car" and "storage battery car" and now "trolley car." "Tram Car" covers all of these. I have, in the body of the book, used "bus" for "omnibus" as that is the term used in all English-Speaking countries, now including the United States and is beginning to be used in many other countries. You may remember that we used to talk about "stages" in New York. Then the term "omnibus" came in, now shortened to "bus."

In the Definitions I have added the term "to station" as it includes both Ranked and Parked vehicles. The term "park" has become so misused that scarcely anyone gives the same definition of it. Stationed vehicles may however be in either Ranked or Parked position. The only way to get away from the misapplication of the word "parked" seemed to be to adopt some term which includes both ranked and parked vehicles. In England and France "station" has been used for many years and is good English.

In Article V on Right of Way, I have substituted the word "left" for "right." The accompanying diagrams should make clear the reasons. When I began the work nearly thirty years ago and for many years thereafter vehicles moving east and west were obliged to give the right of way to those going north and south. This led to a good deal of confusion and the next change was that a vehicle approaching from the right "shall have the right of way." This

caused many accidents as the vehicle on the right was apt to assume that the coast was clear and rush into the intersection without sufficient care. The next change was that "a vehicle shall *give* the right of way to another vehicle approaching from its right." This has stood until the present time but it is evident that the change now proposed will be safer and more convenient in every way and block traffic very much less. With the old rule, the blocking of traffic is within the intersection of the two streets (See Figure 1 [A]) whereas with the new one it is entirely outside the intersection (See Figure 1 [B]). Another advantage is that an approaching vehicle on the left can be seen at a greater distance since the angle of vision is wider (See Figure 2) and the driver's vision is not obscured by the windshield of his car.

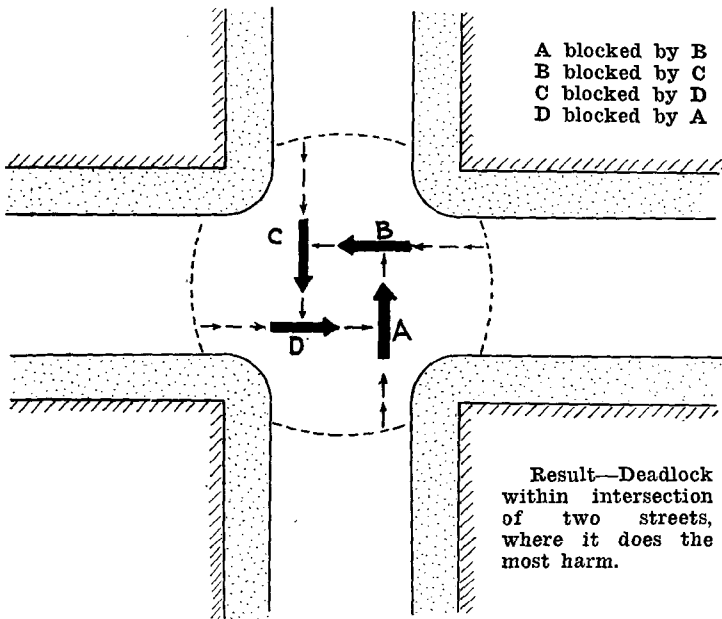


FIGURE 1 [A].

When right of way is given to vehicle on RIGHT.

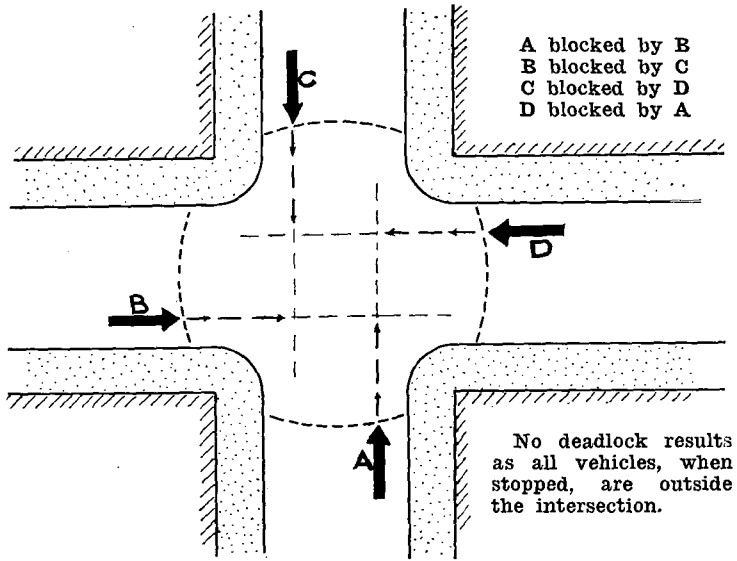


FIGURE 1 [B].

When right of way is given to vehicle on LEFT.

A can see B and C at a greater distance than he can D and E since his angle of vision is wider and is not obscured by any part of his own vehicle.

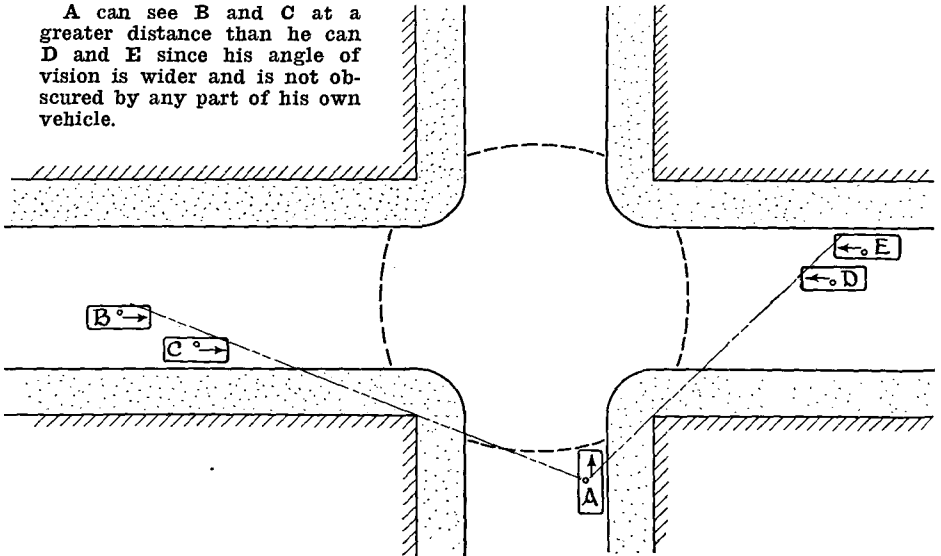


FIGURE 2.

Advantage of giving right of way to vehicle approaching from LEFT rather than from right.

### **Local Pamphlet to Be Entitled**

**“Local Regulations and Traffic Information for the Convenience and Safety of Drivers and Pedestrians.”**

The Police Department of every city and town of importance should cause to be compiled, printed and issued a small pamphlet for the convenience of drivers and pedestrians, setting forth the penalties provided for infractions of regulations; the state and local laws governing speed, lights, sound signals and other equipment; local regulations as regards stationing of live or dead vehicles, a list of one-way traffic streets, giving the direction in which traffic moves and whether or not it is restricted to certain hours of the day or days of the week, directions as to how to obtain drivers' permits or licenses and vehicular registration; the local regulations with diagrams for the management of traffic at the different theaters and other places of assemblage; a list of the locations of cab-stands and the number of cabs each stand accommodates; cab regulations and fares and such other information as may be useful in facilitating and safeguarding vehicular and pedestrian traffic and simplifying the understanding of the public in it.

### **Motor Vehicle Acts**

Most, if not all, states have motor vehicle acts. These may or may not contain the C. N. D. Code but if they do they should keep up to date with authorized revisions. It is hoped that sometime in the future we may have a motor vehicle act sufficiently perfect to be worthy of adoption by all states and by the Federal Government. If a motor vehicle act suitable for standardization were adopted by the Federal Government it would hasten the matter of standardization throughout the country.

In this Division, I have spoken of three printed fundamentals for Education which should be adopted everywhere. Please keep them in mind while reading this book. They are:

First, the C. N. D. Code (see pp. 8-13 inc.)

Second, Local Pamphlet (see above, p. 17)

Third, Motor Vehicle Acts (see above, p. 17)

## DIVISION C

### ENFORCEMENT

#### The Role of the Police in Traffic Management

##### (a) TRAFFIC BRANCH OF A POLICE DEPARTMENT

The C. N. D. Code has been reproduced and discussed in the preceding Division, and now the question of the means of enforcement must be considered. In so far as is conceivably possible, the drivers themselves should be the enforcers of the regulations and should feel the responsibility for their proper execution. The rôle of the policeman should be that of overseer. This is in accord with what experience has revealed in London, where the drivers themselves have proved the best regulators of traffic, because, knowing their duties as well as their rights, they strictly observe their duties and resent interference with their rights by others, who are not excused for ignorance. It becomes, therefore, of the first importance to educate the drivers so as to make them, as well as the police, the regulators of traffic.

In the United States, unfortunately, there is not the inborn respect for law which is found in England. Violations of the laws of the land are frequent and there is a regrettably widespread impression that the law is to be obeyed only under compulsion. Another reason for lawlessness is that justice is slow and uncertain and offenders are too often treated laxly. Stricter and more sure but always reasonable and just punishments, combined with a building up of the morale of the people through channels of education should tend to remedy the prevalent disrespect of the law.

It is therefore fitting that we state the following fourfold classification of drivers we have to deal with :

First: Those who *know* the regulations and are willing to obey them.

Second: Those who *do not know* the regulations but who would be disposed to obey them if they did know them.

Third: Those who *know* the regulations but are not disposed to obey them.

Fourth: Those who *do not know* the regulations and would not be disposed to obey them under any circumstances.

The first class in this country is, unfortunately, too small and it is clear that it needs regulating least of all.

The second class is many times larger than all the others together, but if by education we can add this to the first, most of the difficulty will be overcome.

The third class is, fortunately, very small and can be made to obey by force when necessary, but the experience of other countries teaches us that those who

compose this class are usually impelled to obey by the demands of those law-observing drivers who resent having their own rights interfered with and by gradual realization of the advantages to all, individually.

The fourth class, much larger than the third, can by education be added to the third class and in time almost eliminated.

Thus we are able practically to reduce these four classes to two, as follows:

First: Those *who know* the regulations and *are willing to obey them*.

Second: Those *who know* the regulations but *are too selfish, vicious, or ignorant to see the advantagé of obeying them*.

This second class, like the poor, we shall always have with us to some extent, and for it, the only remedy is prompt punishment; but this class will diminish very rapidly through proper handling.

It is a self-evident fact that as the number of those who become familiar with the traffic regulations increases, the less will be the work required to be done by the police. In other words, pennies spent on education will save dollars on enforcement. Common sense methods are so easy, economical, efficient and comprehensive that there is no apparent reason why they should not be everywhere employed.

Education of the drivers as to their duties and rights is, really, the keynote to efficient and economical highway traffic regulation, and anyone in charge of highway traffic can be nothing but a stumbling block to its development and proper control unless he sees the importance of this fact and acts upon it.

At the risk of repeating myself I dwell on this matter of education! It is all-important! Unless my reader can see this point, it will be a waste of time for him to read this book.

If we observe the conditions in other countries we find that traffic moves more smoothly in England than elsewhere. The uninitiated attribute the smoothness entirely to the police, and to the fact that drivers there are amenable to authority. Much of this is the case because the police are thoroughly trained in their duties and the drivers who see the advantage of it, follow directions; but back of this is the still more important fact that the English are, and have been for generations, a nation of horsemen. It is the exception and not the rule to find an Englishman who does not know how to drive and who does not understand and observe the rules and etiquette of the road. The English, as a rule, are also fond of fair play, and not only give it but demand it from others—they know their duties and perform them but at the same time vigorously resent having their rights interfered with by careless, ignorant or perverse drivers. If we

add to this the fact that the English are a nation of "conscientious kickers" we will have found a full explanation of the orderly movement of traffic.

A short time spent driving around London will convince anyone who observes that the drivers themselves are the real regulators of street traffic under ordinary conditions. The presence of the police is needed, principally, at the intersections of crowded thoroughfares, to give the signals for alternately stopping and starting the lines of traffic in crosswise directions.

Now let us pass to the consideration of the rôle of the police in traffic regulation.

As so many of our roads are Federal roads, it may be that there will be in the future Federal Police to regulate the traffic on them. Already many of our States have State Police, a portion of whose duties is the regulation of traffic. We have had and always shall have city police. Probably sometime all three kinds of police will work in harmony in a well-thought-out scheme of cooperation in the management of traffic.

In London and Paris, the Police Departments<sup>1</sup> have branches known as the Public Carriage Office in the one and as *Le Bureau des Voitures Publiques* in the other, some of the duties of which are to examine and license drivers of public vehicles, such as cabs, trucks, sight-seeing cars, etc., and to make and enforce regulations in regard to the fitness and maintenance of such vehicles, including examination of taximeters, etc.

Every city should have a similar branch of its Police Department, to be appropriately known as the Traffic Bureau of the Police Department. The Traffic Bureau should have authority over all matters pertaining to the carrying out of the regulation of traffic on the highways. Two particularly important functions are the control of traffic on the streets by the Traffic Squad (see (b), p. 21), and the appropriate jurisdiction in the case of violation of the regulations through the medium of Traffic Courts or Traffic Arbitrators (see (d), p. 24).

Other duties of the Traffic Bureau are as follows: The licensing of peddlers and the registration of push-carts and regulations in regard thereto; control of obstructions on roadways and sidewalks, including those necessitated by building operations when these affect the movement of traffic; the recording of accidents for the purpose of fixing blame and ascertaining cause with a view to devising prevention.

The head of the Traffic Bureau should be known as the Traffic Director<sup>2</sup>

<sup>1</sup> Many of our cities are now following the example of Paris and London.

<sup>2</sup> Experience has many times demonstrated that it is a mistake for the head of a police department to take direct charge of traffic because his other duties may be neglected or because he has not the kind of mind which fits him for traffic work. It may be remarked that there are but very few who have traffic minds.

and be fitted by natural talent as well as experience for traffic work. The money-saving which a competent man at the head of the Traffic Bureau can effect for any city is very large, not to mention the saving of life and the reduction in the number of accidents. Even in towns with but a small police force, the supervision of traffic work should be delegated to a special officer who should not be outranked while he is in charge of traffic by any uniformed officer except the Chief of Police. Good traffic men are so scarce that choice should not be limited by rank.

Street Traffic Regulation has long since become the most important branch of police work, from an economic standpoint at least. Even in its present incomplete development the amount of money it saves the people of New York, for instance, very many times exceeds the cost of maintenance of the entire department.

#### (b) POLICE DUTIES IN REGULATING TRAFFIC

##### *The Traffic Squad*

All policemen should be made to understand that they have general traffic obligations through a general order reading as follows:

“You are hereby informed that it is the duty of every uniformed member of the police force to correct and instruct drivers and pedestrians in the traffic regulations and rules and reprimand them for infractions thereof, and if an offense is committed with obvious intent to obstruct traffic or to interfere with the rights or safety of others, to take the driver’s name, number and address, the vehicle number, if it has one, or in the case of a pedestrian, his name and address, and such other particulars as may be available for identification of persons or vehicles, and report same at his precinct station or at Police Headquarters for action. In case of a serious or intentional offense, the offender should forthwith be arrested.”

In addition to the general traffic duties to be performed by all members of the police force, there are special duties which require a trained body of men—a traffic squad. The traffic squad consists properly of members of the Traffic Bureau who perform traffic regulation work on the highways.

All police privates and officers, including members of the office force, men on foot and those mounted on horses and wheels who are regularly employed in traffic work, should be members of the Traffic Bureau and directly under the Traffic Director. If details of men from the Traffic Squad are needed in emergency they should be assigned by the head of the Police Department through an order to the Traffic Director. It goes without saying that all members of



the Traffic Squad should understand that they are not withdrawn from regular police duty but must be ready to help wherever and whenever occasion arises in the same way that all policemen have general traffic obligations as explained above.

Too much stress cannot be laid on insisting that all policemen and especially traffic officers shall be polite and considerate at all times and under all conditions. They are the servants of the people and should be an example to the citizens rather than a reproach. The old saying that you "can catch more flies with molasses than with vinegar" is very true so far as traffic is concerned. What we want is cooperation between drivers and police and that cannot be brought about by discourtesy.

The men on foot should regulate traffic at street intersections and other congested points.<sup>1</sup> Where the Block System is in force such regulation consists principally in stopping and starting traffic on each street in turn; but everywhere, it should consist in facilitating drivers and pedestrians by direction with hand, voice or whistle when necessary. This can be done efficiently only by specially trained traffic men.

The mounted men should patrol and exercise general supervision over traffic. Being higher up, they can see better than men on foot and are most valuable in reprimanding drivers for offenses and in teaching them to observe the regulations. The horses, however, must be carefully trained for this work.

Mounted traffic men should not be on stationary duty at street intersections nor elsewhere, nor ordinarily on streets with tram rails. It was the misuse of mounted men in New York that led to the mistaken idea that they were not needed for traffic work. This resulted in a reduction of their number and in sending most of them to the suburbs where, in fact, bicycle and motorcycle men are more efficient. Their proper function is patrol duty, especially on the river fronts and in parks and they should be used for this duty in sufficient number.

A well trained body of mounted police is essential to every large city for the management of parades, escort duty, suppression of riots, etc. A mounted traffic squad furnishes this service economically, because daily traffic duty gives its members regular employment between times.

The bicycle men<sup>2</sup> should patrol and exercise general supervision of traffic,

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<sup>1</sup> An unskilled traffic policeman at a street intersection is a hindrance to and not an assistance in traffic regulation. It is far better to use a Dummy Cop or a traffic mushroom unless a skilled man can be provided. Many of the men now on duty at intersections throughout the country should be given other jobs.

<sup>2</sup> Many more bicycle men could be used with advantage in every city to keep the streets open and clear for traffic. The general statement is true that in all cities more traffic men are used than necessary at intersections and not enough on patrol.

particularly in seeing to it that in crowded streets the stationing privileges, especially of dead vehicles, are not abused and moving traffic obstructed. The flexibility and speed of bicycle men enable them to cover a large territory effectively. Motorcycle police are particularly useful in the suburbs and parks in regulating the speed of automobiles.

The management of traffic by the police adds comparatively little to the cost of police work, because the men composing the traffic squad are not withdrawn from regular police duty, but are usually so placed by their special assignments as to have an effective supervision of their locality and to be found readily in case of emergency. Their duty constitutes limited "fixed post duty" by men on foot and limited "patrol duty" by men on horses and cycles.

The Traffic Squad, on account of its greater experience, is very efficient in the management of vehicles at theaters and other places of assembly and at the races.

It is manifestly impossible to lay down, in a reasonably brief form, rules which should always be enforced to the letter, and consequently *considerable discretion should be left to the intelligence of the traffic officers themselves.*

Uniformity of signals at crossings is much to be desired and has at times been taught at Police Headquarters in New York with excellent results.

#### (c) PENALTIES

Fines and punishments now differ greatly in different cities and states and it is very doubtful if they ever can be standardized, although time and experience will doubtless lead to more uniformity than now exists. Such fines and punishments as are already locally in force where the C. N. D. Code is adopted should continue to prevail until officially changed. A small pamphlet should be locally issued containing full information on penalties as well as other matters of interest to drivers and pedestrians. (See p. 17.) In the C. N. D. Code no mention has been made of specific penalties, it being thought inadvisable to include such necessarily lengthy details as it is essential to make the contents of the folder as brief as possible.

Penalties should of course be in proportion to the gravity of the offense. Prison sentences are not desirable except in extreme cases. Reference to the driver's permit or license, if a proper form of permit or license is in use (see (e) p. 25), should indicate whether or not the driver has been arrested before.

Anyone who is a party to an accident and who tries to escape or hide his identity or the identity of his car deserves the most severe punishment.

Driving without permit or license should be dealt with by a heavy fine, for the first offense, increasing materially for repetitions. There are emer-

gencies when it becomes necessary for someone to drive home or to a place of safety who has no permit or license, as for instance, if the driver is taken ill and someone has to take his place. These circumstances should, of course, be given intelligent consideration.

If a driver should misplace or lose his permit or license, he should be obliged to produce it within a given time or show by proper evidence that he has duly qualified and has received it. The number of people, especially minors, now driving who have no permit nor license is very large and has doubtless been one of the greatest contributing factors in causing accidents. The police should receive strict orders to stop any car at any time and demand to see the permit or license to drive if they suspect that the driver has not qualified.

Another matter worthy of the constant vigilance of the police is the improper placing of the registration plate and its condition and lighting equipment. All drivers who are negligent in this matter should be stopped, cautioned and fined if necessary (see (e) p. 25).

Reckless driving<sup>1</sup> or violation of any other provision of the regulations should be punished in accordance with the gravity of the offense, increasing in severity for repetitions.

#### (d) TRAFFIC COURTS

It would be well for all of our cities to have one or more traffic courts, and they should be so conducted as to cause as little delay and trouble as possible. On this subject, Chapter III of Part 3 of the "Science of Highway Traffic Regulation" (1920) is here quoted:

"On Page 3 of 'Street Traffic Regulation,' published as far back as 1909, there appears the following paragraph:

'It would still further tend to simplify and avoid trouble and waste of time if there were Street Traffic arbitrators at the Traffic Bureau and its branches, whose duties should be to examine all cases of street traffic accidents and breach of street traffic regulations, and decide what punishment should, in their opinion, be meted out or what damages should be paid. If the culprit chooses, he would, of course, have the right to resort to the courts, but in such cases the findings of the arbitrators should also be reported to the courts. Probably a large percentage of the traffic cases, by this method, would never go to the courts.' "

This paragraph together with later conversations on the subject, resulted in the first traffic court being established in New York City.

<sup>1</sup> See Article I of the C. N. D. Code. Read all six sections carefully, especially Sections 2, 3 and 4. All drivers who disregard these sections should be fined heavily each time they do so. Article I, if universally obeyed, would almost eliminate traffic accidents.

In large cities there is no doubt but that traffic courts should exist, and in a city like New York, a good many are necessary. In small cities and towns the suggested plan of Street Traffic Arbitrators might be ample for the purpose.

It should be borne in mind, however, that the education of the public in Traffic Regulation means reducing the necessity of traffic courts. The education of the public is so cheap and the upkeep of courts so expensive that all necessary money should be spent on the former in order to decrease large expenditures essential for the maintenance of the latter.

At the Traffic Bureau and at traffic courts, diagrams of typical and special traffic intersections and junctions should be provided, to be spread on a table for the purpose of simulating accidents. Toy vehicles or little blocks made on the same scale as the diagrams should represent the different kinds of vehicles to illustrate how accidents occurred.

#### (e) LICENSES, PERMITS, REGISTRATIONS AND VEHICLE LIGHTS

It would, of course, be a nuisance measure as well as unnecessarily burdensome and expensive to require drivers who already have permits or licenses to drive, to pass new examinations. It would be practical and reasonable, when any driver of a motor vehicle, whether he has ever passed a driving test or not, is arrested for reckless driving or other disregard of traffic regulations, to oblige him to pass another examination as to his competency to continue to drive a motor vehicle so as to satisfy the authorities that he is a safe and proper person to drive on the public highways.

It surely is reasonable also that new permits or licenses for drivers of motor vehicles be granted only after official physical and mental examination, (special attention being paid to a test for speed of reaction to danger) demonstration of thorough familiarity with the C. N. D. Code, satisfactory references as to character and practical demonstration of ability to drive safely. Requirements of this sort are already in force in some of the most progressive states and should be generally adopted. I would advise that a difference be made between drivers of private vehicles and drivers of public vehicles; that the former be given permits to drive and the latter licenses to drive. Both permits and licenses should be in the form of little pocketbooks where records of arrests for traffic violations may be made by the magistrate. These permits should contain a description and photograph of the driver and such other details as may be thought necessary for identification. The licenses, however, should contain, in addition to these things, the fingerprints of the driver.

Each member of a family driving a motor vehicle should be obliged to comply with the foregoing requirements and obtain separate permits to drive.

Provisions for beginners should be made under proper restrictions.

An ample bond should be furnished by or for every driver of a motor vehicle or some approved form of liability insurance be adopted as a protection to the public.<sup>1</sup> Some restrictions on insurance companies should be in force to prevent them from settling cases out of court when such cases are the result of intentional collision, caused with the design of collecting damages.

Registration numbers should, above all things, be in two strongly contrasting colors and we should work towards the time when one registration number will be good anywhere in the United States or its territories.

At the present time, on many cars, the rear registration plates are hung either under or in the shade of some projecting part of the vehicle or load so that they are frequently illegible. Then again they are too often covered with dirt and oil and thus rendered unreadable. It should be a serious offense, subject to heavy fine, to have the registration number in such position or in such condition that it cannot be easily read. The front numbers are often partially hidden by the bumper. This also should be prohibited. It does not make so much difference as to the exact location of the number plate on the car either in front or rear, provided it is so placed that it can be easily read day and night by drivers and pedestrians.<sup>2</sup> At the present time, many number plates are tipped so that the top is further out than the bottom. This should be reversed; the bottom of the number plate should protrude a little further from the vertical than the top for better visibility. It should be required also that the rear light be sufficiently brilliant to illuminate the number plate amply and that it be provided with two electric bulbs turned on by one switch to reduce the danger of the light being out.

Any caution light applied by the driver from his seat should be separated from the rear or tail light sufficiently so that the lights do not blend. As the red light has to be on the car anyway, these extra lights applied by the brake should be yellow. Conservation of space being an important point to be considered, the word "Slow" abbreviated to "SLO" is recommended. The word "Stop" should not be used since caution is required but not necessarily a complete stop.

When the tail light is on or off, it should be so indicated by a small bulb on the dash if such an arrangement can be devised.

There is also the question of the so-called parking or anchor light now

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<sup>1</sup> The State of Connecticut has lately passed a Financial Responsibility Law on this subject. It is published in Bulletin No. 26 by the Department of Motor Vehicles, Hartford, Conn. Massachusetts requires every recipient of a driver's license to carry liability insurance and other states are considering a similar measure.

<sup>2</sup> In some European cities the number is often painted on the back of the body of the car. It is an excellent method.

placed on the left hand side of the car. When cars are stationed in ranked position on the left hand side of a one-way traffic street they should have an anchor light on the right hand side. It would, of course, not be necessary to use current for both anchor lights at the same time.

As to head lights, no type so far has been adopted anywhere that is entirely satisfactory. In fact, the lights now in use are perhaps more glaring, dangerous and otherwise objectionable than those we had fifteen years ago. I believe that the Bureau of Standards, with the invited assistance of lighting engineers and manufacturers throughout the country, might adopt or devise something that would be far better than what we have now, and that therefore definite action should not be taken on this subject until a recommendation is formulated by the Bureau of Standards.

There has been in use for some years a special lamp to illuminate the right hand side of the road. This is very useful but should be perfected so that the light will not be blinding to approaching traffic.

## PART II

## TRAFFIC GUIDES

Signs, Lights, Standards, Dummy Cops, Mushrooms, Semaphores, Crowsnests, Pavement Markings, etc.

## SIGNS

Until a few years ago, the only highway traffic signs were those at cross roads and junctions, giving distance and direction to other towns and cities.

Within the last few years signs have multiplied in number and variety. They are of all colors, shapes and wording according to individual fancy. This of course is confusing and unintelligent.

The following classification of Highway Traffic Signs has been adopted by the Eno Foundation. It presents a standardization of all signs on the basis of both shape and color. The dimensions given are those which have been found, after extensive experiments, to give most effective results.

## ENO FOUNDATION CLASSIFICATION OF HIGHWAY TRAFFIC SIGNS

CLASS	KIND	SHAPE	COLORS	DIMENSIONS
PRIMARY	CAUTION	Square (on road) Diamond (off road)	WHITE (on black)	2 ft. x 2 ft. square
	DANGER	Circular	RED (on white)	2 ft. 3 in. outside diam. 1 ft. 6 in. inside diam.
	SAFETY	Hexagonal	GREEN (on white)	Dimensions optional if used at all.
	SECURITY	Triangular	BLUE (on white)	16 in. hor. x. 10½ in. vert.
SECONDARY	INFORMATION	Circle for tram and bus stops. Oval for all the others	BLACK (on yellow) with black border	12 in. diam. circle Vary oval as needed
	DIRECTION and DISTANCE	Rectangular (superimposed circle for "Rotary" Traffic only)	BLACK (on white) with black border	Vary rectangle as needed
	ROAD CONSTRUCTION AND REPAIR	Rhomboidal set at an angle of 18½ degrees (bevel of 4 inches in 12)	BLACK (on white) with black and white border	12 in. to 15 in. wide Length as required

The photographs shown were taken from full size signs made in accordance with the specifications in the tabular arrangement.

Full-sized paper signs in color are being prepared from which signs can be made. When completed these may be procured at cost by writing to the Eno Foundation for Highway Traffic Regulation, Inc., at its permanent office, Saugatuck, Fairfield County, Connecticut.

### PRIMARY SIGNS

The outstanding characteristic of this system of signs is the use of symbols wherever possible and the avoidance of words. This follows the old French system first used over a quarter of a century ago (See Street Traffic Regulation, page 35). Some of the symbols in the "Caution" series advocated here are taken directly from the French. Words cannot be read on signs except when close up whereas symbols can be made out at a long distance. Symbols are also suitable for international adoption. No translation is required as they are, in fact, a universal language. The symbols are so simple that anyone of average intelligence can understand them but anyhow a knowledge of them should be a requirement before permit or license is granted.

### CAUTION SIGNS.

White, against a black background is advocated for caution signs. In my previous books, I recommended yellow on black for this class of signs. After further study and many experiments, I believe white is better.<sup>1</sup> The nature of the hazard—steep hill, turn, cross road, school, etc.—is indicated by a distinctive symbol in white on a black background. All caution signs are square, two feet on a side. For warning against anything which has to do with the road itself, such as curve, intersecting road or limitation as to speed, they have the sides of the square vertical and for anything off the road, such as hospital or school, the diagonal is placed vertically.

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<sup>1</sup> Experiment showed that at night yellow looks very dark from behind headlights but curiously enough it is effective if you get out of the car and stand in front, between the headlights and the sign. Many signs have been made with bad yellow paint which either fades into a dirty white or turns brown. The paint railroads use, however, lasts very well. It is called "Signal Yellow."



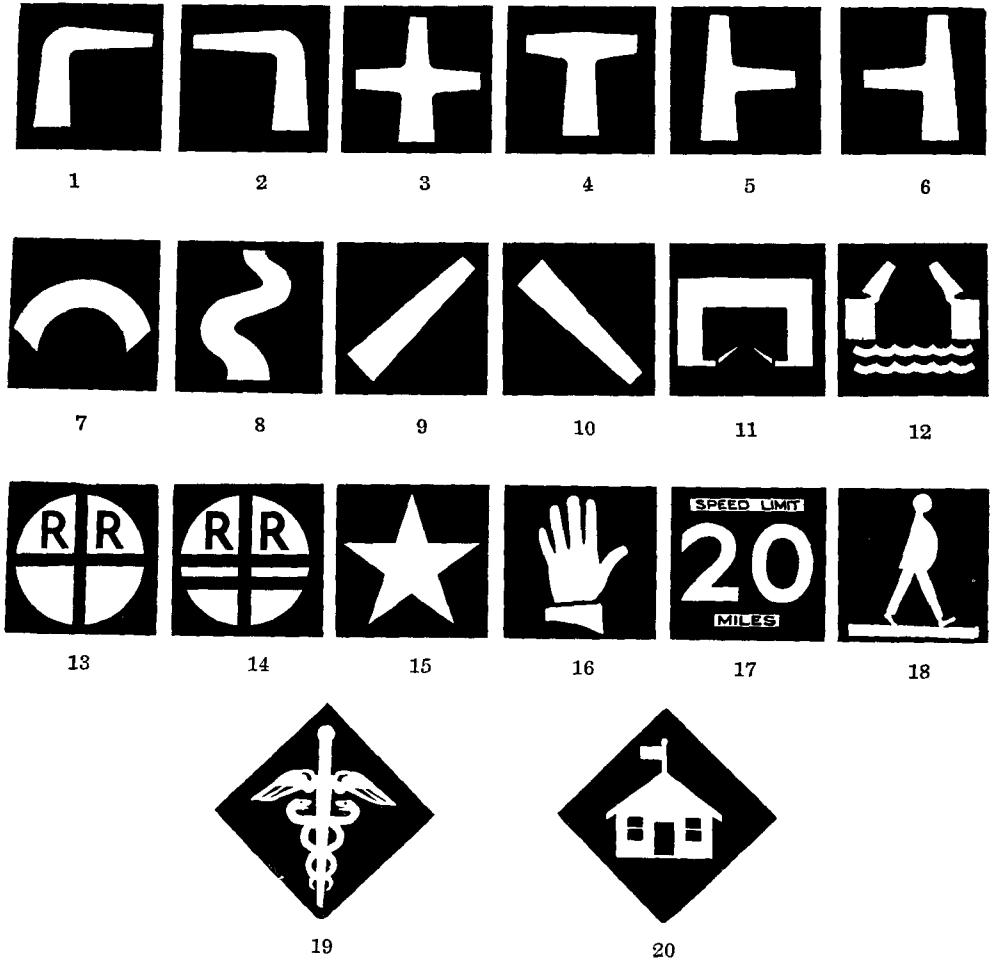


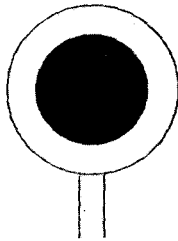
FIGURE 3.

General Caution Signs—Two feet square, white symbols on black ground.

- |                        |                     |                                       |
|------------------------|---------------------|---------------------------------------|
| 1. Right Turn.         | 7. Dangerous Curve. | 13. Railroad Crossing—Single Track.   |
| 2. Left Turn.          | 8. Winding Road.    | 14. Railroad Crossing—Multiple Track. |
| 3. Cross Roads.        | 9. Uphill.          | 15. General Caution.                  |
| 4. Right or Left Turn. | 10. Downhill.       | 16. Temporary Stop.                   |
| 5. Side Road—Right.    | 11. Underpass.      | 17. Speed Limit.                      |
| 6. Side Road—Left.     | 12. Drawbridge.     | 18. Pedestrian Crossing.              |
|                        | 19. Hospital.       | 20. School.                           |

**DANGER SIGNS.**

Red has always been universally used to indicate danger. It does not show well however against some backgrounds but when on white it is easily seen by most people. On a clear day, the sign given, being a red disc on a white disc as a background, is clearly visible at well over an eighth of a mile. The use of red signs should not be abused. In fact, they never should be used except where there is some unusual danger. Red lamps and flags usually mark excavations, piles of stone, etc., on the highway. The red sign should not be used for this purpose but for instance when there is a precipice at the end of a road or on a sharp turn as is sometimes the case in the mountains, red signs should be used, of course, and they are much better reflecting or lighted.

**FIGURE 4.**

**Danger Sign**—White circle, 2 feet 3 in. diameter, with bright red center 1 ft. 6 in. diameter.

**FIGURE 5.**

A very stupid sign is here shown (Fig. 5) so that its use can be avoided. It is octagonal in shape, has white letters and border on a red background. It is used to bring about a temporary stop before entering a more important thoroughfare. It should not be a danger sign as the color red indicates but a caution sign, the proper one being No. 16 as shown on page 30. The words "No Parking Within 25 feet of Sign" should be omitted because if obeyed it would result in useless waste of curb space. Section 4 of Article III of the C. N. D. Code (page 10) covers this matter fully and correctly. The word "Parking" is incorrectly used for "Ranking." The words "Police Dept." should be omitted from the face of all traffic signs. If desired, they should be put on the back of the sign—though of course they are superfluous.

One trouble with exacting a temporary stop before entering another roadway is that many drivers do not keep their brakes oiled and their squeaking, when applied suddenly, creates an unnecessary and exasperating noise which should not be permitted by the police. I feel that a temporary stop would not be necessary if drivers strictly obeyed Section 4 of Article I of the C. N. D. Code, to be found on page 9 of this book. In the future I hope that the proposed speed regulations contained on page 107 will become law. These regulations exact that the speed be reduced to one-half the legal speed rate before reaching crosswalks, cross roads and side roads on the right.

#### SAFETY SIGNS.

Safety signs should be green on white but though very useful on railways they are rarely desirable on highways although they do no especial harm.



**FIGURE 6.**  
Safety Sign—Hexagonal,  
bright green letters and  
border on white ground.

#### SECURITY SIGNS.

Security signs are designed primarily for the protection of pedestrians. They are triangular in shape, with the corners rounded. The color scheme comprises bright blue letters and border line on a white background.



**FIGURE 7.**  
Security Signs, primarily for pedestrians. Blue  
letters and borders on white ground.

## SECONDARY SIGNS

The Secondary signs comprising those for information, direction and distance, and road construction and repair, are self-explanatory from the table and the photographs. The direction signs are the largest and most varied group. Those giving distance are the standards of the U. S. Bureau of Public Roads. The road construction and repair signs are those which are within the control of the highway authorities and are suggested as a substitute for those now in use because they differ so much in shape and design that they are not likely to be confused with traffic signs.

### INFORMATION SIGNS.

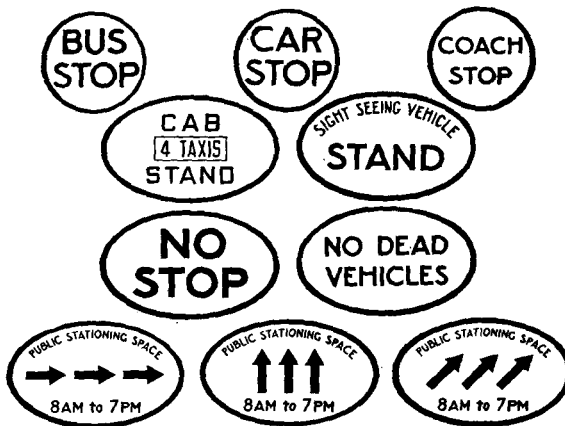


FIGURE 8.

DIRECTION AND DISTANCE SIGNS.

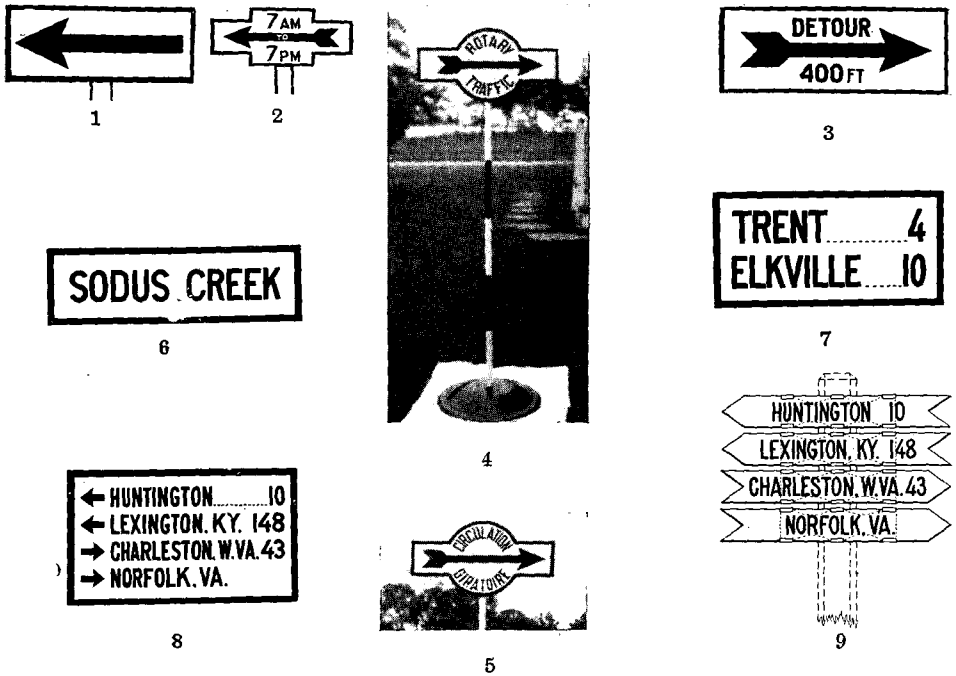


FIGURE 9.

Direction and Distance Signs, Black letters and symbols on White ground.

1. One Way Sign.
2. One Way, with time limits.
3. Detour Sign.
4. Rotary Traffic Sign, with standard.
5. Rotary Traffic Sign designed for Paris.
- 6, 7, 8, 9. Signs designed by the U. S. Bureau of Public Roads.

ROAD CONSTRUCTION AND REPAIR SIGNS.



FIGURE 10.

Road Construction and Repair Signs. Black letters and black and white borders on white background.

Among the other signs that should come under this group are "Fresh Oil," "Loose Gravel," "Soft Shoulder," "No Shoulder," "New Grading," "Pavement Ends," "Road Repairs Ahead," etc.

Illuminated signs are best of all, reflecting signs come next and other signs third.

No low signs should project over the roadway under any circumstances since, if they do, they are apt to be hit by vehicles. If the standards are on the edge of the sidewalk, the signs should be pushed over, out of center, with the standards sufficiently to the right so as not to endanger passing vehicles but if endangering pedestrians they should be raised high enough so they will not do so.

The combinations of colors to be used in traffic signs should be prohibited on any other signs near the curb in city streets or on any part of a country highway.

There seems to be a growing opinion among students of traffic that signs of caution should be simplified and that perhaps one sign of general caution would be better than many for the reason that if warned against some special danger, one is apt to look for that only and forget others quite as menacing.

As painted signs are not easily read at night, especially if a vehicle is going fast, their usefulness is limited unless they are reflecting or illuminated. Illuminated signs are effective at any height but reflecting signs only when placed sufficiently low for the headlights to strike them. As the importance of road traffic is realized, more signs will be illuminated. The present method of placing signs at the proper height to be illuminated by headlights is reliable only on a road sufficiently wide for two lines of vehicles, but where it is wider than that, the sign is apt to be hidden by a vehicle on the right and therefore on roads that are wider than necessary for two lines of vehicles there should be two signs on every standard, one low down for the outside line and one high up for the inside line. The high sign for the inside line must be illuminated if it is going to do much good. The low sign will be illuminated by the headlight but is better made reflecting and still better if lighted.

Where signs cannot be read when passing, every sign that is seen should be interpreted as a general caution sign and the driver slow down and be alert for any danger whether expected or unexpected. This being the case, it would be well to place under every low sign a small reflecting general caution sign of the same design as No. 15 (see Caution Signs, p. 30) thus warning every driver who is not sure which sign he is passing to go slow and be careful.

Some three years ago, the Sectional Committee on Codes for Signs and Signal Lights of the American Engineering Standards Committee was formed

and has met from time to time but as yet has not come to any satisfactory conclusion. The U. S. Bureau of Public Roads in July, 1925, took the matter up also and has published a set and now the Eno Foundation for Highway Traffic Regulation, Inc., has offered a set in this book which it hopes may be thought sufficiently well of to be adopted for standardization. The Foundation has attempted to assimilate the best details from such signs as have already been recommended or are in actual use, and has adopted the sizes and shapes of the U. S. Bureau of Roads in its caution signs so that, for a change, nothing is necessary except repainting. The direction signs of the U. S. Bureau of Roads have not been changed at all except the arrow and the detour sign.

### LIGHTS

In several places in this book, I have spoken of highway traffic lights and condemned some of them as most objectionable for the reason that they delay traffic and make it more dangerous instead of safer. I do not, however wish to be construed as condemning all lights which may assist traffic. The best lights of all for traffic are those which give ample illumination especially at cross-roads and side roads. Notice how the lamp-posts are placed at an intersection as shown in Figure 29.

Where ample illumination cannot be practically or economically accomplished I strongly recommend those lights which are known as blinking lights, the light given off being as nearly white as possible, except where a danger sign would ordinarily be used, when the light should be like the danger sign—red. The white light should show through a square lens and the red light through a circular one to carry out the same shape as the signs.

These lights are manufactured by numerous firms. The ones I prefer are those with the acetylene tanks which run continuously for from six to eight months without attention. These are preferable to electricity for the following reasons. Electric light may fail either through the current being cut off or the bulbs being burned out. Acetylene lights are more economical in the long run and do not necessitate the expense of electric wiring which is large when it has to be put under the pavement and more or less dangerous to the public when suspended from above.

In France and Belgium, red lights are used which are worked by the traffic officer at the intersection. (See last paragraph on p. 59.)

At the time of my last visit, May, 1927, England and France had not considered seriously adopting any mechanical lights although importuned by various sales agents from the United States to buy their products. New Scotland Yard has however been considering the French and Belgian systems.

## STANDARDS

Stationary standards for signs have been designed by the Bureau of Public Roads which are practical and economical if they are accurately set, since they are adapted for most country road signs and for some of those required for city streets. I prefer, however, for city streets a round iron pipe, let into the sidewalk and set in cement about twelve inches from the edge of the curb. The signs should be secured in place at the top of the standard by a dowel.

Portable traffic standards are usually made of iron pipe about  $1\frac{3}{4}$  inches in diameter and 4 feet high, with a round iron base.

Lately, many portable standards have been made larger, heavier, and higher, on the theory that they are harder to knock over. It has been lost sight of, however, that if heavy standards are knocked over they are very apt to cause serious injury to pedestrians and vehicles.

Formerly where there was a row of portable standards at Tram-Car-Stop Refuges they were often connected with ropes, chains, iron rods or pipes. Such connections are a source of danger because if one standard is knocked over the others are apt to be pulled down with it.

Portable traffic standards should be only sufficiently heavy to keep them in place in a high wind. The base of the standard should be in the form of an elongated circle to prevent rolling if knocked down.

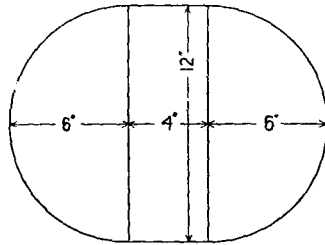


FIGURE 11.

The base should have a round hole in the center to receive the iron pipe which should be secured by a set screw. The iron pipe should not be serewed into the base as the thread weakens it, resulting in expense for replacements. Steel pipe is better than iron as it does not bend easily. In some instances, a hickory or other hardwood stick is better than metal, as for example, for danger flags at street excavations. The base should be cast with a collar, to hold the pipe or stick securely in a vertical position.



The height of the portable standard should not exceed 4 feet 6 inches unless it be one for a lamp to be used inside a safety, prohibited, restricted or danger zone, remote from its border, where the chance of its being knocked over is small.

The top of the standard should be fitted with an upright ring on top easily removable, to be replaced when necessary by a lamp socket, bracket or sign.

The bases and tops of portable standards should be painted bright red. The pipes with black and white bands from 8 inches to 12 inches wide. The top and bottom bands should be white.

Wherever a portable standard is used, a white disc considerably larger than the base of the standard should be painted on the pavement to insure the accurate placing of the standard, to afford it protection and to increase its visibility.

### DUMMY COPS

The Dummy Cop, in its simplest form, consists of a post as a substi-

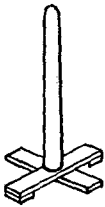
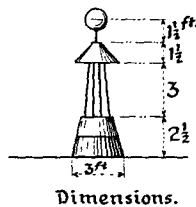


FIGURE 12.

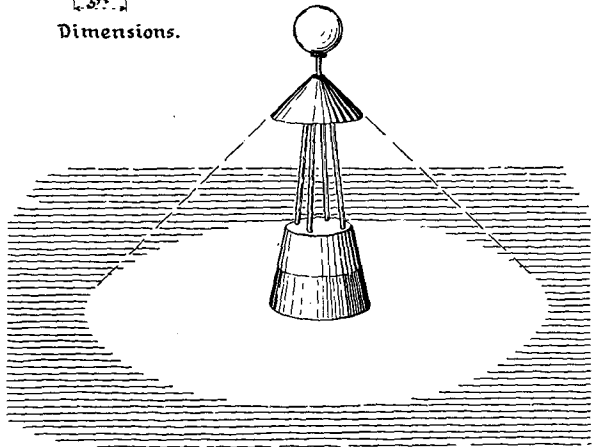


FIGURE 13.

Dummy Cop especially designed for use at right angled intersections where rotary traffic is in operation. Notice how the shade directs the light on to the pavement. The shade should be made with greater or less angle in proportion to the area on the pavement which it is desired to light.

tute for a traffic officer. I published the first drawing of a Dummy Cop December 24, 1904, the design given being still in use in some states (Figure 12).

There are now many models of Dummy Cops. Probably hundreds of thousands are now in use and their number is constantly increasing. The Dummy Cop is far more effective and certainly more economical than any policeman other than a thoroughly trained and intelligent traffic officer.

The best colors for Dummy Cops are the same as those for traffic standards. The Dummy Cop should always stand on a good sized white disc to add further visibility and to insure accuracy of position.

In many places, since the Dummy Cop has proven so useful, permanent structures with lamps and signs, many of them ornamental as well as useful, have been built at the intersections of roadways in city and country. If permanent structures are to be used, the bases should be of such form as to deflect the wheels of vehicles striking them, and these bases should be kept painted white except for about six to twelve inches at the bottom, which should be painted red.

A Dummy Cop (and the same may be said of a traffic mushroom) should not be used at the center of intersection of streets which cross each other at an angle not practically a right angle as this practice makes one-half of the turns too acute. However, they may be used to advantage at acute angle intersections but four will be required at each intersection. (See Diagrams in Part III.)

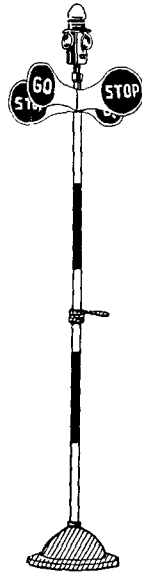
### **MUSHROOMS**

The Traffic Mushroom, sometimes called Bumper or Button is a device which can be used instead of a dummy cop and is in some cases to be preferred. The mushroom consists usually of an iron disc from 12 inches to 18 inches in diameter and 4 inches to 6 inches high. There are also on the market several varieties of electric lighted mushrooms and others with reflectors, which are worthy of consideration.

Mushrooms should be kept painted white and should stand on a disc also painted white so that they can be easily seen.

### **SEMAPHORES**

The so-called "Go-Stop" semaphores are very imperfect in their present form because the signs on them have no neutral position. If the signs could be turned or dropped down so they could not be seen, the semaphore could be left in position when there was no traffic officer present and so serve as a dummy cop.



**FIGURE 14.**

It is a question, however, whether a semaphore is not more of a hindrance than a help in regulating traffic. It certainly is no material help to an expert traffic officer and it is doubtful whether it improves the work of an inexperienced officer. An inexperienced officer is, after all, not nearly as good as a dummy cop, which, at least, does not interfere with traffic by incomprehensible gestures which tend unnecessarily to delay and confuse both drivers and pedestrians.

One of the objections to the use of the "Go-Stop" signal is that the traffic officer often fails to turn it promptly. When it is considered that the hours of duty are long and tedious, it is not to be wondered at that the officers are sometimes a little absent-minded. Another difficulty is that when a signal is turned against traffic the officer is often obliged to beckon individual vehicles forward in order to facilitate their movement. This necessarily results in uncertainty, as the drivers do not know whether to obey the semaphore or the hand signal of the traffic officer. The "Go-Stop" semaphore for individual work is not as good as the hand because the semaphore signals all vehicles in sight to go in one direction and to stop in another, while the hand of an officer can signal to them individually and weave them in and out without causing unnecessary delay.

The "Go-Stop" semaphore should be discontinued absolutely unless it can be so constructed that it will be practical to place its signs in a neutral position.

The following drawing shows one method of construction by which the signals can be placed in a neutral position. The handle turns the semaphore through an angle of 90 degrees when revolving around the shaft, and when it is desired to turn the signals flat to the ground in a neutral position the handle is simply pushed up. Notice the wooden platform 8 inches high and 4 feet square which covers the iron base of the stand and affords dry footing for the traffic officer as well as giving him the advantage of extra height.

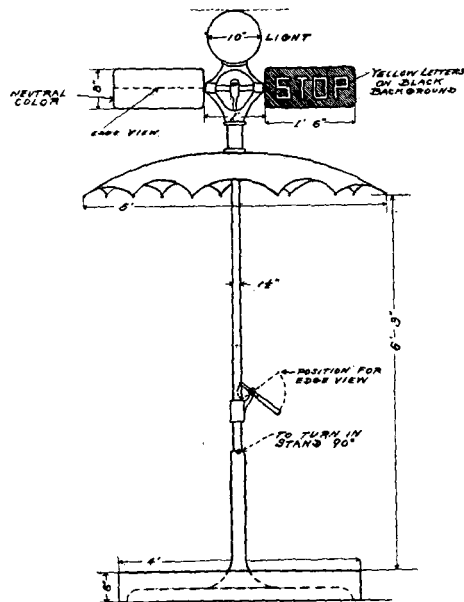


FIGURE 15.

The working drawing does not show colors, which should be the same as in preceding cut. Notice that the usual word "GO" has been omitted from the semaphore as superfluous though it does no harm.

### CROWSNESTS

A Traffic Crowsnest, as described in an article published March 7, 1914, and in *The Science of Highway Regulation* (1920) is a raised and covered

sentry box to be located at important street intersections or foci. The traffic officer has a clear view of traffic in all directions, is moderately protected from the weather, isolated from distractions and able to do more effective work than when on the street level.

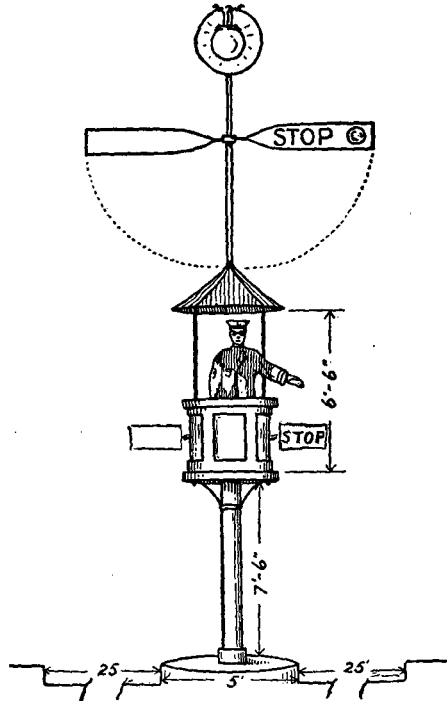


FIGURE 16.

On the Crowsnest are two pairs of semaphore arms worked by electric switches. At night these arms carry a red light. Lower down on the Crowsnest, as shown in the drawing, are two other semaphore arms, located at a height where they can be seen from beneath an automobile hood. The upper arms are to signal vehicles some distance back and the lower ones to signal those nearby. The semaphore is for the Block System, when it is necessary to employ it temporarily, although the more advanced method of Rotary Traffic at intersections where there is sufficient room will probably make the Block System superfluous, at least most of the time. The semaphores, however, are a safeguard when necessary to temporarily stop traffic in case of the approach of fire apparatus or other danger.

Telephone equipment furnishes direct communication with police and fire departments and nearest police station, and also with other crowsnests if located on the same street, while electric push button signals connecting the crowsnests indicate such warnings as "Clear the Street for Fire Apparatus," "Look Out for Runaway," etc. The indicators should show from which crowsnest the signal is given in order that the distance of the approaching danger may be estimated. The crowsnest is also equipped with an electric heater and a revolving stool, adjustable as to height. The stool can be placed in position for use when required and when not needed, pulled out and set to one side.

In 1917, the first of these crowsnests was put in use in Detroit. Slight improvements have been made since that time in the Detroit crowsnest and in those used in other cities. The crowsnest used in Detroit in 1917 is shown in the accompanying illustration.

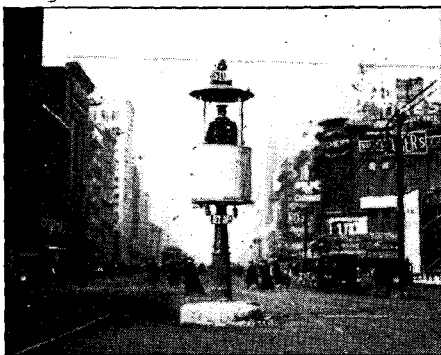


FIGURE 17.

This was modeled after the pattern above described except that signal lights were installed in place of semaphore arms. The latter would be better as the falling and rising of the arms attract the attention of the eye. The arms could be equipped with a tinkling bell to attract the ear also. In order to describe the working of the crowsnest, extracts of letters from the Detroit Police Department are given.

January 24, 1918.

My Dear Mr. Eno:

I have yours of the 18th inst., and in reply, would say that we put the Crowsnest in operation at Woodward and Michigan Ave. on Tuesday, Oct. 9, 1917. I assure you that it was my intention to write you about this at that time but it was partly through neglect and

partly owing to the pressure of other matters that I failed to do so. You say you are anxious to know all about it. I am anxious that you should.

It was this way: Last summer one of the Aldermen suggested to the Commissioner "That something elevated be placed at this corner for the traffic man to stand on." I immediately recommended "Mr. Eno's Crowsnest." Together with this recommendation I submitted a sketch similar to the one in your pamphlet. This recommendation was approved by the Commissioner and construction of the Crowsnest commenced. About a week after it was put in operation I reported to the Commissioner that "It proves to be a successful innovation beyond our expectations." We did not realize what an advantage the elevated position gives the officer. He has a clear view over the tops of street cars and automobiles and can command the whole situation for two or three blocks in all directions. Men at other corners in the vicinity work in conjunction with this master semaphore with the result that movement of traffic is noticeably faster and safer. Drivers and pedestrians frequently expressed their approval. It works to the advantage of the driver because they have the officer in it in plain view at all times from every angle. Direct telephone communication between the booth and First Precinct Station is another good feature.

One of the better proofs of its success is that one officer can control the traffic alone, while heretofore it required two men. One of our oldest and best traffic officers who had been regulating traffic at this corner for years after occupying the Crowsnest for one day, said "It is the best thing in the world."

I am enclosing herewith a cut of the tower clipped from a recent issue of "Popular Science." I was informed there was a cut of it in "Popular Mechanics." You will notice the change in the type of semaphore. Under a separate cover I am sending you a photograph.

The location of this tower, as you may remember, is in front of the City Hall. The Commissioner has ordered another one to be constructed at Michigan Avenue and Griswold Street, which is one block to the westward. \* \* \*

W. P. RUTLEDGE,  
*Chief Inspector,*  
*In Charge of Traffic.*

February 2, 1918.

My Dear Mr. Eno:

Upon his return from Washington recently, Commissioner Couzens instructed me to forward to you a photograph of our elevated Traffic Booth which I am sending you under separate cover. It is

situated at the intersection of Woodward, Michigan and Munroe Avenues, in front of the City Hall, at one of Detroit's heaviest traffic points.

Your specifications were followed quite closely in its construction. Please note that the "Go and Stop" signal is indicated below as well as on top. The lower one is specially for the benefit of drivers making a left turn, who come to a stop and await the signal to make the turn; also, it is of value to pedestrians who cannot very well see the signal which is located on the top.

GEO. A. WALTERS,  
*Secretary to Commissioner.*

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February 26, 1918.

My Dear Mr. Eno:

Your suggestion that a seat similar to a bicycle seat might be placed in the "Crownsnest" as a good one, and I will see about having one installed.

I think I told you we were heating the tower by electricity. We also have a telephone in it which has been used to good advantage on more than one occasion.

W. P. RUTLEDGE,  
*Chief Inspector,  
In Charge of Traffic.*

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October 12, 1920.

My Dear Mr. Eno:

\* \* \* Speaking of the Traffic Crownsnests, I do not know whether you are aware that we have increased the number in this city until we now have six in operation at our heaviest traffic intersections, and are preparing to install the seventh one. We have never had occasion to regret for one moment that we adopted your idea and installed these Crownsnests, but on the other hand, we sometimes feel inclined to be proud of the fact that we were pioneers in this regard. Not only that, but everyone realizes the practical advantages of this system.

W. P. RUTLEDGE,  
*Superintendent,  
In Charge of Traffic.*



Crowsnests should be located not more than four to five blocks apart, although one at every intersection would not be a mistake.

Since the above letters were written, there has been quite an increase in the number of crowsnests in Detroit and other cities have followed Detroit's lead, apparently with satisfactory results.

Rotary traffic, aided by traffic crowsnests, at important or preferably at all intersections on Fifth Avenue and eventually at the intersections or foci of all streets where there is sufficient room to inscribe a circle of seventy feet or more in diameter within the sidewalk corners, will take the place of the block system in my opinion.

The block system, however, can be immediately put into operation temporarily from the crowsnest to clear a blockade of any kind. Some five years before the crowsnests were adopted in Detroit an experiment was made with improvised towers on Fifth Avenue, New York, to synchronize the block system over a number of intersections by a system of flag signals. This attempt proved a failure, principally because conditions vary at different intersections.

If the block on Fifth Avenue, for instance, is sufficiently long for the vehicles on 34th and 42nd Streets to cross, it is usually much too long for most of the other side streets. In spite of this sufficiently well demonstrated failure, early in 1919, traffic towers were put on Fifth Avenue to carry out a synchronized block system. These towers were not even placed at the right spots. The only place to put a traffic crowsnest or tower is evidently at the center of intersection where it can be seen from all directions. These towers were located without any regard to the traffic control of the cross streets.

In the spring of 1922, new towers were designed to take the place of the old ones on Fifth Avenue and a fund of \$125,000 was raised to pay for seven of them.<sup>1</sup>

Meantime, the old towers have been erected in other places in New York and many more have been added, with the result that this system is tying up New York worse than it was ever tied up before. The traffic capacity on Fifth Avenue and some of the other avenues has been reduced at least fifty per cent and the best thing to do now is to replace the present towers with others at street intersections which are on the principle of those in Detroit but preferably with the arm semaphores. Each intersection should be operated independently of all others when it is necessary to resort to the block system at all but the use of the rotary system should be the regular procedure. By this method, vehicles will be distributed practically evenly over the whole surface of the roadway and be able to cover a longer distance in

<sup>1</sup> The latest report is that these extravagant towers are to be removed.

a shorter time and at a safer speed than they do now, since their operations will be practically continuous.

At the present time, when the block is raised, the vehicles which have been held back dash forward at much too great a rate of speed considering that they travel so close together.

### PAVEMENT MARKINGS

It is only comparatively lately that paint lines on the pavement<sup>1</sup> have begun to be appreciated at their full value. That they have not been of more advantage in cities is largely due to the fact that their location and form have not been determined upon by engineers sufficiently versed in traffic requirements.

The use of paint lines on country highways has been so far practically limited to central guide lines and to right angled caution lines, often accompanied by arrows or words of explanation.

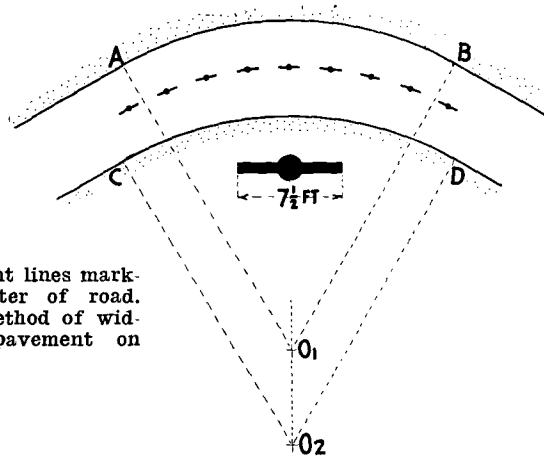
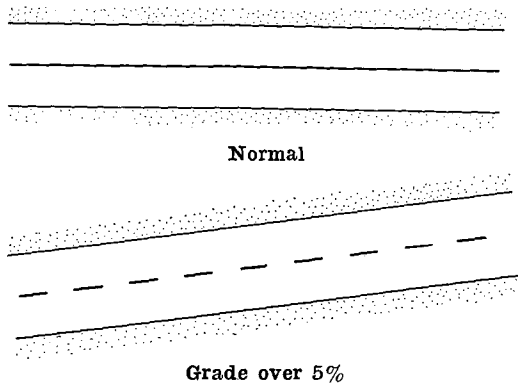
Crosswalks also should be marked out by paint lines and security signs at convenient distances apart on main highways in the country since it is often both difficult and dangerous for pedestrians to cross without them.<sup>2</sup>

I should like to see every paved roadway which is wide enough for two lines of vehicles, whether it be in the country or in the city (except where modifications are necessary on account of an intersection, junction or focus of roadways or some central obstruction such as tram car-tracks, etc.), marked with a central paint line six inches wide—the line to be an unbroken one except on grades of greater than say five per cent, where the line should be a broken one and on curves where the radius is less than say three hundred feet, a broken one with a disc in the center of the painted part eighteen inches in diameter to accentuate the necessity of keeping to the right.<sup>3</sup>

<sup>1</sup> The cost of application of paint lines to pavements is about eighty-five per cent labor and fifteen per cent paint. For this reason it is economical to use the paint that will last the longest, regardless of the cost of the paint itself. If paint lines are to be used on wooden block or bituminous pavements one or two coats of shellac should be put down before the paint is applied. Where long white lines are required, there are machines which will lay them down more economically than can be done with a paint brush but where the lines are short or are curved, the machine does not pay. Lines have been objected to on account of the expense but the expense has been largely due to bad paint which needs frequent renewing. In one of our well-known cities, I am told that the paint used was composed largely of fish oil and whiting which lasts only a little longer than whitewash.

<sup>2</sup> Paint lines on sidewalks would be useful in congested areas to prevent certain parts of the walk from being blocked by people standing or loitering, as for instance, on Fifth Avenue, where during the noon hour the walks are almost impassable on account of the overflow of workers from shops, who have no idea of using sidewalks in a reasonable way.

<sup>3</sup> Whether or not the part of the line which is to be put down should be of the same length as the space which is to be omitted is a question which should be decided after careful experimentation. It may be that some differentiation of these relative lengths would be useful to indicate the amount of curve or grade existing.



Pavement lines marking center of road. Also, method of widening pavement on curve.

Grade and Curve

FIGURE 18.

Lines across the pavement have been quite extensively used in some states to indicate the presence or distance ahead of certain dangers which can be guarded against through caution. These lines are often accompanied by the name of the danger ahead, as for instance, "grade crossing," "narrow bridge," "steep hill," etc., and sometimes the caution is repeated by having a single line a certain distance away from the danger and double lines nearer to the danger. I think the use of such lines should be greatly increased provided care is taken to put them only where they indicate a real reason for extra caution.

Perhaps the most important lines of all in city streets are those marking

crosswalks. It should be kept in mind, however, that the usual method used to mark crosswalks is in itself a serious danger because the line marking one side of the crosswalk is ordinarily the line of the curb continued, thus leading pedestrians over the most dangerous part of the roadway.

Crosswalks at right angled intersections should be back of and bounded on one side by the arc of a circle described within the four street corners and at intersections which are not at a right angle, back of the oval within such corners.

It is a good rule for pedestrians to remember always to keep a little back from the intersection of roadways while crossing and to carefully watch for the approach of vehicles. It is often even safer where the crosswalk is not marked by lines, if there is a vehicle to your right standing at the curb, to go just in front or behind it and cross there, as by so doing you will have a longer time to see a vehicle turning to the right from another street into the one you are crossing.

Crosswalks, especially in cities, should be marked by three lines—one on each side and one in the center to divide it according to direction. Direction arrows painted on the crosswalks create another well worth while safeguard, since they minimize confusion of pedestrians while crossing.

As there are such a great number of complications in most cities, especially in our older ones, due to the fact that until very recently, no study of traffic conditions had ever been made, it is the part of wisdom to have all crosswalks laid out by a civil engineer<sup>1</sup> who has made a real study of traffic requirements. The same argument applies also and perhaps to a greater degree to Prohibited, Restricted, and Danger Zones and Refuges, to Traffic Whirlpools, to Stationing areas and the marking out of stalls in them so that they may contain the maximum number of such stalls without waste of space, also to the designing or selection of dummy cops, mushrooms, semaphores, crowns and proper lighting fixtures and especially their location at intersections and crosswalks.

In the past, most, if not all of the work of locating lines has been left to local police officials who usually have had no adequate training for the purpose. The results have, of course, been unsatisfactory and uneconomical. Each and every such traffic problem should be worked out to scale on a drawing table before it is transferred to the road surface which should always be done under the direct supervision of a civil engineer who has qualified himself for traffic work.

<sup>1</sup> In selecting an engineer it is desirable usually to avoid one who has been trained for railroad work as he is apt to be influenced by things (such as mechanical signal lights operated from a distance) which are essential for railroad traffic but usually detrimental to road traffic.

It is a common practice to paint words on the pavement, such as SLOW or "SLO," SCHOOL, etc., to be read by the motorist. As ordinarily done, however, with letters of usual shape, say a foot wide and sixteen or eighteen inches high, the words are not legible until the motorist is almost on top of them. Some designs have been made in which the height of the letters is about  $2\frac{1}{2}$  times their width but even so the words are hardly legible at more than ten or fifteen yards.

In the design for these letters shown herewith the height of the letter is fully ten times its width and the thickness of line at top and bottom is strongly emphasized. With these proportions the 5 foot letters are perfectly clear, on a level pavement, at a distance of 100 feet, and the larger ones may be read at three times the distance, giving ample time to bring the car under full control or to a stop. Caution signs Nos. 13, 14, 15, 16, 17 and 18 preferably elongated as described above, are suitable to be used as pavement markings.



A.

Letters five feet high and six inches wide designed as admonitory signals to be painted on the pavement.



B.

The "SLO" sign as seen from a distance of 50 feet.

FIGURE 19 [A-B].



C.

Seen by the camera from a distance of one hundred feet. The camera lens was held at the height of a motorist's eye. Compare with the block letters, a foot square, or perhaps 18 inches high and 9 inches wide, generally used. These are quite unreadable at more than 8 or 10 yards.



D.

Larger letters,  $7\frac{1}{2}$  feet high and 9 inches wide. When painted on the pavement these may be easily distinguished at a distance of 250 feet or more. A motorist running 34 or 35 miles per hour is traveling about 50 feet per second. He would have at least 5 seconds, therefore, after making out this sign before reaching it.

FIGURE 19 [C-D].

## PART III

### HIGHWAY TRAFFIC REGULATION SYSTEMS

Highway Traffic Regulation systems are applied methods to assist in traffic control. The C. N. D. Code, as already explained, consists of the ancient rules of the road developed for modern requirements. With only the C. N. D. Code in force, if thoroughly understood by both drivers and pedestrians, traffic can move safely and effectively anywhere, but under certain conditions and at certain times and places traffic can move still better through the adoption of certain systems.

#### THE ONE-WAY SYSTEM

We will first take up the One-Way System because although not generally known, it is probably the oldest method in the world for the control of traffic in narrow streets. The earliest evidence of its existence is shown by bas-reliefs of chariots in Pompeii pointing the direction in which vehicles had to move on streets where the roadways were wide enough for only one line of vehicles. The Pompeians were apparently more alive to traffic requirements than we are today for, until very recently, in many cities and in some of them even now, vehicles are still allowed to move in either direction though there may be roadway width for only one line of vehicles at a time.

The One-Way System was put in use in a few streets in New York in the spring of 1907; in Boston in the fall of 1908; in Paris in the summer of 1909 and in Buenos Aires in 1910. It is now used in most cities throughout the world. Rotary traffic around circles, or other forms of centralized obstruction, is one example of it.

All city streets with roadways not wide enough for *two* lines of vehicles should of course have one-way traffic at all hours of day and night. All city streets with roadways not wide enough for *three* lines of vehicles should have one-way traffic all the time unless the stationing of vehicles is confined to one side of the street. All city streets with roadways not wide enough for *four* lines of vehicles should have one-way traffic at least during the busy hours in order to avoid confusion. No city street with roadway wide enough for *five* lines of vehicles should have one-way traffic unless it be provided with refuges at all cross-walks.

Wherever two roadways are practically parallel and near together one-way traffic has been very successful. In Paris, for example, it has solved many problems that formerly seemed hopeless.

Attention is drawn to the fact, however, that it is economically stupid to adopt one-way traffic streets unless proper signs are amply provided, indicating the direction of the movement of traffic. Since a sign costs but an infinitesimal fraction of a policeman's yearly pay, the economy is plainly evident.

An article was published on the One-Way System, in *Motor Travel* in November, 1917, which is here reproduced since the controlling arguments then advanced have not lessened in importance. However, since the article was written, many of the numbered streets in New York, some of them badly chosen, have been restricted to one-way traffic. A closer study of the question as set forth in the article quoted might well even now result in selecting practically all the streets mentioned at that time for one-way traffic without changes.

### **"ONE-WAY AND TWO-WAY STREET TRAFFIC"**

**How the New System Should Have Been Applied to East and West Streets in New York from 14th to 59th Streets, inclusive**

By WILLIAM P. ENO

"I had intended to write this article before, having made a careful study of One-Way Street Traffic some years ago, especially in regard to its suitability on the East and West streets from 14th to 59th streets, inclusive.

"I am impelled now to avoid further delay by the fact that the authorities are already widening the roadway of 44th Street and have decided to widen that of 38th and other streets. Of course, the streets which should remain Two-Way Traffic streets are the ones to widen first and both 38th and 44th streets, in my judgment, should be made One-Way Traffic streets and therefore should not be widened, at least without further consideration and not until after a practical trial has been had by actual but inexpensive experiment to determine definitely which streets should be for One-Way and which for Two-Way traffic.

"Such an experiment can easily be made without any change in curb lines, simply by the use of suitable signs marking clearly each street where traffic is to be restricted to one direction.

"There are three fundamental conditions which should be observed in deciding which streets shall have One-Way Traffic and which shall have Two-Way Traffic:



### **First: Wide Streets**

“On account of their width the following streets should have Two-Way Traffic: 14th, 23d, 34th, 42d and 57th Streets.

### **Second: Streets Bordering on Parks**

“Any street bordering on a park should have Two-Way Traffic because traffic should not be diverted from its natural course further than necessary. Therefore the following streets should have Two-Way Traffic: 17th, 26th, 40th, and 59th Streets.

### **Third: The Relation of One-Way Traffic Streets to Two-Way Traffic Streets**

“It is highly desirable that a One-Way street should have its traffic move in the same direction as traffic moves on the side nearest it in an adjacent Two-Way Traffic street, otherwise, it will occasion unnecessary distance to be traversed and an extra street to be crossed—therefore the following streets should have their traffic move East: 16th, 19th, 22d, 25th, 33d, and 56th Streets, and the following streets should have their traffic move West: 15th, 18th, 21st, 24th, 27th, 35th, 43d and 58th Streets.

“Now we have provided for all streets up to 27th Street, inclusive, except 20th Street, and as we can not make it a One-Way Traffic street and comply with all the aforesaid fundamental conditions, we should make it a Two-Way Traffic street.

“Between 27th and 33d Streets we have to provide for 28th, 29th, 30th, 31st and 32d Streets, an odd number (five) of streets. If we make 29th Street a Two-Way Traffic street we can make the other four One-Way Traffic streets and comply with the required conditions.

“Between 35th and 39th Streets we have to provide for 36th, 37th and 38th Streets, an odd number (three) of streets, and as in the preceding case, 37th Street should have Two-Way Traffic and 36th and 38th Streets One-Way Traffic to comply with the required conditions.

“Between 40th and 42d Streets we have but one street, 41st, and as it can not be made a One-Way Traffic street and comply with the conditions, it should be a Two-Way Traffic street.

“From 43d to 56th Streets we have twelve streets, an even number. These can alternate, according to direction, as One-Way Traffic streets and comply with the conditions.

“Between 57th and 59th Streets, we have only 58th Street, which must be a Two-Way Traffic street, as it can not be a One-Way Traffic street and comply with the conditions.

“The whole list of streets, then, from 14th to 59th Street, inclusive, worked out as already described, is as follows:

Two-Way Traffic East and West	One-Way Traffic East	One-Way Traffic West
14th St.	16th St.	15th St.
17th St.	19th St.	18th St.
20th St.	22d St.	21st St.
23d St.	25th St.	24th St.
26th St.	28th St.	27th St.
29th St.	31st St.	30th St.
34th St.	33d St.	32d St.
37th St.	36th St.	35th St.
40th St.	39th St.	38th St.
41st St.	44th St.	43d St.
42d St.	46th St.	45th St.
57th St.	48th St.	47th St.
58th St.	50th St.	49th St.
59th St.	52d St.	51st St.
	54th St.	53d St.
	56th St.	55th St."

I have reproduced the foregoing article to emphasize the necessity of having a careful study made by engineers who have specialized on traffic, before extensive and unnecessary work of widening roadways is undertaken.

### THE BLOCK SYSTEM

The block system consists in stopping and starting vehicles alternately at an intersection of roadways in order that traffic may proceed through each in turn.

It probably originated in England, was later adopted in France and was put into effect in New York in 1902.

One of the objections to the block system is that it often delays traffic unnecessarily. Vehicles accumulate behind the block and rush through in a mass when the block is raised instead of filtering through continuously and distributing themselves more or less evenly over the surface of the street. If you will watch the operation of the block system from the upper window of a corner building or from the top of a bus you will see that just before the block is raised, much of the roadway surface ahead is practically unoccupied by vehicles. In other words, more than fifty per cent of the traffic capacity of the roadway surface is often wasted.

An additional bad effect of the block system is to greatly increase the speed rate with its attendant dangers in order to make up for loss of time occasioned by the enforced stops.

The block system is a stop and dash system—either vehicles are completely stopped and waiting for a signal or they are dashing forward to make up for the loss of time when they were stopped. Once the block is raised, the temptation is to step on the gas and get as far as possible before the block is closed again. This results in a very large proportion of our city accidents. The only wonder is that more people are not killed by it. *The synchronized block system, whether operated in the usual way or progressively, is, of course, even more effective than the unsynchronized system in inducing drivers to increase speed to try to escape from the unreasonable requirements of enforced waiting.*

Where the block system is used it should consist of a complete block of all cross traffic. The practice of allowing vehicles at the head of the lines on the street in which traffic has been stopped to turn into the street on which traffic is moving is dangerous to pedestrians and should not be permitted.

Before the "Go-Stop" semaphore was adopted, traffic officers were becoming increasingly efficient in enforcing a partial block system where or when a complete block was not necessary. The partial block consists in holding back or beckoning forward individual vehicles by hand signals to facilitate them in weaving in and out with the least possible danger or delay. Reliance on the "Go-Stop" semaphore has seriously interfered with the development of this highly desirable technique.

The partial block is far better than the full block when the traffic is light because it causes less delay and answers all purposes of the full block. Neither the full block nor the partial block, however, should be attempted by an inexperienced traffic officer and when a well-trained one cannot be provided, reliance should be placed on dummy cops or traffic mushrooms. These answer the purpose very well if the drivers are properly qualified and pay due attention to the C. N. D. Code.

Traffic crowns, described on p. 41, are most desirable and economical of men for the handling of both vehicular and pedestrian traffic at intersections under whatever system is in practice. I have already dealt with the synchronized block system at some length (pp. 41-47). It is most important that these pages be read again in connection with what follows. To the uninitiated, this system appealed very strongly at first and people are only now beginning to realize what a mistake it has been to try to control traffic at several intersections from any one intersection even though the intersections to be controlled are on the same thoroughfare. It is still worse when the intersections are on more than one thoroughfare and are controlled from some central point sometimes located far away and where traffic conditions are very different. A doctor might just as well treat all his patients, whether

they have chicken-pox or brain fever, with the same remedy. People are now however, beginning to see the fallacy of the synchronized block system. Of course it will be stopped eventually by public opinion but in the meantime the traffic capacity of the streets of New York and of many other cities which have followed its bad example is being seriously reduced. One has only to attempt to drive around the city a little to realize what a detriment the synchronized block system is to convenience and to safety as well, because it calls for a dangerous speed rate when the block is opened to make up for time lost when it was closed. How much better to have a low speed rate with continuous motion, capable of covering a longer distance in a shorter time!

I would suggest that those who have not already detected the faults of the synchronized block system, observe its effects from the top of a bus or from a corner window on Fifth Avenue. Note that when the block on the Avenue is raised, the vehicles spring forward at dangerous rates of speed, especially as they travel so close behind vehicles ahead. Then when the block on the Avenue is closed, observe the bunches of vehicles stopped behind the blocks at the cross streets, often when there is no local reason why they should be delayed at all. There may not be one vehicle even in sight on the cross street where the vehicles composing the bunch are, but the bunch has to wait just the same because the signals to stop and start are given from some remote point where there may be a local reason for delay. In other words, if the block is long enough for cross traffic to pass through 42d Street or 34th Street, it is usually much too long for the other streets. The trouble is still more apparent on Park Avenue as one cannot help but notice if he be on this avenue or crossing it.

It often happens that before covering a hundred feet on Fifth Avenue you have to stop two minutes for cross traffic to clear itself, then you turn into a side street, only to have to stop at the next avenue for three minutes for north and south traffic to go through. Then perhaps you go a square or so on this avenue and have to stop two minutes again for cross traffic to pass, etc., etc.

It is sometimes almost an endless job to get anywhere in a vehicle with the synchronized block system in force. When you realize this, you decide to get out and walk to your destination.

We certainly do need a change in New York and in every city which has been induced to try the synchronized block system and the best way to get it is to employ as an advisor a trained civil engineer who has specialized in traffic regulation and who has that most important qualification of all—a mind that can visualize traffic movement.

I hope to see the day when the synchronized block system with all its attendant colored light signals will be but a memory of an attempt to regulate

traffic in an impossible way. For too long a time New York and other cities have been the victims of an unsuccessful experiment which will be ended only after the general public is alive to its shortcomings.

I have received several communications from engineers and laymen on the subject of synchronized traffic. One letter dated October 31, 1925, is from a traffic engineer of experience who has been acting as consultant on surveys, planning, regulation and signalling. He writes as follows:

“After intense effort (on the kind of work indicated above), I came to the conclusion that my present plan would not work out, perhaps mainly for the reason that most municipalities seem to be obsessed by the idea that traffic control signalling, synchronous or centrally controlled, would cure their traffic trouble.

“This attitude of the municipalities practically forced me to approach the signal manufacturers to cooperate with them in traffic matters.

“In the past three months, however, I have become even more conscious of the fallacy of rigid traffic control and have become firmly convinced of the fact that continuity of traffic is far more essential than control. This brings me to either a separation of grades or to the Eno Rotary Traffic principle and the urgency of widening the intersection rather than the street and of guiding traffic in fashion of your ‘Rotary’ system.

“This change of mind has caused me considerable apprehension as I can not sincerely continue to propagate the application of control signalling as a remedy and I, therefore, can not serve the signal manufacturers. It has also brought me into a troublesome contrast with the tendencies of the municipalities.”

In the September (1925) issue of “*Aera*” appears an article entitled “Synchronized Traffic Control is Costly to Street Railway.” This article points out the disadvantages of synchronized control from a new angle. It explains by diagrams and figures how in the city of Cleveland where they have tried synchronous control over a few squares it has resulted in an increase of power cost of from \$124,848 to \$146,166. It further says, now that they are proposing to put synchronous control in several parallel streets, it will be necessary to take into consideration the tremendous increased expense to the trolley company, the point being that when all the trams have been stopped, they all have to be started again at the same instant, resulting in an enormous temporary peak load.

I quote from another letter on this subject:

“Relative to this fact, I have been recently informed in Newark, that it takes from four to five minutes longer for a trolley to cover

the distance from Clinton Avenue to Central Avenue, a distance of about one-quarter mile, since the installation of their tower on Broad and Market Streets than before the transformation of their control into a synchronized one."

Only lately I have received information that some of the towers in western cities have been replaced by synchronized light signals located on the street corners. This may be due to one of two causes—either to the lack of traffic acumen of officials in charge or to the over zeal of the manufacturers of synchronized light signals to make sales. The awakening of public opinion to the failure of the synchronized traffic system is therefore fortunate.

The probability now is that the manufacturers of the lights are beginning to be alarmed lest they lose their business and are resorting to intensive salesmanship and to experiments with the so-called alternating or progressive system in the hope that they will continue to be able to sell their products. Another rumor has come to me which has not been authenticated that one of the cities which has bought synchronous light equipment is anxious to sell it for half what it cost. I believe it would be the part of good judgment for every city about to purchase these synchronous lights to make a very careful investigation not only of their merits but of the tactics which I suspect may be employed by the manufacturers.

It might be remarked here that if the corners of the sidewalks are cut back on a suitable radius for vehicles to make the turns easily it is impossible for the light signals to be placed on one pole, unless a bracket is used, and be sufficiently visible from both streets.

England, France and Belgium (at least up to a few months ago) had after investigation refused to adopt the synchronized block system. France and Belgium, however, have a light system, using only a red light, with a tinkling bell, which rings when the signal is changed, but it controls traffic only at the intersection where it is located. It is operated by a traffic policeman on the spot. He can stop traffic in one, two, three or all directions at a time and this adds much to the elasticity of the system. The traffic authorities in London think well of this and may adopt it later. The head of the Street Traffic Office in Berlin writes under date of April 11, 1927, "we dropped the synchronized system in accordance with your opinion, after quite a short trial and introduced the alternating system which is supposed to allow traffic a continuous movement." A letter dated July 28, 1928, says that their signal lights are now operated on the progressive system. I believe it is only a question of time when they will abandon all mechanical traffic lights which are operated from a distance.

## THE ROTARY SYSTEM

### The Most Important Principle for the Control of Traffic So Far Advanced

I have attempted to show the limitations of the block system and especially how undesirable it is when an attempt is made to synchronize it. This chapter suggests a substitute called the Rotary System which can be applied successfully wherever the block system can be used, provided that there be enough space between the curbs to make turns practical without backing. I shall first take up the Rotary System for use at the foci of roadways as it was first used at such places. I shall then follow with its application to intersections of roadways.

Formerly at circles and similar barriers, where several streets converge, traffic went around in both directions resulting in much confusion and many accidents. In the summer of 1903, it was suggested to go around Columbus Circle in New York in one direction only. The plan is now generally called the "Rotary System"<sup>1</sup> and the regulation for it is "A vehicle passing around a circle, oval or other form of centralized obstruction shall keep to the right of such obstruction."

It was not, however, until 1905 that rotary traffic was put into effect at Columbus Circle in rather a crude manner, in which, unfortunately, it still remains. (See Figures 20 and 21.) In the same year, this system was recommended for the Place de l'Etoile in Paris, but was not adopted until 1907. (See Figure 22.) In 1912, a plan was prepared for rotary traffic at the Rond Point on the Champs Elysées (see Figure 23), which was favorably considered but action deferred on account of the war. Rotary Traffic is probably the one system that can materially simplify traffic at this congested center.<sup>2</sup> A

<sup>1</sup> It is called le Système Rotative or le Système Giratoire in France, and in England where they adopted it only in August, 1926, they call it the Roundabout System.

<sup>2</sup> At the request of the "Excelsior," I furnished a plan for the Rond Point des Champs Elysées, published in that paper July 29, 1912, and republished in my Report for the Third International Road Congress in 1913 and reproduced in Pamphlet No. 47, in "Science of Highway Traffic Regulation" 1920 and in "Fundamentals of Highway Traffic Regulation" 1926. It was reported approved in Paris in 1913, but its adoption was postponed on account of the caving in of the Avenue d'Antin (now Avenue Victor Emanuelle III) over the Catacombs and the war in 1914 put an end, for the time being, to any improvements of that kind. M. Hennion, then Préfet of Police and all succeeding Préfets of Police, recommended the adoption of this plan. Each time I have returned to Paris I have taken occasion to again call the attention of the authorities to this plan and in 1927 both M. Chiappe, Préfet of Police and M. Guichard, Directeur de la Police Municipale, seemed to think it should not be further delayed and sent their engineers, M. de Courval and M. Partridge to me for details. I had promised M. Chiappe and M. Guichard to go over the plan again and send them revised drawings which I did on August 30th, 1927. A letter dated September 27th acknowledged receipt of the plan. I have also received letters from my correspondent in Paris, one from M. Guichard and one from Polizei Major Seyffarth, in charge of traffic in Berlin, indicating that the plan is successful. I am glad as it culminates an attempt to get the plan tried at this focus of streets, beginning July 29, 1912, a period of fifteen years and five months.

(Continuation of foot note on page 60.)

August 30, 1927.

Monsieur Chiappe, Préfet de Police,  
Monsieur Guichard, Directeur de la Police Municipale,  
Préfecture de Police,  
Paris, France.

Gentlemen:

When I saw you in Paris, we talked about the advisability of trying gyratory traffic at the Rond Point des Champs Elysées and I promised on my return to send you some suggestions.

We have had our engineers working on the plan and it is being forwarded to you by courtesy of your Embassy in Washington.

The drawings will, I think, make the whole plan clear to you. I am not sure the measurements upon which the plan was made are absolutely accurate but I believe them to be sufficiently so for the purpose.

The main feature of the plan of course consists of an oval around which traffic will go as it now does at the Arc de Triomphe. It would be a mistake, at first to build a raised refuge until the cheaper method is tried out and even then, it would probably be better not to have the raised refuge on account of parades, the champignons and the signaux being easily and quickly removable and the "dummy cops" also with but little more trouble.

The most convenient method of installing the details is to shut off the space which is going to be inclosed by the white paint line with a temporary rope barrier. The oval should be marked with a band of white paint about 15 centimeters in width or by the little metal markers which you have used for the crosswalks on the Champs Elysées or by both. The metal markers could be put on top of the white line to emphasize it. However, I would not put the metal markers down until you have tried the white line and made sure that the form and size of the oval are best suited for the location as the paint can easily be removed whereas it would be difficult to take out the markers.

The blueprint marked No. 1 gives the plan. No. 2 shows a picture of a plain champignon. No. 3 of a reflecting champignon and No. 4 of an electric lighted champignon. The champignons should be kept painted white to make them visible. The electric lighted one (numbered 4) is I think unnecessarily expensive. The reflecting one (numbered 3) costs less and I believe would prove most satisfactory but I should have yellow reflectors instead of red ones as they are for caution and not for danger. The plain champignon (numbered 2) is however very good and if kept painted will do very well.

No. 5 gives a photograph of a signal with standard. The standards are more visible if painted black and white but a single neutral color is sometimes preferred.

No. 6 gives a full size detail of the signal suggested.

No. 7 (a) gives a dummy cop; (b) another and (c) another, any of which will answer. I believe (a) to be the best as it is lighted by acetylene and is most reliable. (b) is lighted by electricity and would be expensive as you would have to put the wires underneath the pavement. (c) is also a practical and cheap form of dummy cop but requires a little more attention. If the expense does not matter, I strongly recommend the one shown in (a). Whichever one you use, however, should be placed on a disc painted white.

The white paint and shellac which I sent to the Prefecture in 1924 and which M. Guichard said was still there should suffice for installing the plan.

When M. de Courval and M. Partridge came to see me early in June I explained the details to them and emphasized the fact that before using paint, the pavement should be thoroughly cleaned and then one or two coats of shellac applied before the paint, then one coat of paint at first and after a week or two another one. This should last a long time and can easily be retouched when necessary.

I was pleased to see, before my departure, that you had begun to mark the crosswalks with the little metal discs. They seem to answer the purpose well.

I have sent a copy of this letter to M. William Dumont, 2 Rue Bleu, and asked him to take or send a translation to you.

With best wishes and kindest regards, I am,

Yours most sincerely,

(s) Wm. P. Eno.



rotary traffic diagram for the Place de l'Opera was also prepared by Mr. Eugene Hennard, a noted French architect (see Figure 24), which leaves little to be desired, provided the existing subways and sewers are not in the way of the proposed tunnels for pedestrians, but even if the tunnels for pedestrians are not practical, the plan should be adopted as furnishing the best solution of the problems at this important focus.

You will notice from the diagrams that the central obstructions are not always circles. Those for the Rond Point and the Place de l'Opera are ovals while the one in Washington for Pennsylvania and New York Avenues is a triangle with the corners rounded off. You will notice further on in this chapter, other central obstructions in the form of an hour-glass and others of kidney shape, etc.

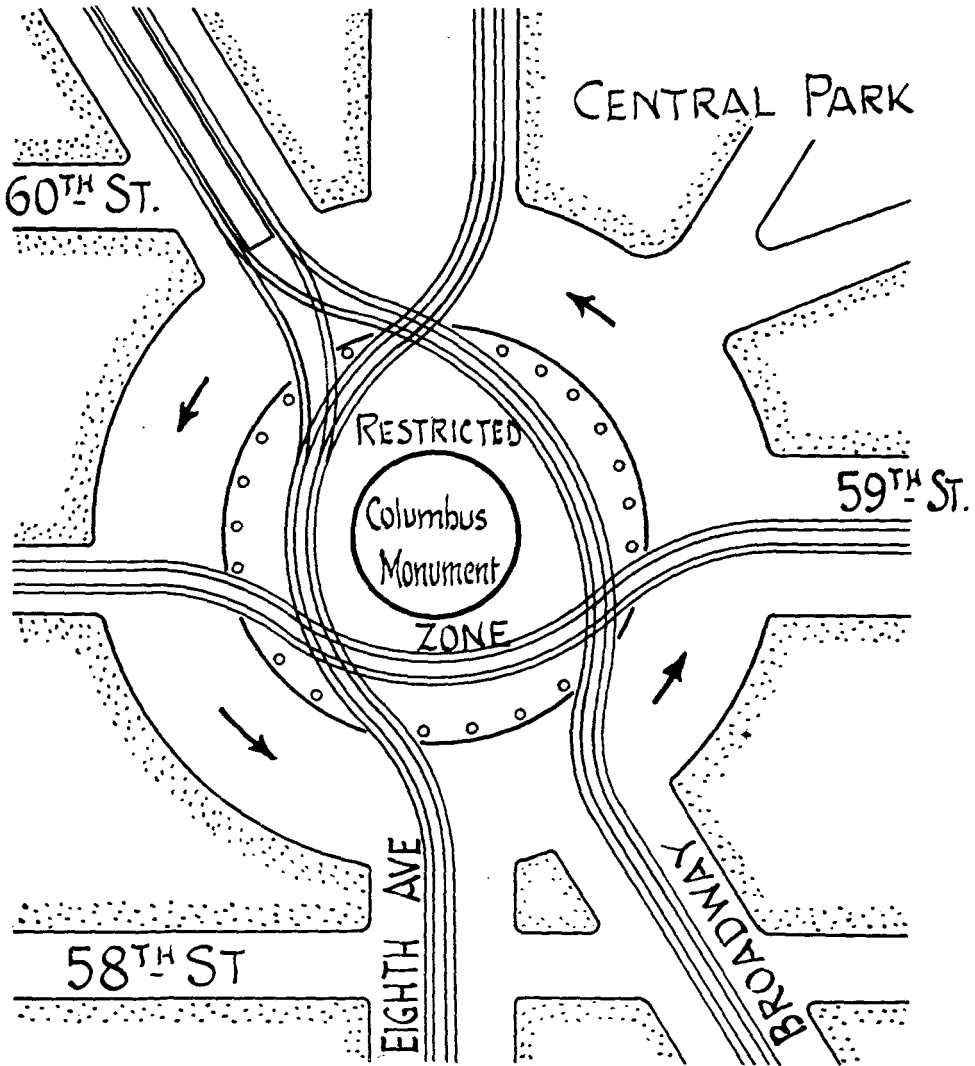


FIGURE 20  
Present Plan in Use at Columbus Circle Carelessly Carried Out  
and Should be Improved.

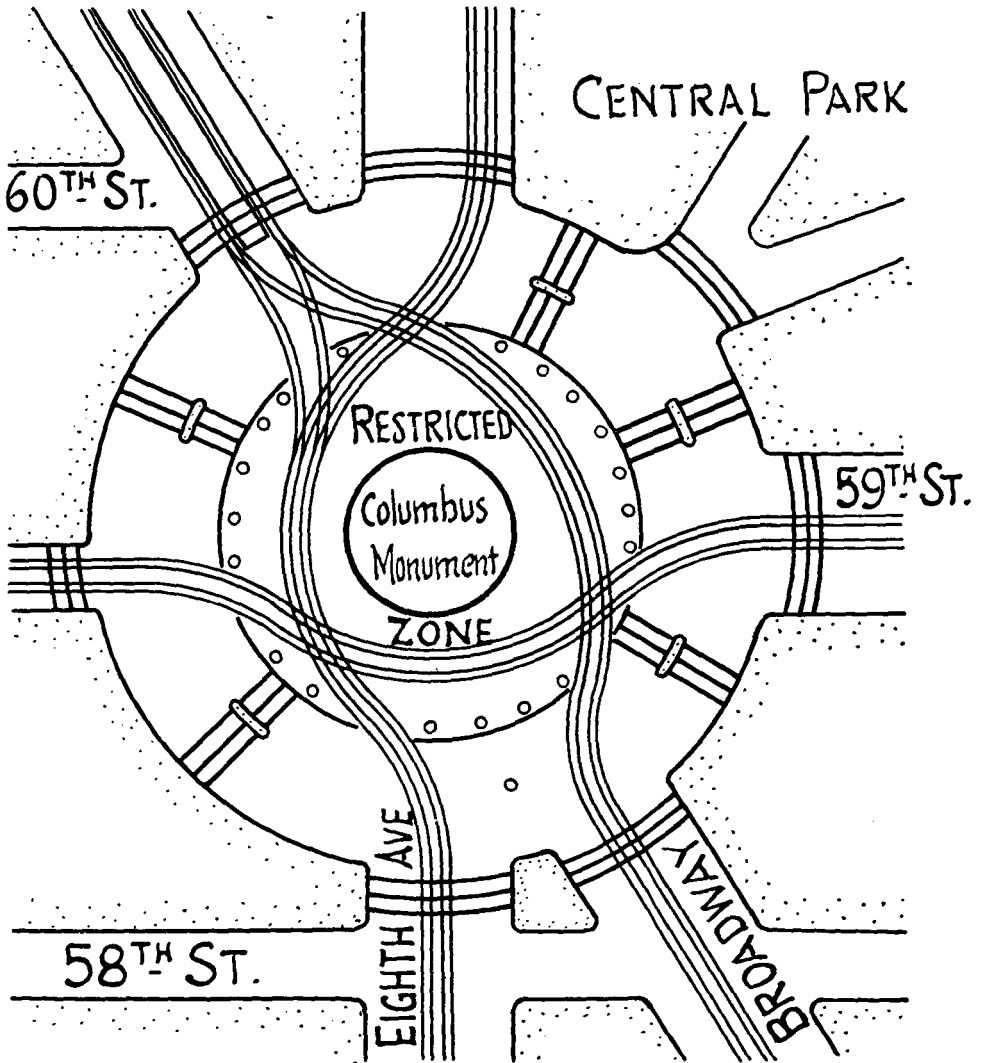
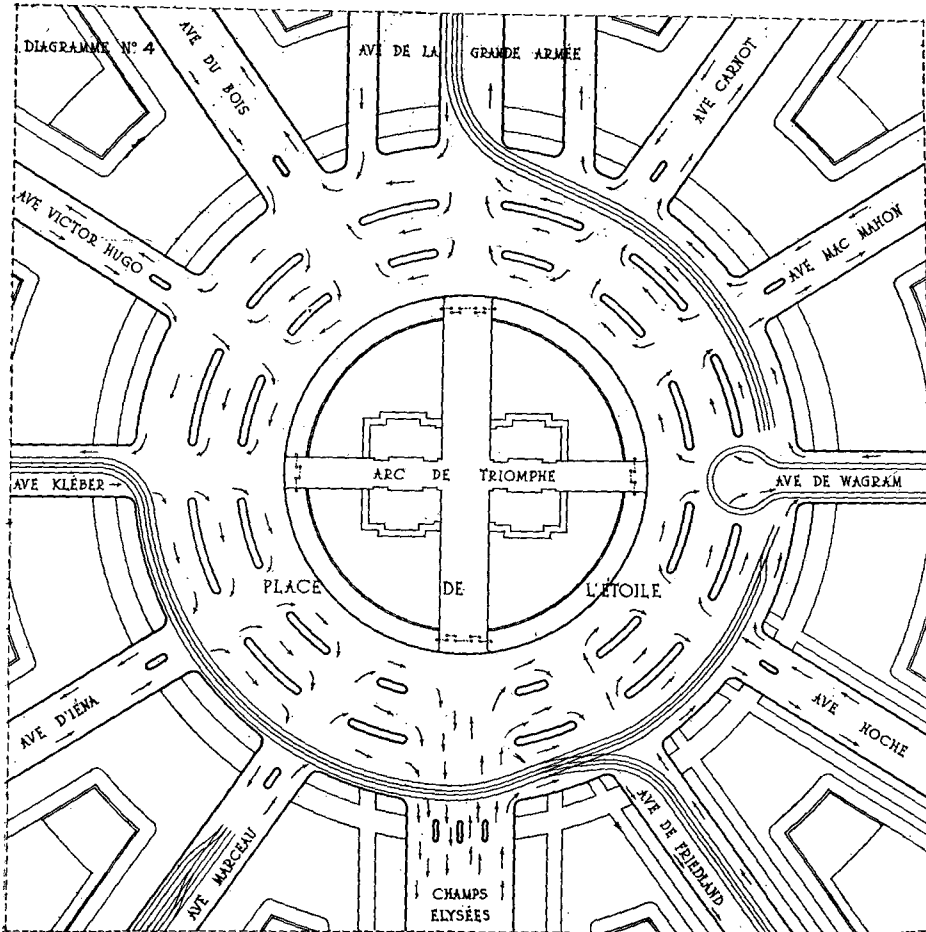


FIGURE 21

Improved Plan for Rotary Traffic at Columbus Circle Showing Cross-walks Properly Placed and Refuges for Pedestrians and to Canalize Traffic. This is a very dangerous place for pedestrians and it is not understandable why the police authorities have neglected to improve it especially as it would be so very easy to do so.



PLAN ROTATIF OU GYRATOIRE POUR LA PLACE DE L'ÉTOILE

FIGURE 22

Place de l'Étoile, with a dozen entering streets and three stub-end tram lines. Traffic is divided into lanes all traveling in the same direction, to the right. The cut shows two lines of Refuges for crossing to the center circle and to canalize traffic. These Refuges are not yet built around the Circle, although those that were in pairs on the Champs Elysées have been spread apart, and a third one constructed between them, now dividing the central part of the Avenue into two alleys for motor cars.

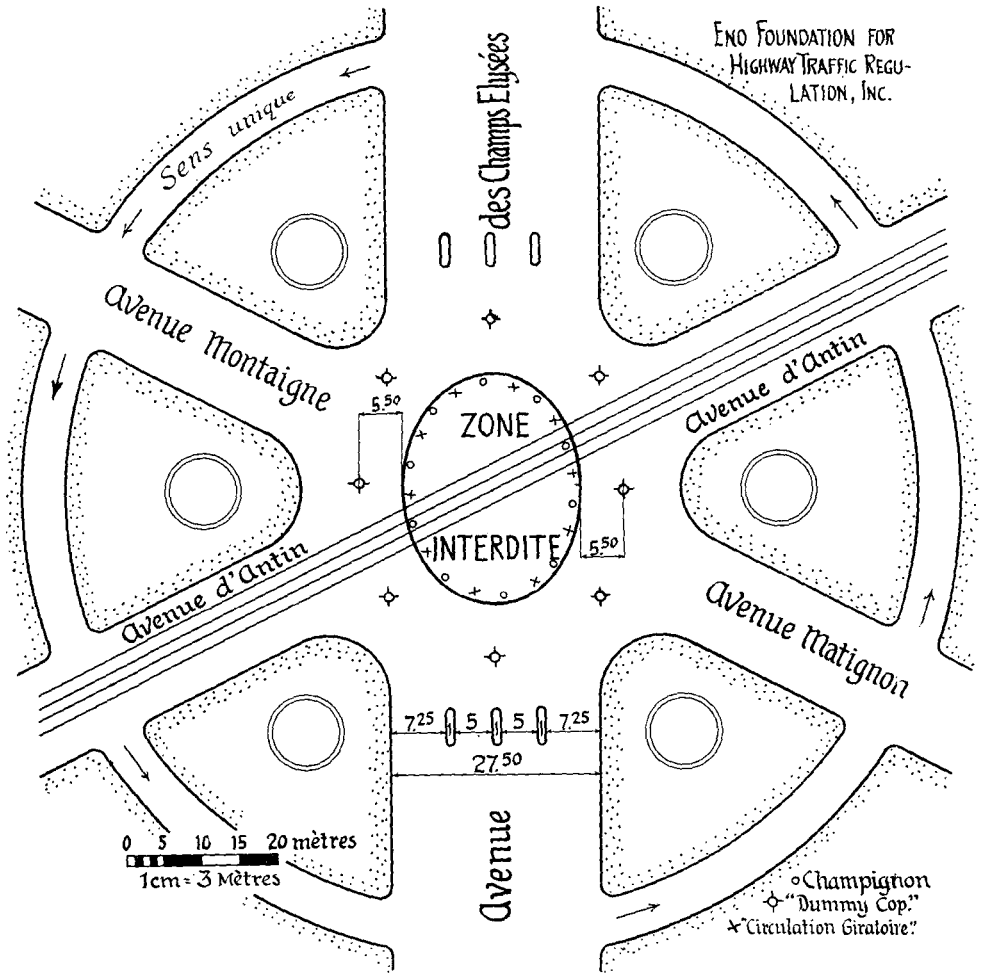


FIGURE 23

Proposed plan for the Rond Point on the Avenue des Champs Elysées. It is crossed by two other avenues, one of them having a tram-car line.

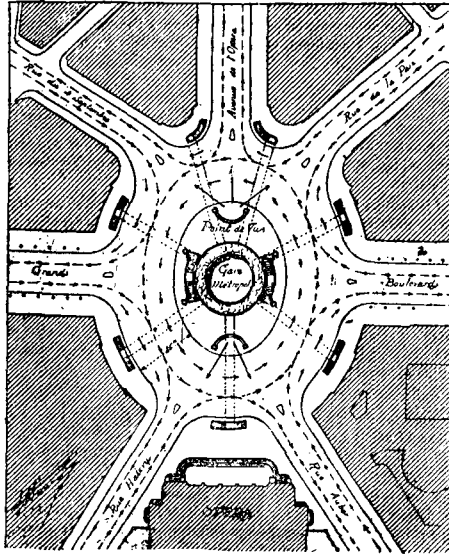


FIGURE 24  
Plan for Rotary Traffic, Place de l'Opéra,  
Paris, prepared by M. Eugène Hennard.

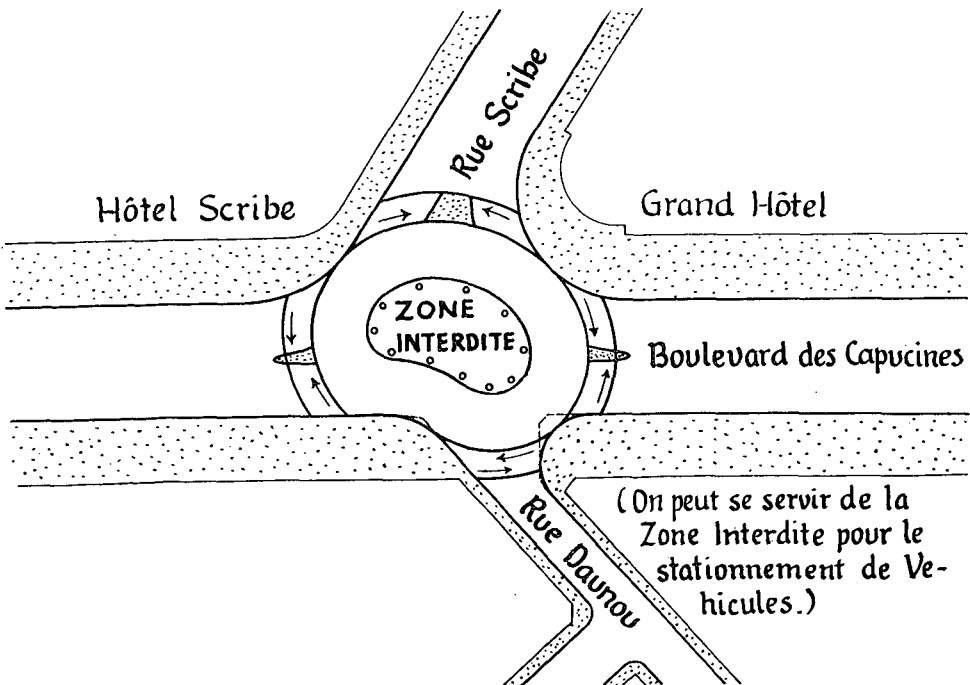


FIGURE 25  
The curbs were changed as shown in the plan in 1926 but the other changes  
have not yet been made.

Figure 25 shows rotary traffic where the rue Scribe and the rue Daunou enter the Boulevard. This was partially carried out in 1926.

Rotary Traffic has now been generally adopted wherever there is any intelligent effort made to handle traffic at foci of streets where there is already a circle or some similar form of central obstruction or where one can be installed. Rotary traffic, however, will work as well at an intersection of two streets where there is sufficient turning space as it will at a focus of streets. It is a no-stop system, distributing vehicles comparatively evenly over the surface of the roadway instead of bunching them as does the block system. It will therefore very greatly increase the traffic capacity of the street. It is also more economical than the block system as it does not require so many traffic officers to handle it. Rotary traffic cannot function at intersections to the greatest advantage unless it extends over a considerable number of them as the operation of the block system at points that feed the spot selected for the trial interferes with the normally even flow of traffic.

At an intersection of streets, where there is sufficient space, the principle to follow is exactly the same as at a focus of streets. In one case the pivotal zone to go around is large. In the other it is smaller and that is the only difference.

At a simple intersection of streets, vehicles will do exactly what they do when there is no traffic officer in charge, *i. e.*, the drivers will follow the general traffic regulation of going around the central point of intersection before turning, but with a pivotal zone in the center, they will be still further constrained to follow this rule.

The corners of curbs are now not usually cut back on a large enough radius, especially if rotary traffic is to be used, six feet being about the average. The scientific radius where the curb lines intersect at right or acute angles is one not greater than the width of the wider sidewalk nor less than that of the narrower sidewalk. Wherever possible the longer radius should be used, as this does not materially affect the sidewalk capacity and does give much better and safer accommodation to vehicles. For obtuse angles the longer radius should also be used unless local conditions require modification. The method of determining these radii geometrically is illustrated in Figure 26.

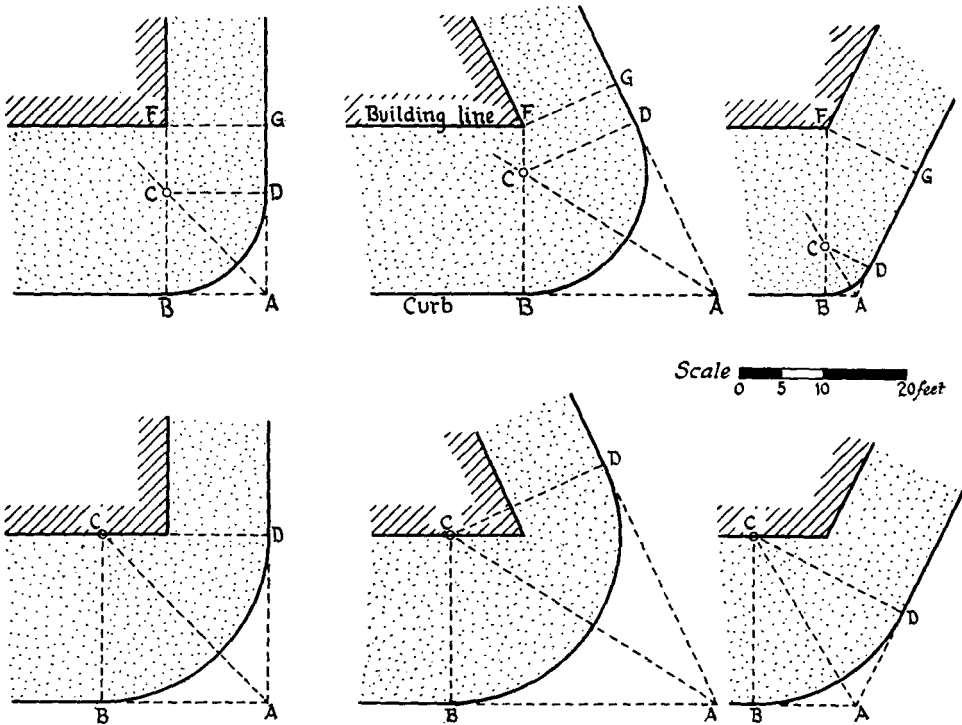


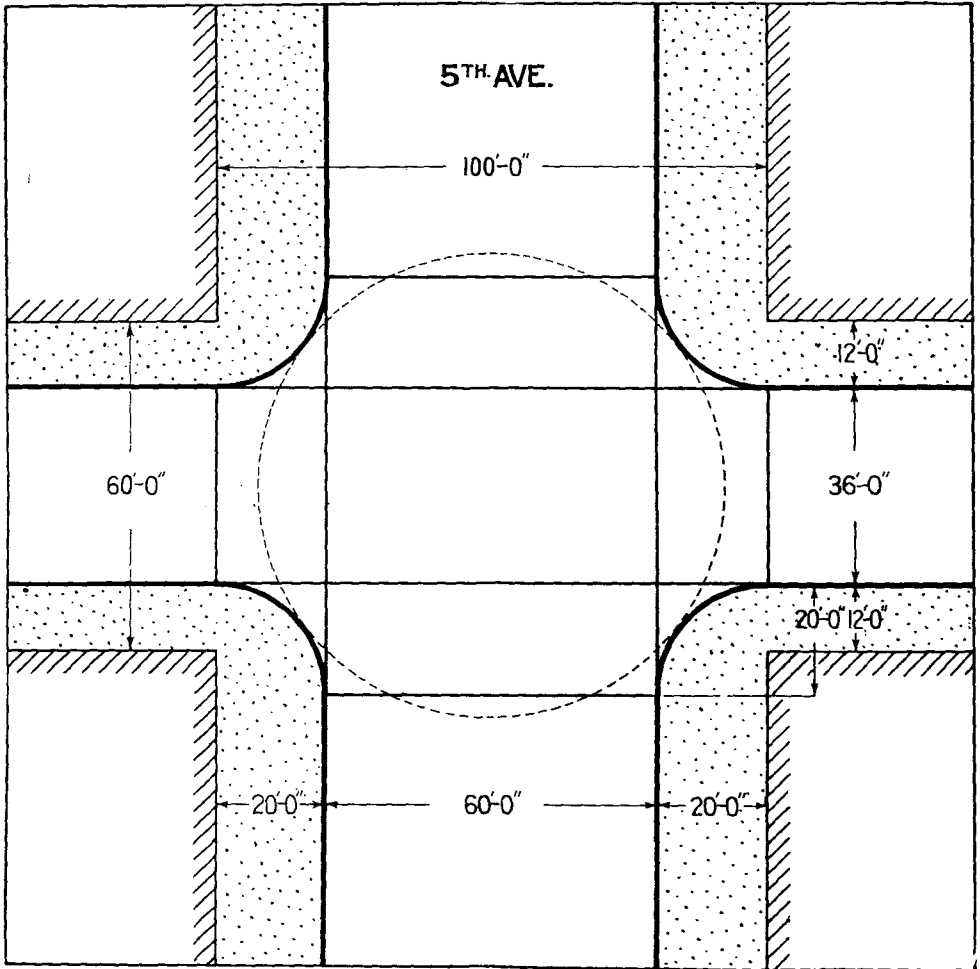
FIGURE 26

Scientific methods of rounding curbs at street corners.

Figures 27, 28 and 29 show the usual layout, a better layout and the best layout for rotary traffic at a right angle intersection. In the example given, one roadway is sixty feet and the other thirty-six feet wide. The place selected for the illustration is Fifth Avenue at a junction of one of the narrow cross streets. The inscribed circle has a diameter of 85 feet which is easily sufficient for rotary traffic.

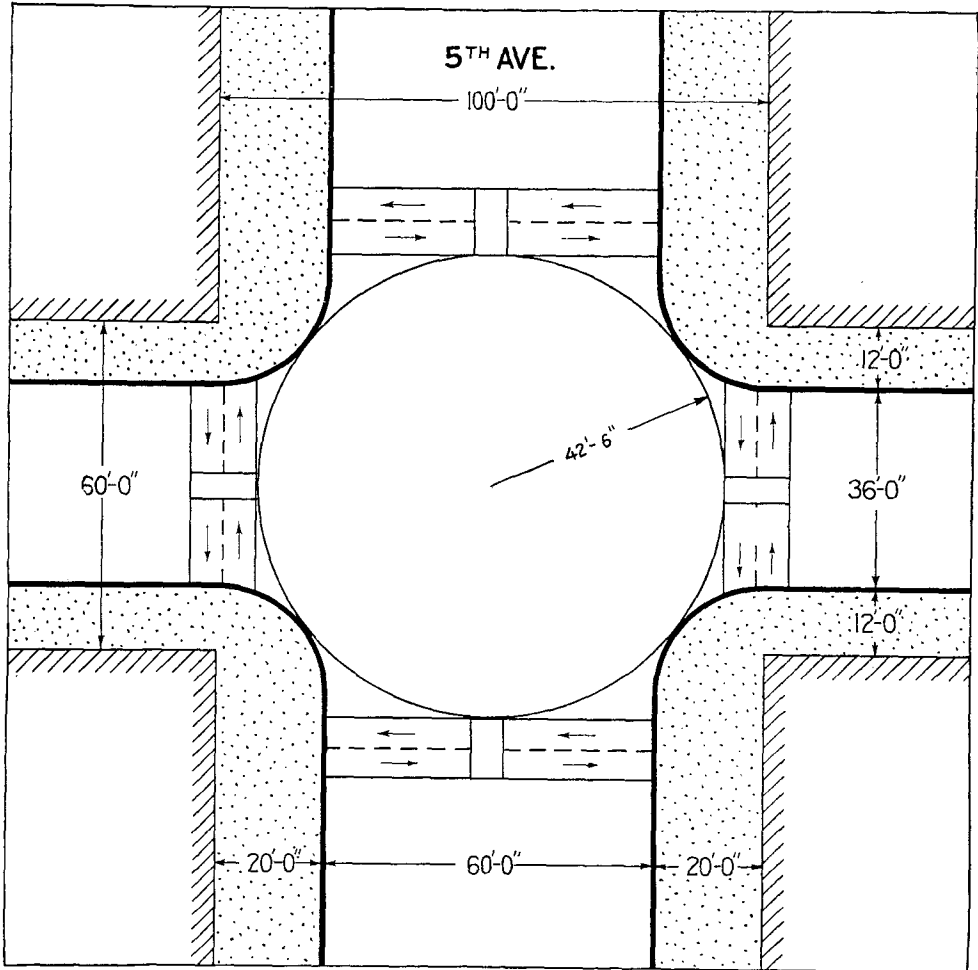
The question is often asked, "How about the pedestrian in rotary traffic?" The answer is that he is much safer than where there is no system at all or where the block system is in force, for the following reasons:



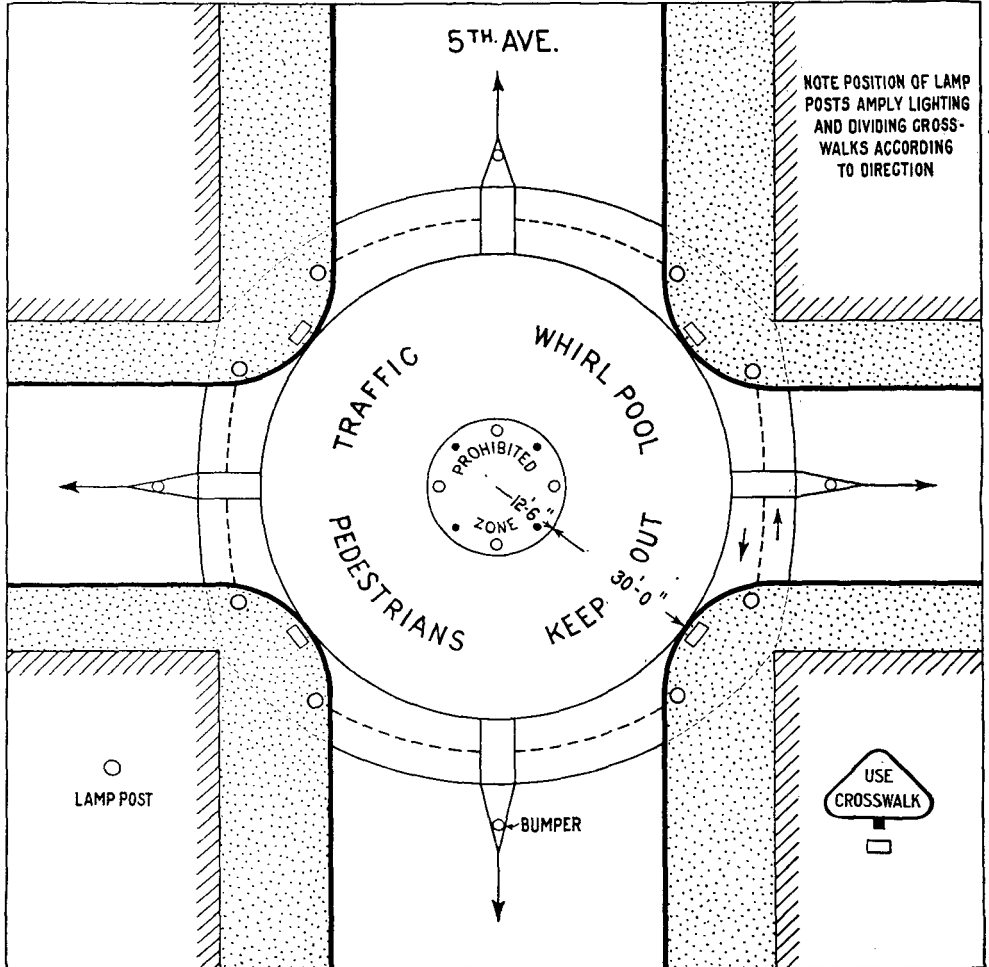


**FIGURE 27**

Showing usual but dangerous method of marking crosswalks. The inscribed circle, touching all four curb corners as cut back on proper radius, is 85 feet in diameter.



**FIGURE 28**  
Showing better method of marking crosswalks.



**FIGURE 29**  
Showing best and safest method of marking crosswalks.

First, because crosswalks are, or should be, distinctly marked out and so located that they keep pedestrians from entering the traffic whirlpool at the center of the intersection.

Second, because the rotary system causes a natural slowing up of vehicles approaching the intersection, not only in order to turn safely but because Sections 2, 3 and 4 of Article I of the C. N. D. Code cautions them in the following words (part of the definition of Reckless Driving) :

Sec. 2. Driving any vehicle when it is not under practical control, especially at crosswalks, crossroads and side roads on the right.

Sec. 3. Driving any vehicle without due courtesy and consideration for the safety, convenience and rights of pedestrians, equestrians and bicyclists, whether on city streets, suburban highways or country roads.

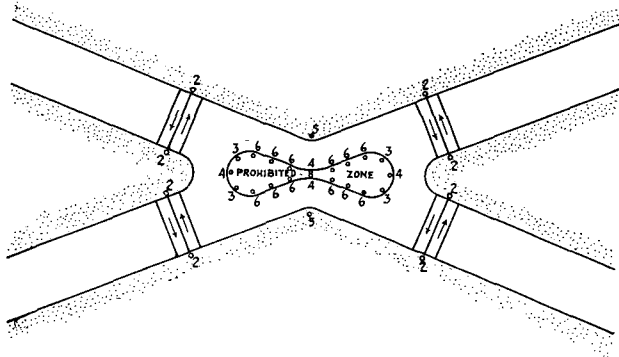
Sec. 4. Failing to exercise due care in crossing or entering the traffic of another roadway—bearing in mind that it is obligatory not to interrupt the traffic of the more important thoroughfare unnecessarily.

Third, where the block system is in use and cars have been held up at an intersection by the adverse signal, when these cars are released, the starting speed is often excessive and consequently dangerous to pedestrians.

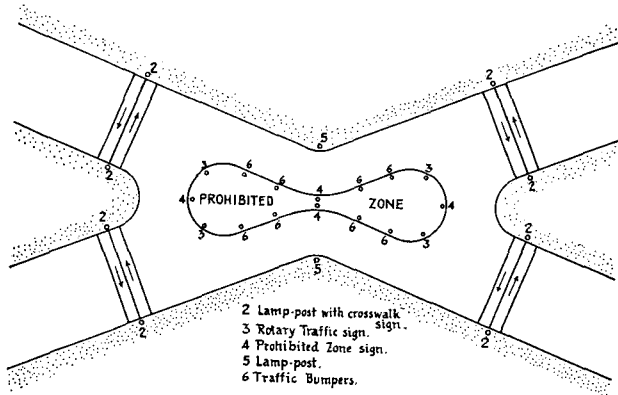
With the great necessity for street traffic betterment, the authorities should welcome any promising suggestion, especially that of the extension of a system which has already proven so valuable in saving life and facilitating the movement of traffic.

Traffic problems have now become too important to the people of all countries to leave them in future to be worked out by local police officers or engineers untrained in the science of traffic management. Courses in traffic regulation engineering should be increased in number and encouraged in universities in order that better talent may be induced to lend its aid. Several universities have already, at this writing, interested themselves in this subject.

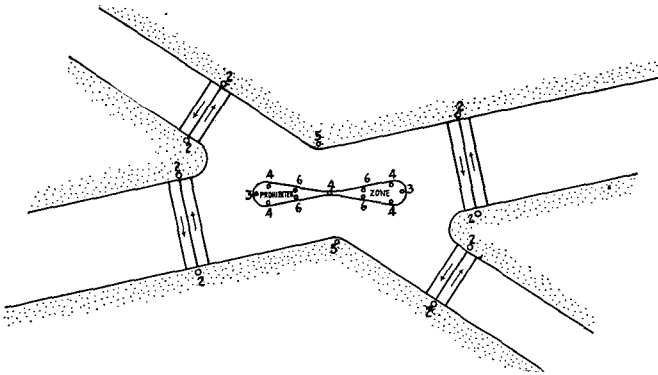
The following diagrams (Figures 30 to 40) are given as examples of what can be done by rotary traffic to solve various problems.



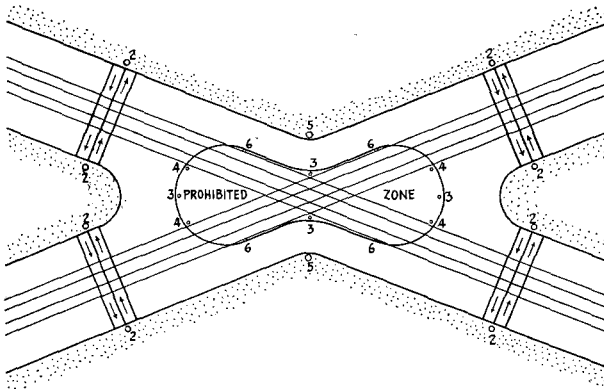
**FIGURE 30**  
 Diagram for the Rotary System at the acute angled intersection of two narrow streets.



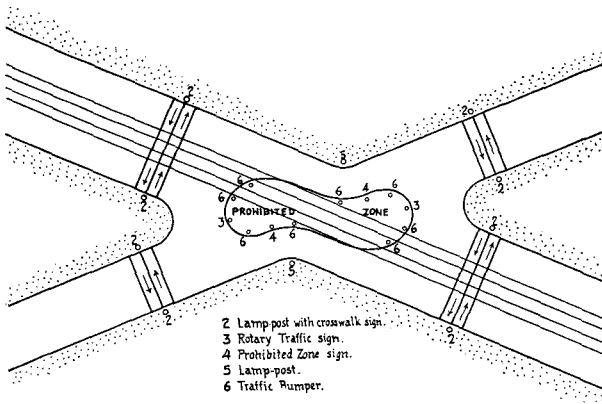
**FIGURE 31**  
 Diagram for the Rotary System at the acute angled intersection of two wide streets.



**FIGURE 32**  
Intersection of a wide and a narrow street.



**FIGURE 33**  
Intersection of two streets, each having  
double-tram-car rails.



- 2 Lamp post with crosswalk sign.
- 3 Rotary Traffic sign.
- 4 Prohibited Zone sign.
- 5 Lamp-post.
- 6 Traffic Bumper.

**FIGURE 34**  
Intersection of narrow street with wider one having  
double-tram-car rails.

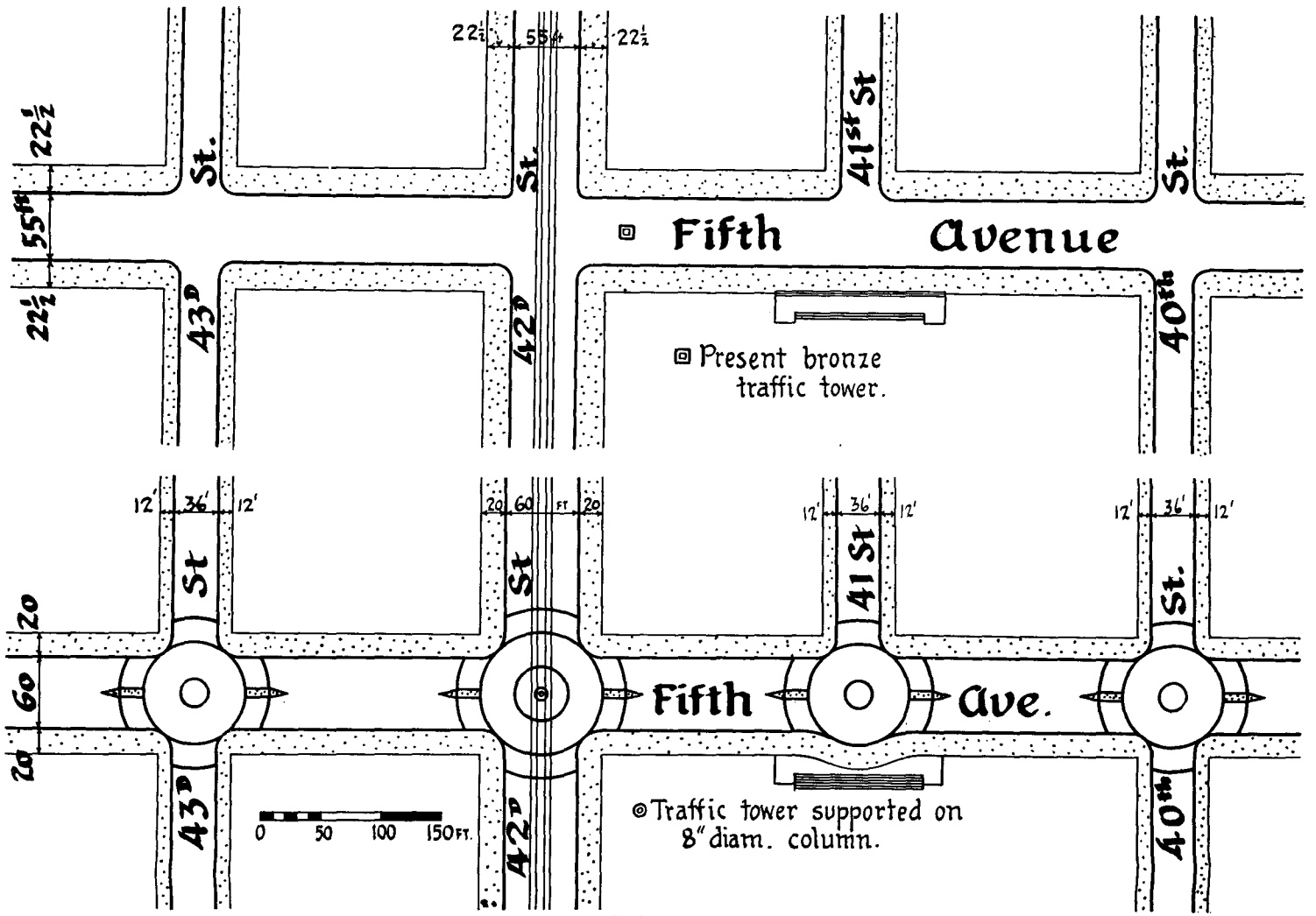


FIGURE 35

The upper cut shows the Avenue as it is with the Block System, and the lower cut shows how the intersections should be laid out for the rotary system.

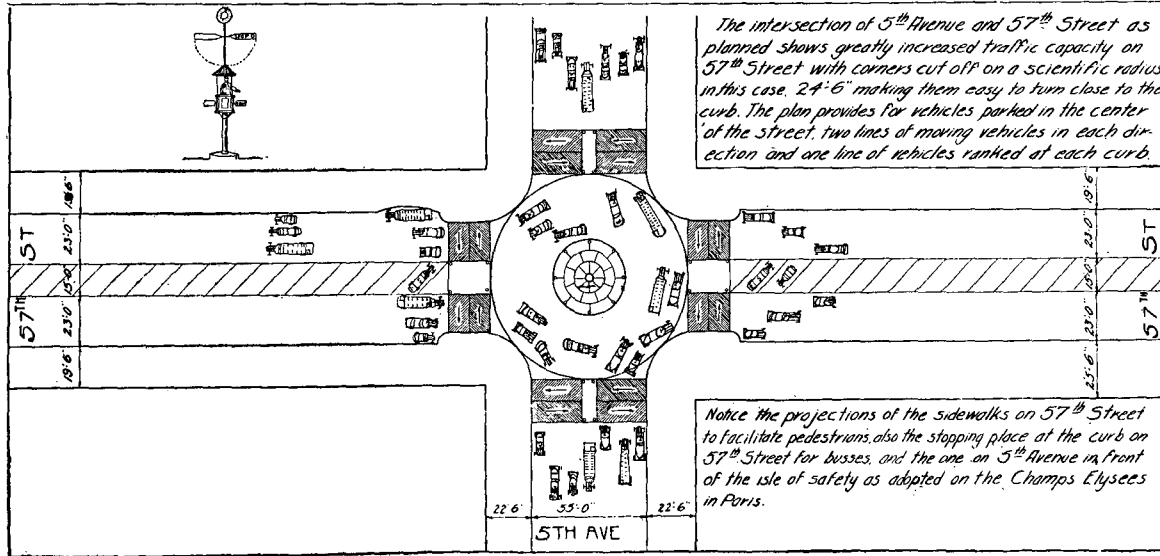


FIGURE 36

Figure 36 (about 1919) shows a plan for 5th Avenue and 57th Street designed to make 57th Street the finest shopping street in the world. The traffic capacity is increased from five to eight vehicles (counting the stationing area in the center as equal to two lines of vehicles). The total width of the roadway is increased from 40' to 61', allowing 15' in the center for stationing, 7' at each curb for waiting vehicles, and 16' between the stationing vehicles in the center and the vehicles at the curb, or 8' for each line of moving vehicles. The sidewalk is reduced from 30' to 19½', or about the ideal width, which would be 20', or one-third of the width of the roadway.

Notice the Traffic Crownsteeple for the center of intersection, the different pavements for the neutral zone, the Refuges, the crosswalks, the location of bus stops at the side of the street on 57th Street as at present, and in the center of the street on 5th Avenue as practiced on the Champs-Elysées in Paris.



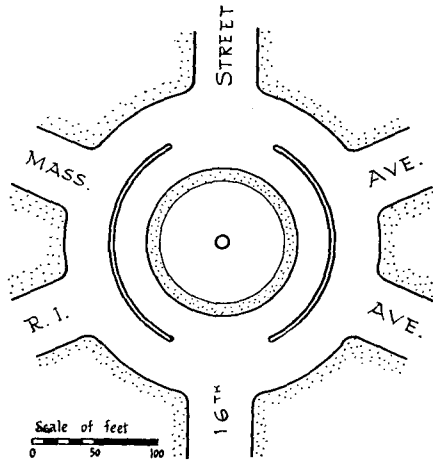


FIGURE 37

Present rotary traffic layout at Scott Circle in Washington. This plan mixes up the rotary system with the block system. The crescent-shaped refuges have caused many accidents.

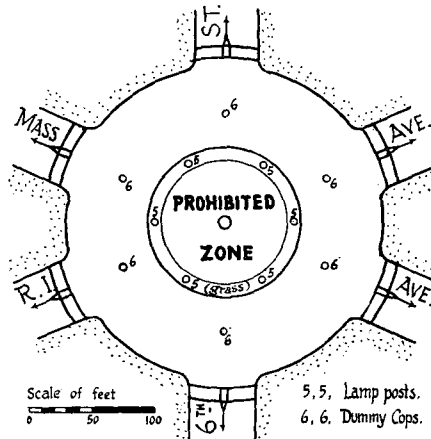
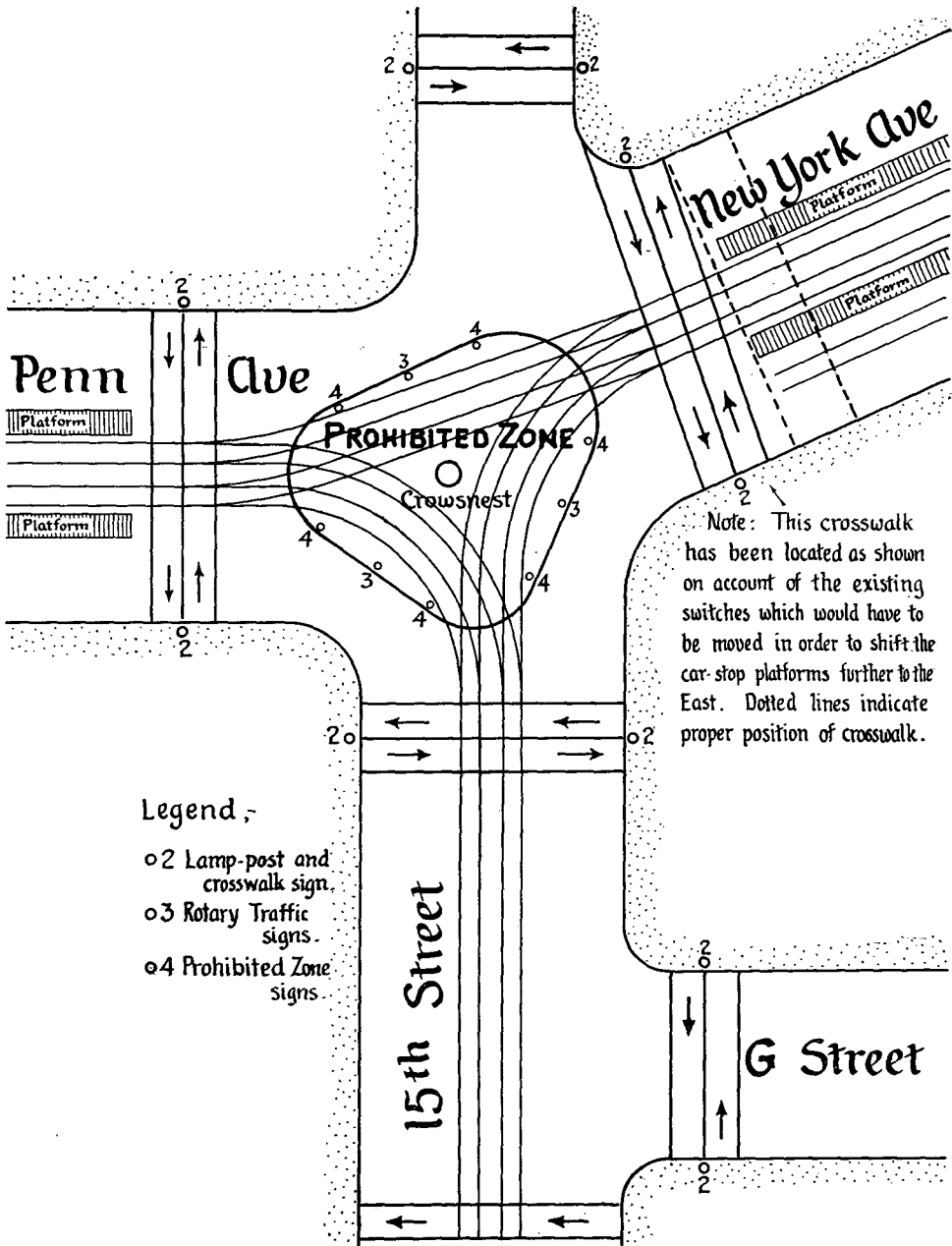


FIGURE 38

This plan shows the correct system of laying out rotary traffic for Scott Circle. Notice that the border of the central circle should be replaced by grass where there is now a sidewalk. Pedestrians should not attempt to cross the circle at all, but should go around it on crosswalks where shown.

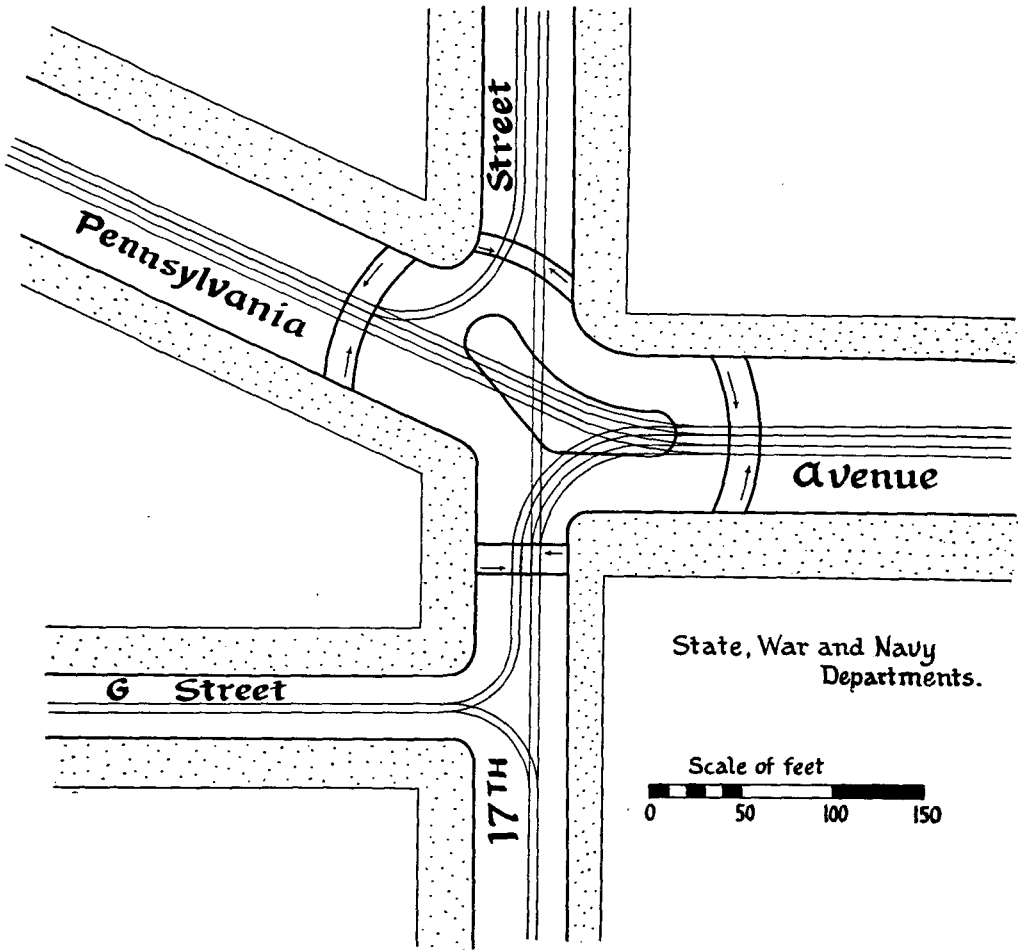


Note: This crosswalk has been located as shown on account of the existing switches which would have to be moved in order to shift the car-stop platforms further to the East. Dotted lines indicate proper position of crosswalk.

- Legend:-
- 2 Lamp-post and crosswalk sign.
  - 3 Rotary Traffic signs.
  - 4 Prohibited Zone signs.

FIGURE 39

Rotary traffic plan for Pennsylvania Avenue, New York Avenue, and Fifteenth Street, Washington.



**FIGURE 40**

Shows the intersection of Pennsylvania Avenue with Seventeenth Street, Washington, adapted for rotary traffic.

In order to apply the principle of rotary traffic effectively at an intersection or focus there should be sufficient room for an "inscribed circle" (see Figure 29) at least 75 feet in diameter. If this is not possible, it is better to require vehicles making the left turn to keep just to the left of the central obstruction, as shown in Figure 41 (see Article II Sec. 5 C. N. D. Code). In this case, arcs of circles are painted on the pavement and vehicles required to

keep to the right of these lines. This device was first suggested by Mr. G. G. Kelcey, a traffic engineer and member of the Honorary Advisory Board of the Eno Foundation. The following diagrams, Figures 41 to 43, show the pavement markings to be used for these intersections.

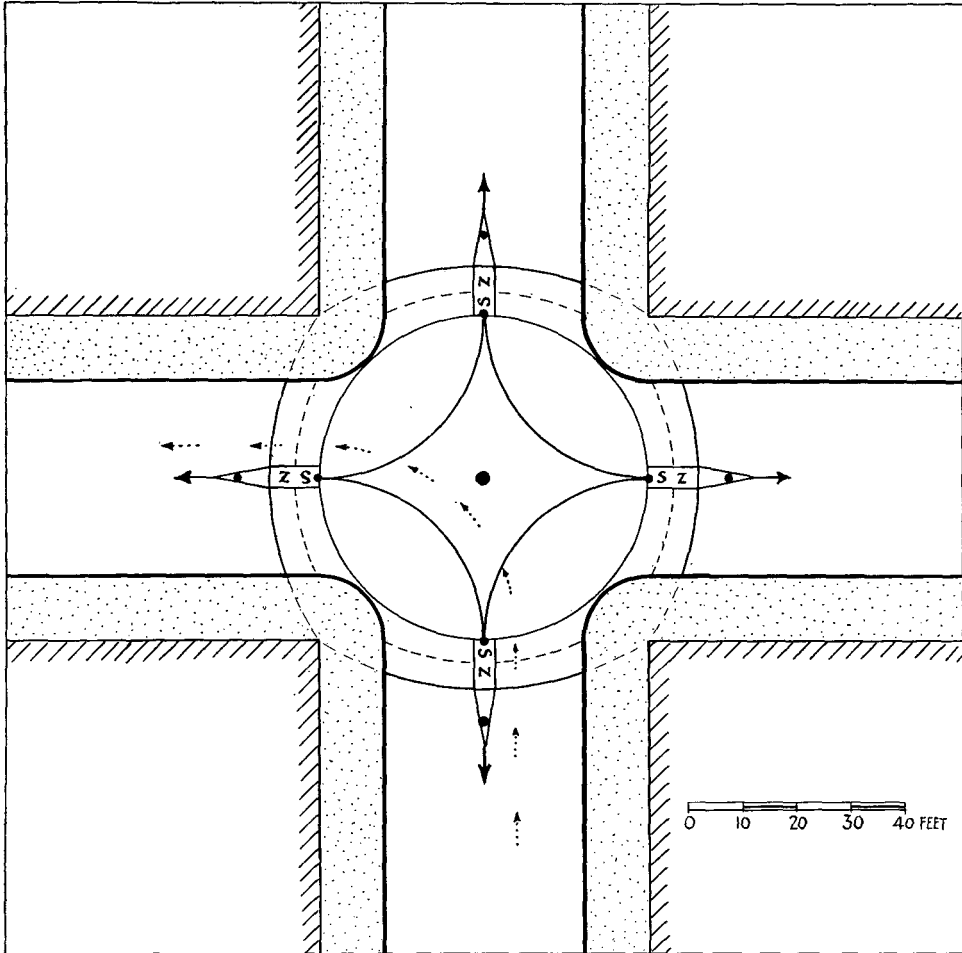


FIGURE 41

Diagram for the intersection of two 60 ft. streets,—12 ft. sidewalks and 36 ft. between curbs,—the space being insufficient to permit rotary traffic. In this case the inscribed circle is only 60 ft. diameter. In making the left-hand turn cars must keep between the central point of the intersection and the guiding arc, as shown by the line of dotted arrows. 'S Z' marks refuges for pedestrians.

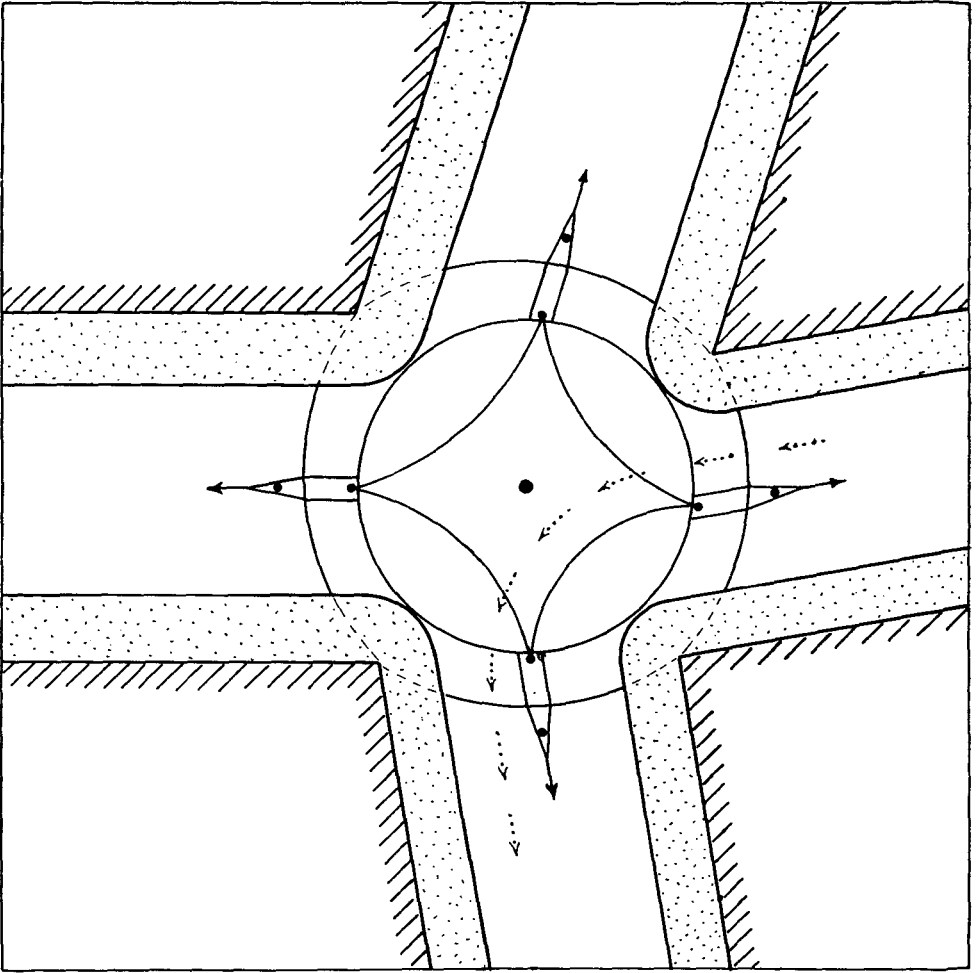


FIGURE 42

Diagram for unsymmetrical intersection of two narrow streets with pavement markings.

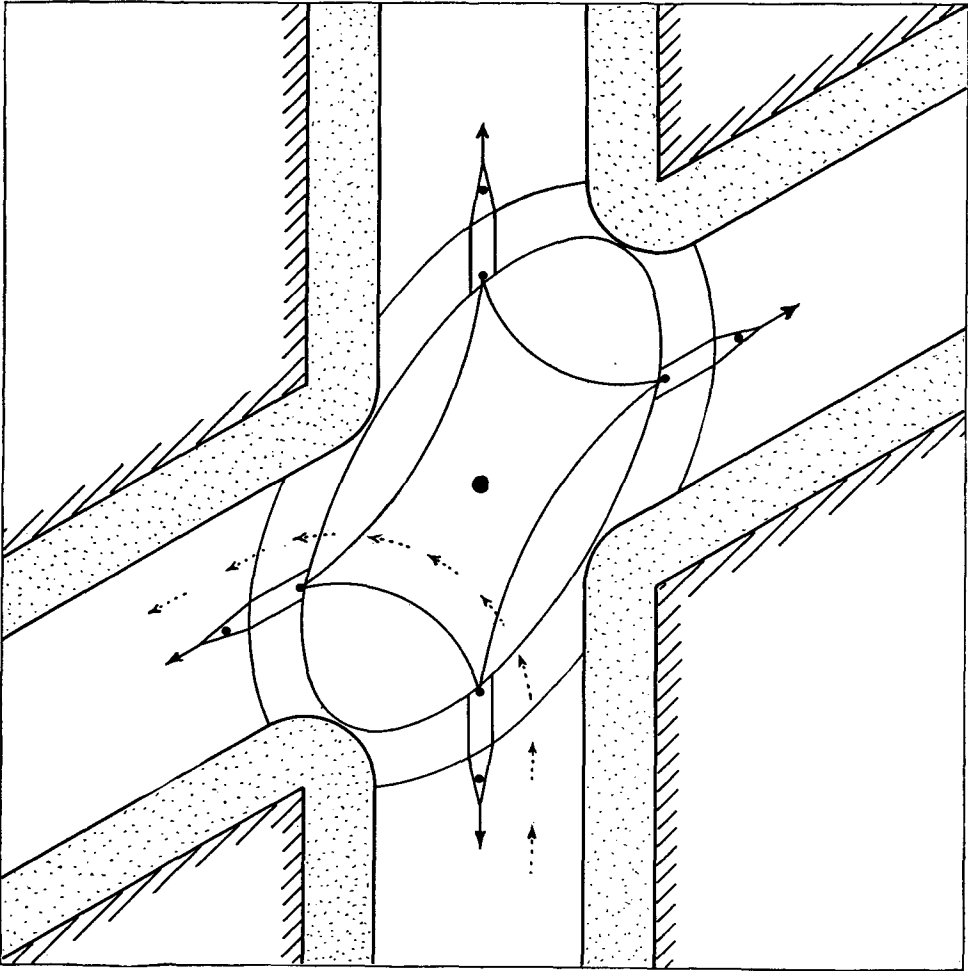


FIGURE 43

Diagram for intersection of two narrow streets, 36 feet between curbs, not at right angles. (See Figure 44 for method of laying out the inscribed ellipse.)

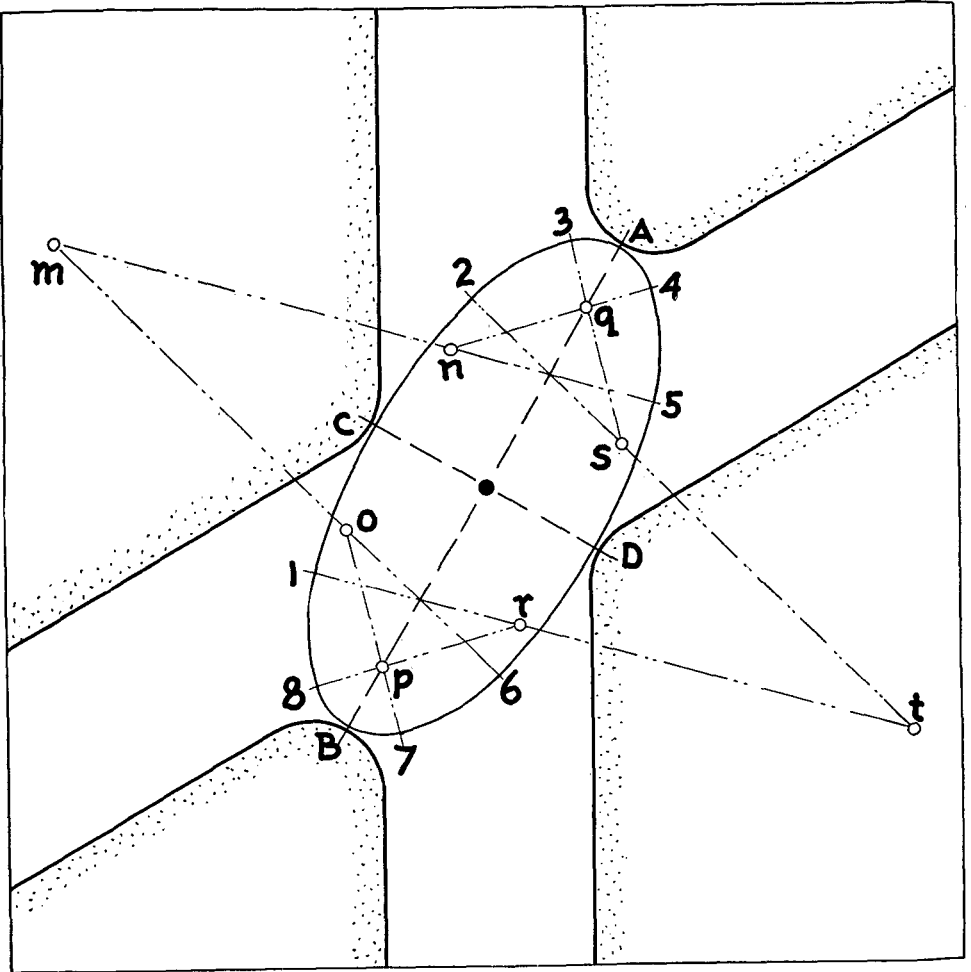


FIGURE 44

Showing method of laying out the inscribed ellipse of Figure 43. The shortest distances between opposite curb corners, AB and CD, are the two axes of the ellipse, which may be closely approximated by drawing circular arcs from the eight centers, m, n, o, p, q, r, s and t, as indicated.

## PART IV

### ELIMINATION OF THE LEFT HAND TURN

Elimination of the left hand turn has been advocated for or is in use at many places where its advantages are much overbalanced by its disadvantages.<sup>1</sup>

Elimination of the left hand turn in New York on Fifth Avenue at 34th Street and 42nd Street, for instance, does not warrant its retention. These two places are cited as they are familiar to so many and it is easy to study them there.

Elimination of the left hand turn is one of the several measures which are being adopted without sufficient consideration, often with much unnecessary inconvenience to the driving public.

Attention is called to this in order that the system may be estimated at its true value and the public be enabled to know when officials have installed it at an unsuitable place. There are just a few places where it is excusable and those are usually where a one-way traffic street intersects or joins a main thoroughfare.

It may be generally stated that at an intersection or focus of streets where there is sufficient room to inscribe a circle of 75 feet in diameter within the corners of the streets for rotary traffic, the elimination of the left hand turn does more harm than good but where rotary traffic is impractical, the elimination of the left hand turn may be used to advantage where there is a one-way traffic, cross or side street.

These diagrams should make clear where the elimination of the left hand turn is desirable (subject to possible exceptions).

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<sup>1</sup> In December, 1914, it was proposed to adopt the elimination of the left hand turn on Fifth Avenue from 26th and 58th Streets, inclusive. At the request of the Fifth Avenue Association I attended a meeting at the Police Department to protest. One example of what the elimination of the left hand turn would effect, killed the proposal, although it has come up again from time to time but in a lesser degree and where the damage is not as serious. The example given was of a vehicle coming down Fifth Avenue and wishing to stop on the east side of the avenue just below 42d Street. In order to accomplish this feat it would have had to turn to the right hand on 42d Street, go over to Sixth Avenue, make one left hand turn there, go down Sixth Avenue to 40th Street and make another left hand turn there, then proceed through 40th Street to Fifth Avenue, and make another left hand turn there and then proceed up to the point just below 42d Street. Therefore, to avoid one left hand turn on Fifth Avenue, the vehicle would have to make two left hand turns on Sixth Avenue and then another one when it got back to Fifth Avenue at 40th Street, but this one according to the arguments of the other side, did not constitute a left hand turn on Fifth Avenue because the vehicle was first going along 40th Street and then turning into Fifth Avenue instead of the opposite—going along Fifth Avenue and then turning into 40th Street.



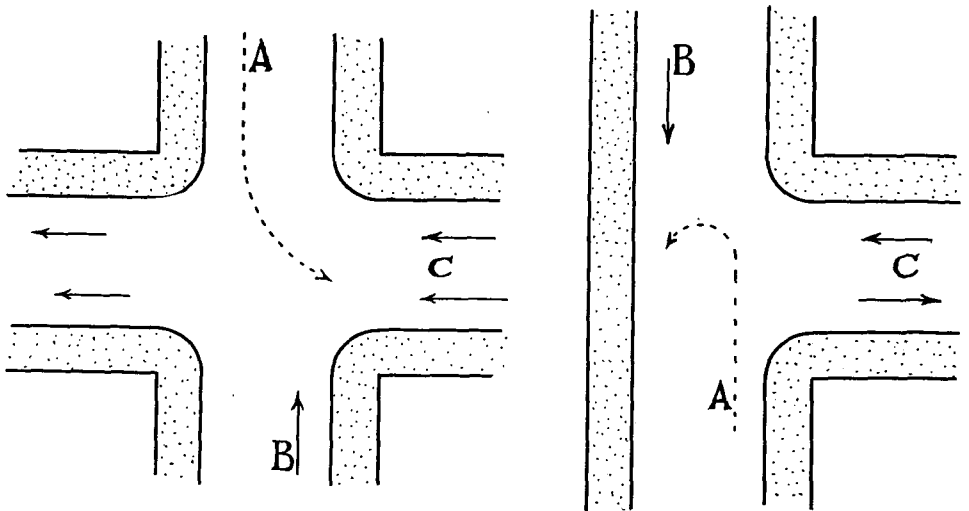


FIGURE 45.

No left turn should be permitted for A in the first diagram but the left turn should be permitted for A in the second diagram, and for both B and C in both diagrams.

Much unnecessary annoyance has been caused by the elimination of the left hand turn ignorantly applied, necessitating great distance to be travelled over to get to a near destination. Protests should be published whenever this occurs.

In some cities at certain places the right hand turn has been prohibited, adding to complication. There is practically never any justification for this.

### SEGREGATED STREET TRAFFIC

It took a long time for the Police Department of New York to realize that it had authority to exclude traffic of any special kind from any special street. Section 315 of the New York City Charter gives this power. The realization of this was a step in advance, but the authority should be used with discretion and only after careful study of the local situation.

It is not at all necessary or advisable to exclude light traffic, and by this I refer not only to light passenger vehicles but to light delivery wagons, or to any other light, fast moving vehicles which do not obstruct traffic on account of their slow pace, from any street. All vehicles when moving slowly should be forced to keep near the right hand curb.

On some important shopping streets, such as Fifth and Madison Avenues, heavy, slow-moving vehicles should be excluded during congested hours, except for a limited distance for the purpose of loading or unloading. Cruising cabs should be obliged to move briskly when in the stream of traffic in order not to impede following vehicles and to limit the distance they travel on a congested street when not carrying fares. A sufficient number of well-located cab-stands will tend to correct this trouble.

## PART V

### DEAD VEHICLES ON ROADWAYS

This discussion has to do with what is often inaccurately termed "the parking question."

Much of the difficulty we have been experiencing is due to the indiscriminate application of the word "park" to both ranked and parked vehicles and the failure to differentiate between live and dead vehicles.

We must get these traffic terms straight in our minds before we can intelligently or effectively attempt to bring about better conditions. The terms "ranked" and "parked" while applicable to both live and dead vehicles relate only to their relative positions to one another and to the curb.

The definitions are as follows:

Ranked Vehicles—those stationed in file parallel to curb.

Parked Vehicles—those stationed parallel to one another, at an angle to curb.

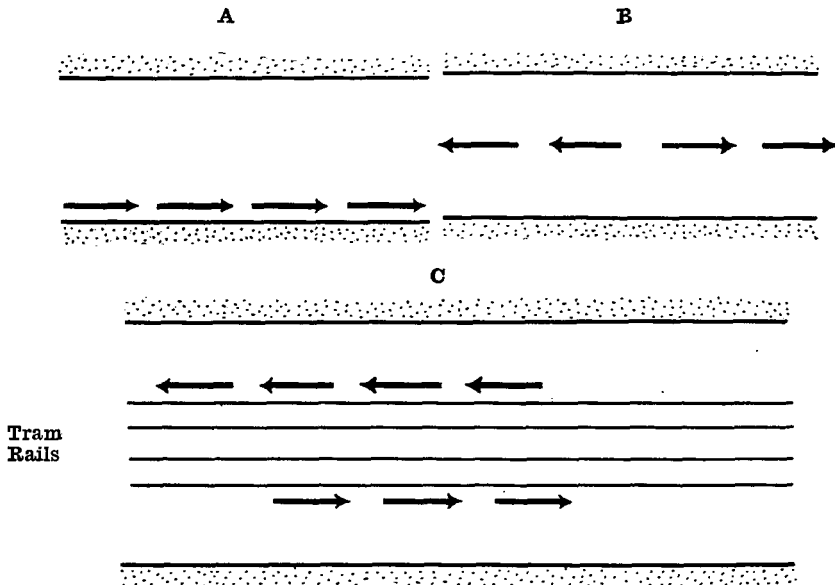


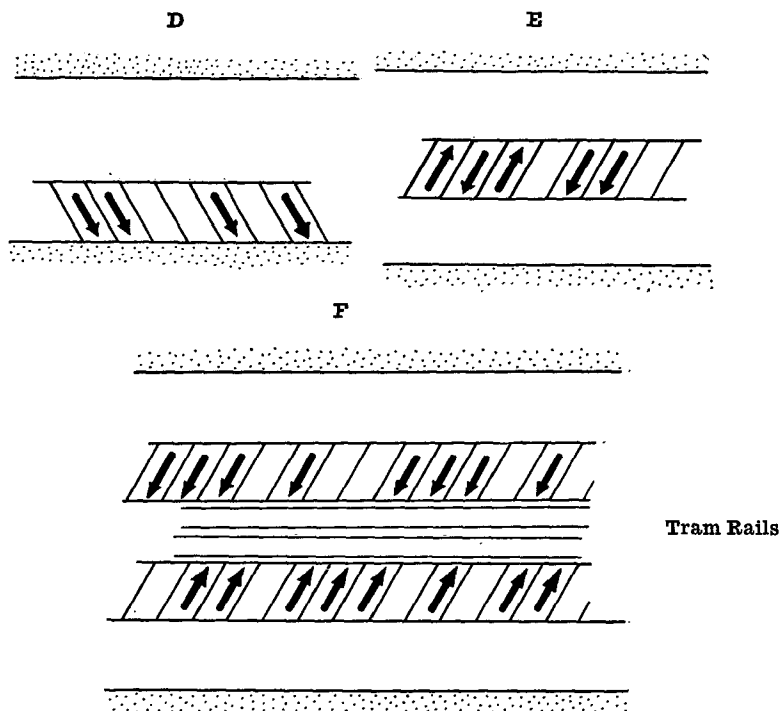
FIGURE 46

Vehicles stationed in ranked position:

A. At the right hand curb.

B. In center of street.

C. Next to tram rails.



**FIGURE 47**  
**Vehicles stationed in parked position:**  
 D. At the right hand curb.  
 E. In center of street.  
 F. Next to tram rails.

The term "ranked" is derived from "cab rank" as used for generations in London where cabs were placed on stands one behind the other in file.

The term "parked" is derived from the practice of placing gun carriages parallel to one another, in which position they are said to be parked.

It is therefore clear that the terms "ranked" and "parked" are not synonymous but that there is a practical and important difference between the two.

The definitions for live and dead vehicles are as follows:

**Live Vehicles**—those whose drivers are present and prepared to move vehicles.

**Dead Vehicles**—those whose drivers are absent or unable to move vehicles.

When vehicles are ranked no one of them can move out of line indepen-

dently of the others unless considerable waste space is allowed for between them. When they are parked, being parallel to one another, any one of them can get away without causing any other one to move.

I have added to the definitions in the C. N. D. Code the term "to station" which includes both ranked and parked vehicles and which I hope will correct the confusion which has been brought about by the misuse of the term "parked" and failure to use the word "ranked" when describing the relative positions of vehicles to one another and to the curb.

The definition of "to station" is as follows:

To Station—to stand vehicles on roadway in ranked or parked position.

The general adoption of the term would tend toward a more accurate understanding of the essential difference between parking and ranking. The same word is used in France and other European countries (see Figure 25). It is good English as may be found by referring to the dictionary.

Article III of the C. N. D. Code contains about all in the way of General Regulations which are suitable for standardization. Each city must make its own local regulations which, if intelligently done, should in conjunction with the C. N. D. Code handle the question satisfactorily.

Live vehicles do not give unreasonable annoyance or cause serious fire hazard if the C. N. D. Code is in effect. Dead vehicles, however, constitute not only great inconvenience to the general public and injury to business, but a veritable menace likely to result in uncontrollable conflagrations because fire apparatus cannot reach its destination promptly.

In considering the question of stationing we should follow the requirements of Article III of the C. N. D. Code.

Any relaxation or increase of control should be through local police regulation by the use of pavement markings and signs.

One of the effects of enforcement will be that *vacant lots will be leased to store waiting vehicles as has been done already in many places and it will become profitable to construct public garages* where cars can be left during the day when people are attending to their business and during the evening when they are at the theater. Some of these storage places will undoubtedly be in the congested parts of cities and others a little way out where people will leave their vehicles and proceed to their destination by tram, bus or taxi. This latter will be the case, I believe, in some of our congested cities such as New York, where it does not really pay to go downtown in private cars.

No part of the C. N. D. Code has had a more careful study by more people than Article III. The considerations involved are complicated because it is difficult to preserve the rights of all and at the same time refrain from impos-

ing more restrictions on any one than is absolutely necessary. We must, therefore, count upon intelligent police discretion, and the education and respect for fair play of the public for cooperation.

Section 8 of Art. III requires that the driver of a waiting vehicle be ready to pull out immediately on the approach of an arriving vehicle. Such strictness as this implies, is necessary on roadways where the importance of getting to the curb is paramount, as, for instance, on roadways devoted to retail trade, and to a slighter degree on those devoted to residences. Where wholesale business predominates, the necessity of allowing sufficient time to load or unload has to be adequately considered.

It should be remarked that a live vehicle temporarily stopped at the curb, when not in the way of moving traffic, should not be compelled to enter traffic again until another vehicle comes to take its place. It is a case where the old adage, "Let sleeping dogs lie," applies. It is clear that while this provision of the code should be enforced strictly when congestion exists, it need not be so strictly insisted upon when congestion does not exist. Of course, every driver, out of common decency, should refrain from leaving his vehicle where it will block access to the door of an occupied building.

### **PUBLIC STATIONING AREAS**

There are many areas which can be used for vehicles stationed in ranked or parked position without interfering with the flow of traffic on the roadway. These should be regarded as public stationing areas and should be marked out by paint lines, but whether marked or not marked, they should be free for vehicles to station in. Among such areas are those alongside parks, vacant lots, public and vacant buildings and buildings where the doors or entrances are not in regular use. Briefly, these areas may be defined as all those not in front of a regularly used entrance to a building or to a transportation station.

No private signs prohibiting stationing should be allowed, but the Police Department should furnish signs on application, to property owners if the reason given is adequate.

The economy of room for stationed vehicles as well as for moving vehicles on many congested roadways is so important that it is well worth while to define by paint lines every such area that can be used to hold one or more vehicles.

Besides such stationing areas, there are other areas adapted to provide for waiting vehicles. Some of these are in the center of streets; some, in very wide streets, are next the tram car tracks, and others are where streets come together at acute angles. These areas are often of irregular shapes, filling space not required for moving vehicles. It is of the utmost importance that *all such*

*available areas in the congested parts of cities be scientifically marked with paint limit lines or be paved with a different kind of pavement from the rest of the roadway and furnished with suitable signs as to whether to station in ranked or parked position. In these areas vehicles should usually be allowed to remain unless at certain hours it is necessary to limit their time, when the sign should have on it such instructions, as, for instance, "30 Minutes from 3 to 7 P.M."*

Areas for vehicles in parked position should be divided into stalls not less than  $7\frac{1}{2}$  feet or more than  $8\frac{1}{2}$  feet wide marked by paint lines. Stalls for trucks, sight-seeing vehicles, etc., should be wider.

Vehicles should be stationed in parked position at an angle to the curb of 90 degrees, 45 degrees,  $37\frac{1}{2}$  degrees or 30 degrees, as is best adapted for local conditions. The length of these stalls when in the middle of the street for parked position at an angle of

90°	should be at least 15'
45°	should be at least 15'
$37\frac{1}{2}$ °	should be at least 14'
30°	should be at least 13'

When the stationing area is next the curb, the length of the stalls can be reduced one foot, as a portion of each vehicle can project over the curb about that much.

Vehicles should never be parked at an angle of 90 degrees to the curb, except in certain locations, when waiting for the termination of the races, theater, etc., or when loading or unloading merchandise, and in some instances on cab stands. If in parked position at an angle of 90 degrees to the curb, it is apparent that to get into a stall will very often necessitate backing once or even several times.

When vehicles stationed in parked position, unless waiting for the termination of some gathering, they should drive directly into their stalls and back out when ready to leave. This method will avoid seriously retarding other traffic if the time chosen to back out is when there is a slight let-up in traffic.

If the opposite is done, *i. e.*, passing the stall to be occupied and backing into it, it must always retard the vehicles which are directly behind.

Stationing areas for vehicles in ranked position in the middle of a street should have the side lines six feet apart. If at the curb, one line six feet from the curb should be used.

Some streets are wide enough for vehicles in parked position on both sides and allow the necessary room for moving vehicles in the center. Others can

have vehicles in parked position on one side and in ranked position on the other, provided room is left for moving vehicles.

In one-way traffic streets, if stalls for parked vehicles are to be marked on one or both sides, the stall lines should slant towards the approach of traffic.

### **CAB, TRUCK AND SIGHT-SEEING VEHICLE STANDS**

Cab, truck and sight-seeing vehicle stands should be marked by signs giving the number of such vehicles each stand is intended for. The vehicles should usually be stationed in ranked position in the middle of the roadway or next the curb, as best suits each locality. There are, however, a considerable number of places where vehicles can be stationed in parked position advantageously either in the middle of the roadway or at the curb. At such places an angle of 90 degrees is ordinarily to be preferred, as it best enables such vehicles to leave their stalls so as to proceed in either direction with equal facility. However, this is not always the case. Sometimes the stands are located in the center of the roadway, where, if *other* vehicles are in *ranked* position at the curb, there is not sufficient room for entering or leaving the stand to join in with the moving traffic without manœuvering by backing and thus impeding it. In this case an angle of 45, 37½ or 30 degrees should be substituted.

When in *parked* position at the curb, public vehicles should be backed into the stalls so as to be ready to drive directly out into the traffic when leaving.

The greatest opposition which we shall have to my recommendations will be from owners of cars who have no chauffeurs, who will claim that class legislation is being proposed, whereas *it is they who desire class legislation because what they want to do is to leave their cars where they will be a nuisance and a menace*. This should not be permitted under any circumstances—whether they have chauffeurs or not. It is not a question of chauffeur but one of nuisance and menace.

Surely conveyances, such as trams, buses and taxis, which are available to the general public, should have preference, if necessary, over those for private use, but we do not permit these to stand indefinitely where they are a nuisance and a menace.

### **REMARKS**

In many cities, the regulation of dead vehicles is comparatively easy, as, for instance, in Washington, where there are scores of places, many of them in business sections, where in the aggregate thousands of cars could be stationed if the spaces were skilfully laid out and where they would create



no menace in case of fire and no hindrance to moving traffic. In New York, however, there are but few such places which can be set aside for stationed vehicles and therefore the problem is more difficult.

The primary objects of roadways are to enable vehicles to go from place to place and to set down or take up passengers and to load and unload merchandise. Vehicles which are confining their activities to these objects should, of course, be let alone so long as they observe the C. N. D. Code, but vehicles which are encumbering the roadways for individual indulgence and convenience should be strictly restrained from doing so.

This treatise has been written for technical men, especially for those who are making a study of traffic regulation as a branch of civil engineering. In the not distant future, these problems will be their problems, and they will be employed by the government to work them out. Only by specialists can complicated traffic problems be solved, and the problem of providing for the accommodation of the greatest number of stationed vehicles in a given space on the highways and in specially constructed storage garages is one of our greatest civic problems today. The time when such things are left to inexperienced members of police departments or to so-called traffic advisory committees is about over. Already a considerable number of our universities have interested themselves in highway traffic regulation, and soon courses of instruction will be part of the curriculum. Of the fifty billions of dollars<sup>1</sup> invested in our country in transportation, less than twenty billions is in railroads, more than twenty in highway transport and ten in electric roads and waterways. That is to say, in about a quarter of a century highway transport has from nothing already distanced the railroads, and is steadily increasing in relative volume and importance. It is needless to say that the best minds must be employed on the regulation of highway traffic, if we expect to prevent the now appalling and needless loss of life and to make highways transport function without undue delay and with the greatest efficiency.

It is up to all associations interested in traffic regulation to keep their eyes on city engineers<sup>2</sup> and other officials who in their ignorance of traffic requirements are cutting off corners on a rule of thumb radius, permitting rails to be laid out unscientifically, placing traffic towers in the wrong places and allowing fountains and other monuments to be erected where they unduly limit stationing facilities, and so forth, and so on. It is easier to prevent than it is to remedy.

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<sup>1</sup> These figures were published several years ago, but I have not been successful in getting the figures for 1927.

<sup>2</sup> Each city should of course employ a Civil Engineer versed in traffic regulation to plan out all special regulations in relation to the stationing of live and dead vehicles, etc.

It may be interesting to know that on account of the urgent necessity for solving this question of stationing, especially of dead vehicles, the Eno Foundation for Highway Traffic Regulation has given prizes at Yale and at George Washington Universities for essays on the subject which should be of value in bringing about a satisfactory solution.

The best solution for the stationing of dead vehicles on roadways is one of the most serious civic problems of the day. In cities like New York, Boston or Philadelphia it may even be reasonably required that there be no dead vehicles permitted in the congested parts of these cities during certain hours. In Washington, on the contrary, where there are such a great number of places where stationing areas may be scientifically marked out, there is no very great difficulty. It is in Washington and, unfortunately, in many other places, simply a matter of lack of ability of the authorities to use what available space they have with intelligence.

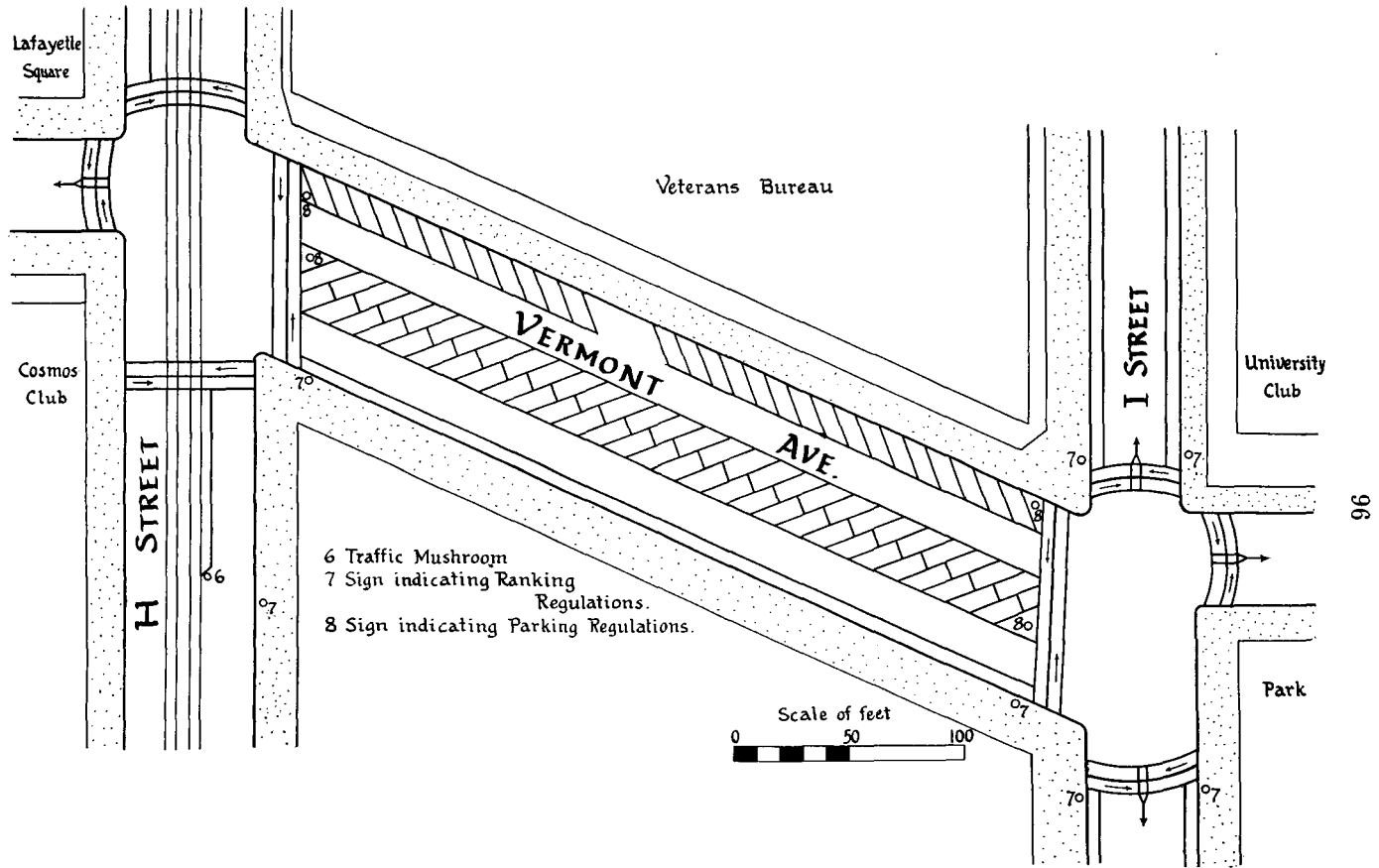
The primary reason for roadways being to enable vehicles to move from place to place and to permit them to take up and set down passengers and load and unload goods, vehicles which are not engaged in these activities are of secondary importance and should be permitted to be stationed on roadways only when they do not unreasonably interfere with vehicles which are moving or loading or unloading.

Live vehicles can be given more liberty than dead ones because they can be immediately moved out of the way of moving vehicles and of those which have to load or unload.

If there is to be any preference given to any kinds of passenger vehicles over any others, it should be to public carriers such as trams, buses and taxis for the reason that they accommodate more people than private cars.

If the tram, bus and taxi service were improved there would be less reason to station private cars in the street during business and theater hours.

Many more cab stands should now be added in New York to reduce the number of cruising cabs and to make it easier to find a cab when wanted. At the time the fight for better cab service was begun in New York in 1913 it was reported that the hotels were selling the privilege of standing alongside their buildings to cab companies for over \$500,000 a year. Now any cab has a legal right to stand on a hotel cab stand, though owing to recent laxity by the police, this is made as disagreeable as possible by the hotel cab starters for those cabs that are not the ones they wish to have taken. A move to correct this should now be made by the police.



**FIGURE 48**

represents a certain location in Washington with stationing areas marked off in the middle and one side of the street with stalls for vehicles in parked position and on the other side a line parallel to the sidewalk showing where vehicles can stand in ranked position. The crosswalks are marked out scientifically. Notice the method of dovetailing the spaces for vehicles in parked position in the middle of Vermont Avenue which saves  $7\frac{1}{2}$  feet in the width of the roadway over the usual method. The U. S. Army engineers were the first to adopt this plan at Gatun Locks, Isthmus of Panama, in 1926.

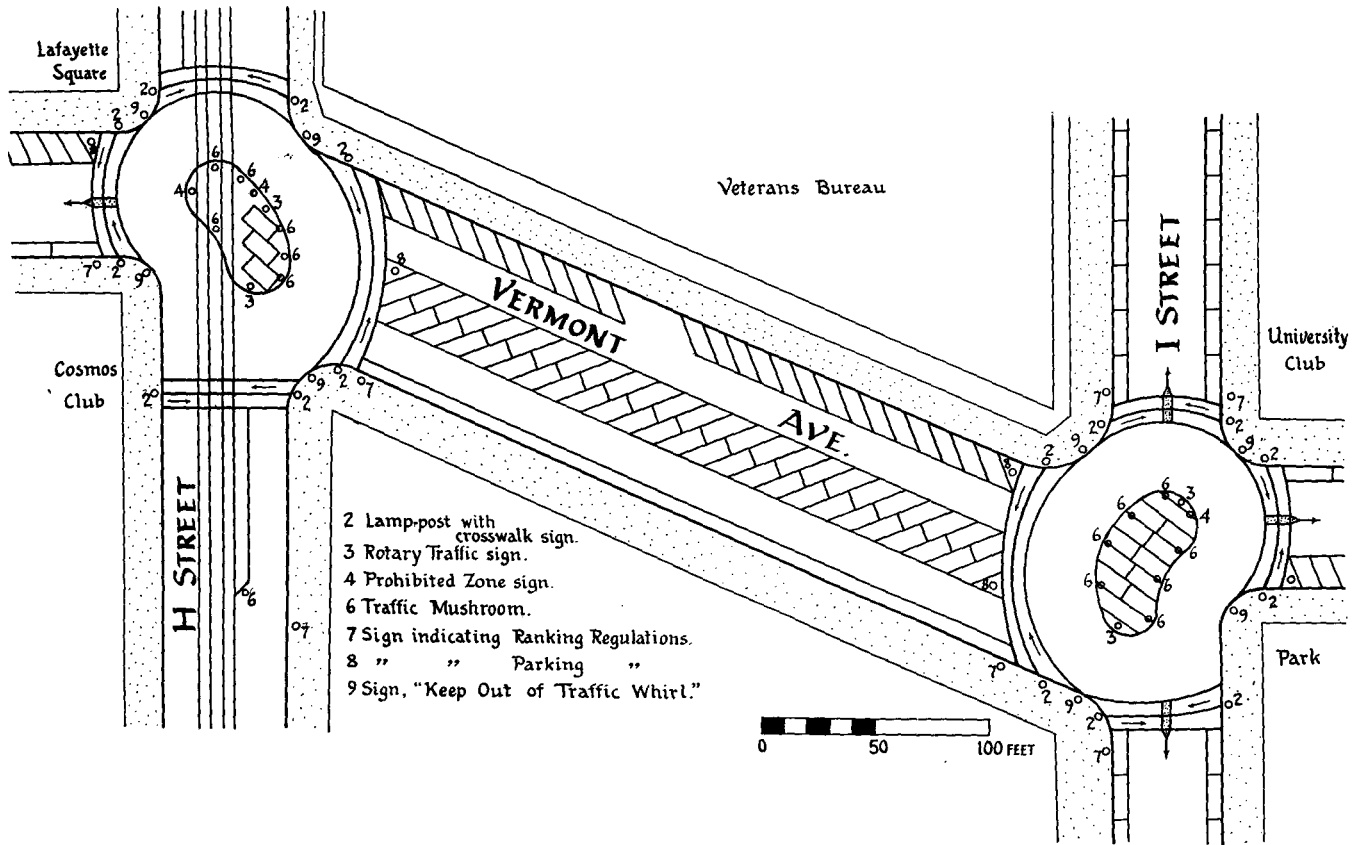
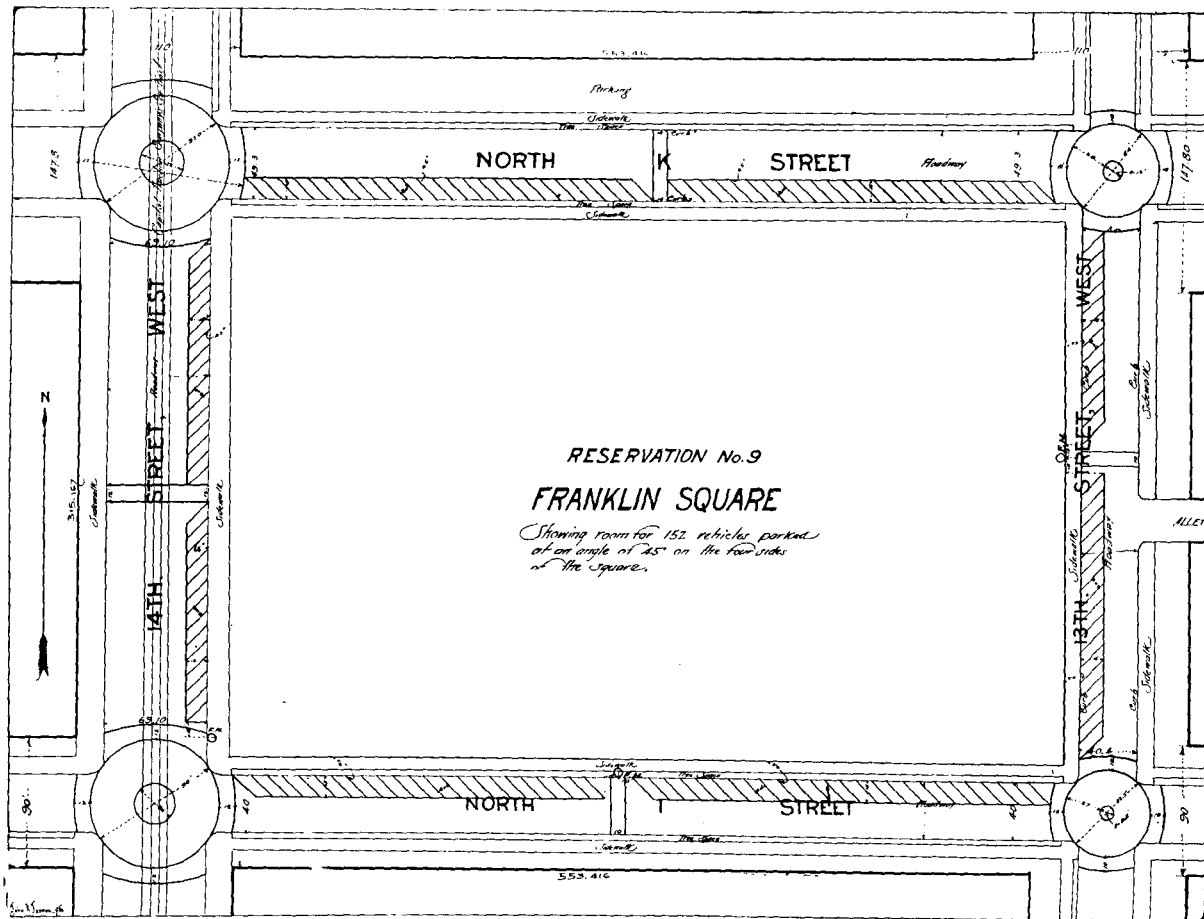
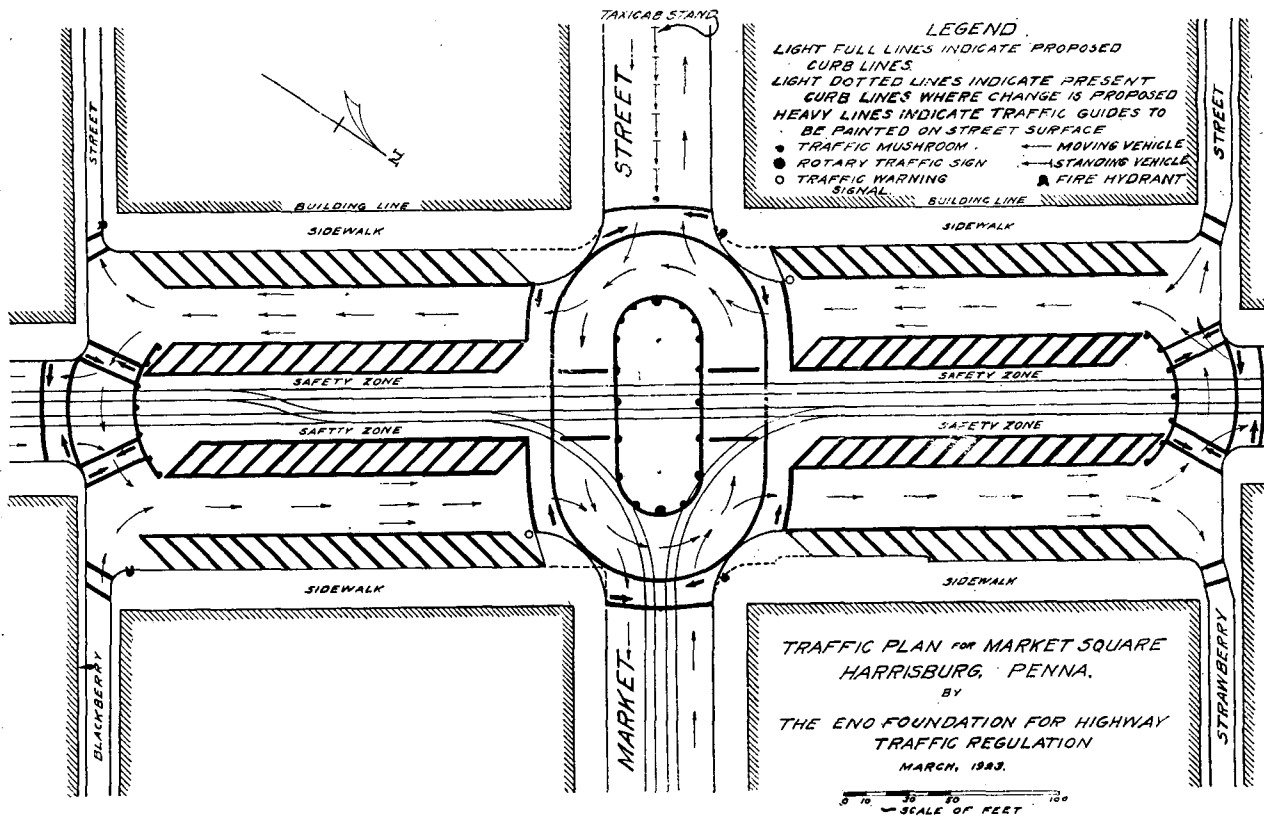


FIGURE 49

shows the same locality if both H and I Streets are made a uniform width instead of as now having part narrower than the other part and the corners are cut back on a scientific radius and rotary traffic introduced at two intersections. There are a considerable number of other wide streets in Washington where a similar plan could be used to great advantage. Among these are several that have been recently widened but which have not been taken advantage of for the scientific stationing of vehicles.



**FIGURE 50**



**FIGURE 51**  
Put into effect half-heartedly by the authorities and soon discontinued, probably through opposition by the police chief, backed up by one of the local newspapers.

There is no reason why in a city like Washington a move like that which was made in New York in 1913 should not be started. There should be many more cab stands in Washington in convenient places and many more cabs. Cab fares are ridiculously high in Washington as they are still in many of our cities. Really if there is any difference, the fares should be cheaper in Washington than in New York.

Considerable of our traffic trouble in cities comes from the fact that it takes too much room to turn a car in and so they have to back to make a turn or go around one or more squares which, of course, continues the car in moving traffic over a longer distance than would be otherwise necessary. This means extra street surface used by that car during its progress to get to a given point and is therefore wasteful of street capacity as well as of gasoline.

In London, taxicabs are required to be able to turn in a street twenty-five feet wide without backing. This is a tremendous advantage because it reduces its interference with traffic. If taxicabs can be made in England which can turn in twenty-five feet they can be made in the United States<sup>1</sup> and after a certain date to be specified they should be required to do this in our most congested cities. It would also be advantageous to have a short turning radius for small private cars for city use, but there is at present no car made in our country that has, although they are rather common abroad. Our car manufacturers should turn their attention to this point.

Undoubtedly buses<sup>2</sup> will, eventually, very largely if not entirely, replace trams in our more congested cities for the reason that bus companies do not have to lay any rails, which is of advantage to them and also to the city, as the joint between the rail and the pavement is where the pavement always breaks down. Buses, being flexible, are less in the way of traffic and they are much less noisy if properly made and maintained. In the event of a street being blocked by fire apparatus or for some other reason, trams have to wait, whereas buses can make a temporary detour. Therefore, for these reasons and others, it is the belief of the writer that buses will be more desirable than trams, which have not improved very much during the last two decades.

I have ventured these remarks about public vehicles because if the public vehicle service is good, the necessity for stationing dead vehicles on streets will be reduced.

<sup>1</sup> When I was in London in 1927 I saw several American cabs in use and on inquiry found that the authorities had compelled the makers to alter their cabs for London use so that they conform strictly to the 25-foot lock which means that they have to turn in either direction within a 25-foot circle. Some of these cabs are made by the Yellow Cab Co. in the United States and some by the Hayes Co. in Canada.

<sup>2</sup> A restriction on size of buses should be made. Many of them are unreasonably large, the reason being that a large bus can be operated with the same number of men as a small one. See further discussion of this topic under "Buses Versus Tram Cars" on page 121.

Much discussion has lately come up in connection with the all night stationing of dead vehicles on streets. Usually the vehicles are not stationed in parked but in ranked position. What happens is that they are left at the curb continually when not in use. To stop this practice suddenly would be to inflict a hardship on many people and therefore it should be modified gradually. If a person wishes to station his car all night in front of his own house, there may not be reasonable objection to that but if he lives in an apartment house, he should have consideration for the other tenants and surely he should not presume to station his vehicle indefinitely in front of another person's house.

Whether or not it is economy to leave a car out of doors all the time is extremely doubtful. It is, however, easier for the owner who has no garage near his residence to leave it on the street. Whether it is fair to his neighbors is, however, another question, and it certainly increases fire risk.

Undoubtedly much of the unnecessary noise made by motor cars is largely due to the fact that they are unprotected from the weather and because the owner does not take the care of them that he would if he kept them in his own or had them kept in a public garage.

The infernal racket caused by attempts to start motor cars at night that are out of order is a public nuisance that should be abated by the mayor acting through the Police Department.

The problem of the stationing of dead vehicles, whether they be placed in a ranked or parked position, is in each city a special problem which should be worked out by an experienced traffic engineer who is open-minded and willing to change plans from time to time as he sees how he can improve conditions. It is a difficult job because of the complicated vested real estate interest in properties affected and the selfishness of human nature, but by and large it is a problem which must be solved for the best interests of the people collectively.

*The time has arrived for New York, and in fact for all cities and towns, as well, to prohibit the stationing of dead vehicles on congested roadways during crowded hours and also on other roadways, to restrict the time they are allowed to station.*

*I believe if proper action along these lines were taken in New York now,—the traffic problem would be reduced in seriousness at least 20 per cent within a month!*



*PART VI*

# THE TERRIBLE COST OF TRAFFIC ACCIDENTS AND ITS CAUSES

**FROM PAMPHLET 28 OF THE PERMANENT INTERNATIONAL ASSOCIATION OF ROAD CONGRESSES AT MILAN 1926, PREPARED BY W. P. ENO.**

There is as yet no adequate system for recording highway traffic accidents anywhere in the United States and in many places practically no system at all so that many who are injured get home or out of town and there is no record of the accidents although they may finally result in death.

During the nineteen months of the World War, it was estimated that the loss of life by highway traffic accidents in the United States was pretty nearly twice as great as our loss of life through the war itself. During that period hundreds, perhaps thousands, of pedestrians were run down by army trucks driven with a recklessness never surpassed.

A record by the United States Bureau of the Census for 1923 gives deaths 22,621, serious personal injuries 678,000, and economic loss \$600,000,000, but as there is no adequate system of recording accidents these figures are necessarily very incomplete.<sup>1</sup> This was an increase of 3,418 in the number of deaths, over 1922. If the same increase in the number of deaths is shown for 1924 and 1925, it will bring the record to 29,457 for 1925.

If a complete tabulation were possible, 1925 might well show a loss of life of 100 per day or 36,500 per year and taking the same relative proportions as above, serious personal injuries 1,100,000, and economic loss \$970,000,000 in round numbers.

Estimating the value of a life at \$10,000 and of a personal injury at \$500, it shows in money value, loss of life, \$365,000,000; personal injury, \$550,000,000; economic loss, \$970,000,000, or a total of \$1,885,000,000. This is a staggering sum when we consider that the actual expenditure by the United States Government for 1923 was only \$3,532,269,266.32.

<sup>1</sup> A later calculation gives 24,000 deaths for 1925. Under date of September 17th, 1927, a letter from the National Safety Council, signed by the Director of the Public Safety Division says that the total number of traffic fatalities in 1926 was in the neighborhood of 26,000 and that for 1927 they would total about 27,000. These statements are based on the Census Bureau information plus official reports which they are receiving monthly from nearly half of the United States. How many were not recorded it is not possible to say. The statistics given from the Convention of the National Safety Council on October 8, 1928, stated that the recorded deaths for 1928 from traffic accidents would run over 28,000.

*The main object of this effort, however, is not to attempt to give an accurate computation of loss, but rather to show that it is so great that no means should be spared to reduce it.*

The only valuable purpose of a traffic accident census is to ascertain the number and causes of accidents in order to devise means for their prevention. A reasonably reliable traffic accident census could be made by the United States Bureau of the Census through sending out specially prepared blanks to every state which in turn should issue them to cities and towns to be returned to Washington for tabulation within a specified time.

The writer believes that by carefully eliminating the unfit driver and strictly curbing the speed craze, accidents on our roads would show a falling off of at least fifty per cent the first year to be halved again in the second year. Assuming that the figures in the fifth paragraph of this chapter are correct, there would be a saving of \$942,500,000 the first year and \$471,250,000 the second year.

### **WHEN THE AUTO KNOWS MORE THAN THE DRIVER.**

*From The Literary Digest for July 23, 1927*

*(I reproduce the following article as presenting a novel viewpoint and one which appears to be perfectly logical and shows that the higher the speed rate allowed the smaller the number of people qualified to drive with safety.)*

Cars built for an intelligence that their drivers do not possess; 50-mile-an-hour cars run by 20-mile-an-hour people; a public, 50 per cent of which is incompetent to drive a car at all—these are the things that are making our automobiles juggernauts and our highways places of slaughter—not bad driving *per se*; not speeding; not discourtesy. The remedy is not more control, more signals, more red tape, but more education and the compulsory elimination of the untrained driver. This, at any rate, is the opinion of Dr. Julia Seton, and she presents it cogently in *The Evening Outlook* (Santa Monica, Cal.). She writes:

“We are prone sometimes to wonder at the faith of men which keeps them going on over the death-dealing thoroughfares. There are many causes of accidents. Drivers can find a hundred excuses, no matter what happens, and every day almost, there is some new law, and some new instruction to motorists. These do little good—the toll goes on in spite of sign and instruction.

“When we look carefully at the world on wheels we can find one great underlying cause which seems to have been overlooked. This cause is not in bad driving. Not inattention to signals, lack of control, speeding, discourtesy;

none of the so-called causes are enough to explain it. But much deeper is the root from which all these accidents spring—the undeveloped quality of consciousness at the wheel. The drivers of automobiles are unfit, both in mentality and application. The mass of people have had automobiles thrust upon them before they were qualified to use them.

“The genius of those who build and put out cars has been able to produce in a car a highly developed quality of intelligent mechanical action, far beyond the intelligence of the public that drives it. Their whole thought is to produce the most intensified mechanical intelligence and response, while they never give a thought to the dull, unrelated mentality of those who will drive it.

“The cheap price of cars places them within the reach of almost any one. There are hundreds of motor owners and drivers with more money than brains, and these are a danger to the public—the car has its own response which it gives to the driver. In an emergency there is no mind in control—the car acts much too quickly—the slow-moving mind of the operator has no power to direct the mind of his motor—he is at the mercy of something quicker than himself.

“There are marvelous cars today of every make which jump at the touch of the man at the wheel, like an Arab horse springs to the whip. What chance has the ordinary untrained intelligence to play safe with a car that is a better man than he is?

“There are turns too quick for the mind at the wheel to calculate; there is space so subtle that the 30-mile brain never comprehends. The darting car—primed to make 65 to 80 miles an hour—what hope is there when it has a 30- or 40-mile intelligence to run it?

“It is a safe estimate that over half the driving public are unfit to operate the modern automobile. The general public intelligence is out of proportion to the rising mechanical intelligence of the car. This can be believed when we take into count the number of unkempt, unwashed, shabby, rattling cars on the road—it is not only plain that the majority of the public not only do not know how to drive, but they do not know how to keep up a good car.

“What is the plan by which this inefficiency can be remedied? Simply this: there should be in every big city an industrial college where motor education could be taught, and no one should be allowed to drive a car until he stepped up to the mental balance required for safety on the highway. This education should be intensive and long enough to give the student a fully developed awareness—and a deep respect for his position of trust.

“He should be required to prove that he can drive a car—and take care of it, up to the hundred per cent mark.

“There should be education along the lines of motor fitness, and motor efficiency, highway courtesy, cleanliness in person and cars, tests in observation, comprehension, vision, awareness, emergency action. Space and distance calculation would go a long way in putting the highways into a safety zone—and would be an example to all the rest of the world.”

### **SPEED AND ITS RELATION TO DANGER**

WHAT IS TO BE DESIRED IS NOT TO INCREASE THE SPEED RATE, BUT TO REDUCE THE TIME REQUIRED TO COVER DISTANCE.

Long before and even for years after the study of traffic regulation was begun in New York in 1899, a speed rate exceeding eight miles an hour on city streets and in parks was prohibited by law. Now vehicles exceed that speed rate by three or four times in many cities and parks without molestation and frequently the police hurry drivers on to even greater speed, often at the risk of disastrous results.

On roads outside cities, motor cars go still faster and from at least one State comes the report that they have taken out of the law any speed rate limit and in some states they have gone so far as to exact that vehicles shall maintain a speed of thirty-five miles per hour or get off the road. Such a law must be due to either speed mania or to the mistaken idea that more traffic can be passed over a road with a high speed rate than with a low one. The opposite is, however, the case. Such experiments as have been made tend to show that, when a roadway is crowded, more vehicles can be passed over it at not exceeding fifteen miles per hour than at a higher speed rate. This is because as the speed rate increases, the distance between vehicles also has to be increased very greatly to maintain approximately equal safety. See “Elements Governing the Development of Highway Traffic,” by Dean A. N. Johnson, M. Am. Soc. C. E., published in “Proceedings of the American Society of Civil Engineers,” May, 1925, pp. 752-3-4-5.

Of course, anyone will admit that the faster a vehicle goes the less time it will take it to cover a given distance. As the number of vehicles increases on a road, however, the speed rate should be reduced to, or at least towards, one which will pass the number of vehicles then on a road over it in the shortest time. If we can believe the result of experiments this speed rate is about fifteen miles per hour when the roadway is full and vehicles are traveling in lines, one behind the other. According to this, therefore, the maximum speed ought to be somewhere between fifteen miles an hour and the rate at which one vehicle would cover the greatest distance in the least time, it being assumed that no one

having due regard for the comfort and safety of other users of the road would care to drive over forty-five miles an hour under any circumstances. If this be so, the average between fifteen and forty-five, or thirty miles per hour, might be accepted as the extreme limit of speed to be considered legally outside of cities. In cities, however, this rate should be much reduced on account of safety as well as on account of conserving the road capacity, since, as already stated, fifteen miles per hour will pass more vehicles over a given distance when the traffic is heavy than will a faster rate.

Assuming that twenty miles per hour should be the maximum speed on city streets, public parks and parkways and that this rate should be reduced at intersections and crosswalks to half that, or ten miles an hour, then vehicles could probably average about fifteen miles per hour on city streets under ordinary conditions unless slowed down by the effects of a synchronized block system.

Any municipality or township should have the right to still further limit the speed rate at any place within city or town boundaries to a lesser speed rate when some local danger makes it urgent to insure safety but perhaps only with the approval, formal or tacit, of the proper state authorities.

There is undoubtedly a great difference in the skill of drivers to drive safely at a high rate of speed. There is also a great difference in the natural time of reaction of drivers to respond to warnings of danger, especially as examinations for permits and licenses to drive are still so lacking in strictness in mental, physical and road tests. In determining permitted speed rates, we should therefore have in view not the ability of the most skillful but that of the least skillful who are permitted by law to drive. Then again, although many of the newer motor cars are made so that they can be stopped more quickly than the older ones, we must not be governed by the best but by the worst cars that are allowed to travel on the highways. The invention of four-wheel brakes is urged by automobile manufacturers as a reason for being permitted to drive faster than before, but four-wheel brakes are not altogether a safety device for while they undoubtedly enable a car to stop quicker than it could without them, the very quickness with which the car stops creates a danger not only to itself but to following vehicles because of the increased liability to collision.

The following is taken from one of a series of articles written for the Sunday newspapers of the State of Connecticut by the Commissioner of Motor Vehicles of that State (see document Series Number 14, published by the Motor Vehicle Department of the State of Connecticut) :

“Speeding, where nothing happens as a result from it, is not in itself so serious an offense as cutting in and out of traffic in bad locations and making a lot of trouble for others by putting them into difficult situations, but it does contribute to danger in almost every instance.

Speeding as well as every other form of unexpected and unusual driving, creates complications which others are not prepared to meet, and often contributes to accidents of which the person who is actually doing the speeding knows nothing, either then or afterwards. It is not unusual to see a speeder drive two or three cars, which are operated by rather timid or cautious persons, out of the road without his having even been conscious of the fact. Therefore, it is necessary and proper to down fast speeding and to enforce against it as a part of the reckless driving statute."

Taking into consideration the foregoing arguments, I suggest the following regulation against reckless driving, of which speeding is perhaps the most important feature:

Reckless driving is unlawful and includes (See C. N. D. Code, Article I):

Section 1. Driving any vehicle when not legally qualified to do so or when intoxicated, or when for any other reason not competent to drive properly.

Sec. 2. Driving any vehicle when it is not under practical control, especially at crosswalks, crossroads and side roads on the right.

Sec. 3. Driving any vehicle without due courtesy and consideration for the safety, convenience and rights of pedestrians, equestrians and bicyclists whether on city streets, suburban highways or country roads.

Sec. 4. Failing to exercise due care in crossing or entering the traffic of another roadway—bearing in mind that it is obligatory not to interrupt the traffic of the more important thoroughfare unnecessarily.

Sec. 5. Exceeding a reasonable, considerate and safe speed rate under existing conditions or the speed rate established by law.

Sec. 6. Violating any of the regulations so as to cause danger or failing to take every reasonable precaution for safety or to obey any order of a traffic officer or any direction indicated by official traffic sign, semaphore, signal light or limit line.

Exceeding a speed rate of:

20 miles an hour in city streets, public parks and parkways, slowing down to not exceeding 10 miles before reaching crosswalks, crossroads or side roads on the right.

25 miles an hour on suburban highways slowing down to not exceeding 12½ miles an hour before reaching crosswalks, crossroads or side roads on the right.

30 miles an hour on country roads, slowing down to not exceeding 15 miles before reaching crosswalks, crossroads, side roads on the right or tram-way ahead or where there is not a sufficiently clear view ahead to insure safety, especially on curves and when approaching a hill crest;

15 miles an hour when within 200 feet of a railroad ahead, slowing down to not exceeding 10 miles an hour at 100 feet;

shall be considered *prima facie* evidence of reckless driving.

Another question which is worthy of consideration is: While it is necessary for the sake of safety to make certain regulations as to speed rates, there are times and places when and where it would not endanger anyone for a vehicle to go faster. For instance, a road may be amply wide, with no other roads crossing or entering it; then if a motor vehicle is well made and in good order and the driver is a competent one, a little greater speed would not actually constitute reckless driving. I would advise, therefore, that some discretion be left to the police as to arrests up to thirty-five miles per hour.

The serious delays on roads due to heavy motor trucks or other vehicles which have not sufficient power to negotiate hills at a reasonable speed rate should lead to a regulation that should require them to have power enough in reserve to enable them when loaded to take any reasonable grade which they are apt to meet at a speed rate of not less than fifteen miles per hour. Such a regulation would add much to the traffic capacity of the road.

*The terrible cost in life, human suffering and money caused by traffic accidents demands that the speed craze be curbed by common sense and through strict enforcement of reasonable regulations. I wonder what proportion of motorists who are using the roads at any one time are really going to any distant point which it is very important to reach in a hurry. Are not most of the motorists either going to some place rather near or else out for a pleasure ride, and would not these people, surely a large majority of them, be just as well accommodated by going a mile in three minutes as at a greater speed?*

*Although only a certain percentage of traffic accidents is due solely to speed, every traffic accident is worse in proportion to the speed at which one or more vehicles are going when the accident happens.*

The motor vehicle speed craze is passing through the same phase as the railways have left behind them. It was not unusual fifty or sixty years ago to read about the railway speed of the future exceeding one hundred miles an hour. What has happened is that schedules are rather lower than higher than they were twenty years ago. There is no longer any eighteen-hour flyer between New York and Chicago.

## **REMEDIES ESSENTIAL TO REDUCE ACCIDENTS TO A RATE WITHIN REASON.**

Those of you who have had the interest and the patience to read carefully the foregoing details contained in this part of my book will doubtless by this time be able to forecast the recommendations I am making to reduce loss of life and injury to persons and property. They are:

1. To gradually eliminate all drivers now permitted to drive who by reason of selfishness, nervousness, slowness of reaction to danger or any physical

defect are not fitted to drive safely. For this purpose, it is not essential to re-examine all drivers now authorized to drive but only those who show evidence of incompetence to the police or who are complained of to the police.

2. A thorough, not a superficial, examination as is the present practice, of all new applicants should be exacted with special attention given to slowness of reaction and to nervousness.

3. Curbing the speed craze, bearing in mind that the higher the speed rate permitted, the smaller will be the number of persons who can safely be allowed to drive.

4. Severe punishment for any one who attempts to drive without permit or license, except in unusual emergency.

5. Severe penalty for any one who drives a car with brakes or any other safety equipment not in practical working order.

There is not going to be much diminution in the death rate or in damage to persons and property until these recommendations are followed.

The reader of this book will have found numerous other things which should be obligatory, as for instance, what has been said in regard to registration numbers being in such condition or so placed that they cannot be easily read.

*I am perfectly aware that I am stepping on the toes of the automobile trade. Dealers believe that the less restrictions there are for safety, the more cars they can sell. This fact I know because I have talked with them in this country and in Europe. In France, one manufacturer whom I have known for years, said, "I hope you will not say too much about speed as you will hurt the automobile trade." Advertising how fast cars of a certain make can go, so often seen on signs near highways, should be prohibited by law. It is not generally realized that many of the Automobile Clubs and Associations were brought into being by the automobile trade and are controlled by it. The truth will, however, eventually prevail but meantime probably about 100 people a day or 36,500 per year are being killed and 1,000,000 injured, the economic loss being close to \$1,000,000,000. The thing most needed now is that the public should realize where the trouble lies and insist that it be stopped.*



## *PART VII*

### MISCELLANEOUS ARTICLES AND PAPERS ON TRAFFIC

#### **THE UTTER DISREGARD OF MOTORISTS AND ROAD ENGINEERS FOR THE RIGHTS, SAFETY AND CONVENIENCE OF PEDESTRIANS, EQUESTRIANS, AND BICYCLISTS.**

Many of our suburban and country highways are being improved for motorists. Most of them are now unfitted for all other users. It is no longer safe to walk, ride or bicycle on roadways, especially at night when it is extremely perilous. The entire width of some highways is taken up by the roadway and on others what is not needed for roadway is left ungraded or so rough that it is useless for pedestrians, equestrians or cyclists. No highway should be permitted to be without due provision for pedestrians and where practical for equestrians or bicyclists. There should be a sidewalk or reasonably well made foot-path on one side at least of every highway. There should of course be two sidewalks or foot-paths on important highways. On country roads where one sidewalk or foot-path is sufficient, the other side should be provided with a path for equestrians or bicyclists. The Government should see to it that road engineers in the future provide in their plans for all reasonable requirements of pedestrians at least before they are allowed to proceed with their work. Justice demands that all users of our highways be considered. People are walking less than ever in the country principally because it is so disagreeable and dangerous. Equestrians are more numerous in the country than ever before and in some places, riding trails are being laid out through private property but where this cannot be done and where it is possible to do it at one side of the highway, it should be attended to. The bicycle has been, and in other countries still is, a very valuable, desirable and economical means of transportation and its use should be encouraged.

#### **CROSSWALKS**

It is getting more dangerous every day for pedestrians, equestrians or bicyclists to cross country highways. As an instance, the main thoroughfare between New York and New Haven on ball game days is crowded with vehicles from side to side so that it is almost impossible for a pedestrian, equestrian or bicyclist to get across. To partially remedy this, the speed rate of motor cars should be reduced to one-half the legal speed limit and drivers be prepared to stop immediately if necessary before reaching crosswalks, cross roads and

side roads. Cross roads and side roads, however, are often so far apart that it is unreasonable to expect those wishing to cross to go to them and therefore there should be intermediate crosswalks located at reasonable distances apart. Crosswalks in the country should be marked by the crosswalk sign given in Part II. Ordinary signs are, however, not very effective at night unless they are provided with reflectors or are lighted and therefore on important highways this matter should be attended to. It would be valuable if there were some means of signalling to drivers at crosswalks, especially when motors are following close behind one another. I am inclined to think that some sort of semaphore arrangement might be designed which could be operated by pedestrians to signal motorists. The attention of traffic students is called to this matter in hopes that some one will find a practical solution.

### **REFUGES ON COUNTRY ROADS**

On important roadways in the country as well as on city streets refuges should be placed where practical at all crosswalks. They not only increase the safety of pedestrians but furnish the best place on the roadway for crosswalk signs.

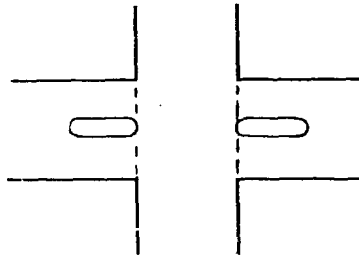
### **REFUGES ON CITY STREETS**

The definition of Refuge is—that part of a roadway from which all vehicles are excluded.

Refuges serve two purposes. They furnish safe stopping places for pedestrians and divide or canalize traffic, thus assisting in bringing about vehicular order. Refuges have been in successful use for more than sixty years in Europe and their number is being constantly increased. They have also been adopted quite largely in South America. It is only in the United States that their adoption lags, due to the fact that our people seem to be determined to get all their experience first hand.

Refuges may be raised to the height of a sidewalk curb or they may be marked by paint lines, metal markers, mushrooms, standards, etc. Raised Refuges should not be built where the Fire Department objects to them. On installing Refuges we should determine first how much roadway width can be spared. For those in the middle of a street, the length should usually be from ten to twenty feet, the best form being that of a parallelogram with elliptical ends. The newest ones in London and Brussels are raised in the middle and at the ends and the intermediate spaces are left open, which has the advantage of not obliging people to step up and is more convenient in wheeling perambulators across the street. In Paris, the round ends are still adhered to.

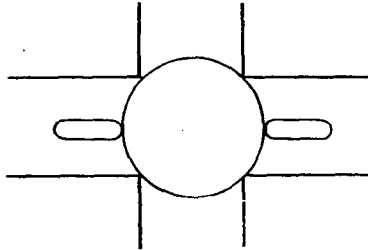
Until recently, Refuges have been placed practically in a line with the curb extended. This reduces the turning space at the roadway intersection



Wrong Way.

FIGURE 52

and it is far better to place them with one end tangent to a circle inscribed within the four corners of the streets, thus leaving all the turning space possible.



Right Way.

FIGURE 53

There is usually but one line of Refuges in the center of a roadway but in some extremely wide roadways like the Champs Elysées in Paris there were formerly two lines, always a bad plan as the vehicles in the central part of the roadway are not separated as to direction. In July, 1913, however, the two refuges on the Champs Elysées were moved apart and an intermediate one installed, thus dividing the roadway into four parts and making it far safer for pedestrians who formerly had found it almost impossible to cross at crowded hours.

Refuges can be used around circular, oval or other forms of centralized obstruction to divide traffic into two lines as shown by the permanent plan for Columbus Circle (see Figures 20 and 21), or into three lines as at the Place de l'Etoile (see Figure 22).

There are many places where Refuges may be used to advantage to fill spaces left irregular by the intersections of streets.

In both London and Paris where the raised Refuge is to be used, they always



Pictures showing popularity of Refuges in London.

FIGURE 54

use one of wood first to make sure that the shape and location are correct before building a permanent one. No raised Refuge should be installed anywhere by any one who has not made a study of those used in Paris and London.

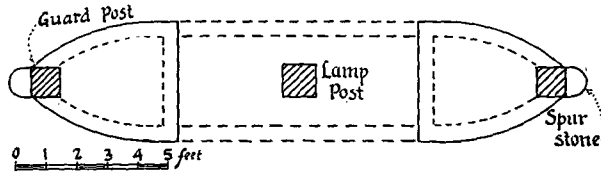


FIGURE 55 [A]

Street Refuge, London, England, Royal Borough of Kensington. The parts enclosed by solid lines are raised above the street level; the central rectangular portion with lamp post in center, is flush with the pavement but marked by a line of stone curbing also flush, as shown by dotted lines.

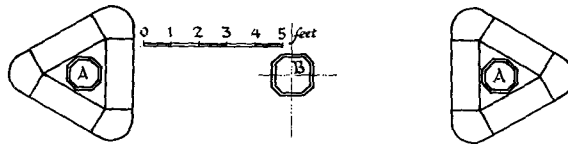


FIGURE 55 [B]

Street Refuge, City of Westminster, London, England. A, A, Guard posts; B, Lamp standard. The triangular platforms, with rounded corners, are raised 6 inches above the road surface, and edged with granite curbing, 12" x 8", laid flat.

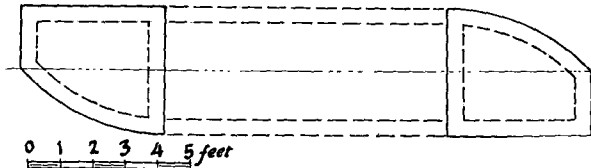


FIGURE 55 [C]

Proposed possible improvement for refuge, suggested by Wm. P. Eno, showing ends curved against approaching traffic, the other side left square.

### PROHIBITED, RESTRICTED AND DANGER ZONES

The definitions of Prohibited, Restricted and Danger Zones are as follows:

Prohibited Zone—that part of a roadway from which pedestrians and all vehicles except tram cars are excluded.

Restricted Zone—that part of a roadway on which pedestrians are allowed but from which all vehicles except tram cars are excluded.

Danger Zone—any part of a roadway not a Refuge or a crosswalk.

Prohibited and Restricted Zones should be clearly indicated on the roadway.

### **THROUGH TRAFFIC ROADS**

Through traffic streets or boulevards in a city should not ordinarily exist on the same level as that of the other streets because the greater speed for which they are intended and the necessary restrictions in regard to cross traffic interfere so much with the general traffic of the city and slow it down to such an extent that the balance of advantage against them is greater than any argument for them.

### **TREES ON HIGHWAYS**

On the streets of many cities, notably Washington, trees have been planted but neglect to trim them has, in many cases, resulted in restricting the usable width of roadways so that high vehicles cannot keep near the curb and the traffic capacity of the roadway is therefore reduced. No part of any tree should be allowed over the roadway without a clearance of sixteen feet and over the sidewalk of eight feet. In making these calculations, it must however be taken into consideration that when the foliage of trees is heavy with rain it hangs down lower than it ordinarily does. The heights of sixteen feet and eight feet are no more than are absolutely necessary. The clearance for bridle paths should be about ten feet. When new trees are planted, the trimming should take place annually since better results are obtained than if they are allowed to grow as they please until later. However, trees that already are in existence had better be trimmed now instead of waiting longer.

### **POISON IVY ON HIGHWAYS**

A very large proportion of the population are poisoned by poison ivy if they touch it and a smaller proportion if the wind blows from the ivy to them. This being so, there does not seem adequate excuse for our government to continue to neglect to eradicate this trouble. I would suggest that state laws be passed requiring towns to remove all poison ivy up to the property line and that property owners be the first year required to clean it out for a distance of five feet inside the property line and that thereafter they be obliged to clean out a strip of at least five feet each year until it is gradually swept back and eradicated from the entire state.

This would not be a heavy burden for the state or property owners and would save much suffering to individuals.

### **CHANGES IN CURB LINES**

We cannot be held responsible for work done before traffic regulation was taken into consideration but from now on the location of curbs and alterations

in them should be under the advice of competent highway traffic engineers. That you may understand the advisability of this, I am going to give several examples of bad judgment due to stubborn engineers. When Broadway was widened from 25th to 33d Street a few years ago, property owners were obliged to cut off projection of show windows, etc., and set back their vault lines in order to allow the widening of the roadway. It however was not widened sufficiently for an extra line of vehicles between tram-line and curb and little was gained so far as traffic was concerned, while space was robbed from the sidewalks and property owners put to inexcusable expense. One foot and a half more on each side taken from the sidewalks would have amply repaid all expense as the advantage of another line of vehicles on each side of the tram-line would have been worth much. Drawings with explanations, published in "Street Traffic Regulation" in 1909, failed to enlist the interest of the city engineer.

Again in 1913, another mistake was made when Columbus Circle was repaved. A successful solution could have resulted if the recommendations and diagrams in "Street Traffic Regulation" had been followed.

Still another serious mistake was that made before the McAlpin Hotel was actually under consideration. Sooner or later, this will have to be made up for by arcading the building and putting the sidewalk underneath it. The authorities were urged to straighten the building line between 33d and 34th Streets when the plans of the building were being drawn. Had they been up to their job, they could have then solved a serious traffic problem besides actually adding to the property value.

Such mistakes should be guarded against in the future, especially as there are many other difficulties to be overcome just as important as those already mentioned.

In the same book a plan was given for the junction of Fifth Avenue and Broadway at Madison Square. It could have been arranged so as to provide for rotary traffic around a centralized obstruction and would have added greatly to the simplification of traffic at that point.

New York is however not the only city suffering from neglect to obtain competent advice in advance on traffic matters in order to take advantage of opportunities for betterment when they occur. In 1911, the Café Durand on the Rue Royale in Paris was torn down. This gave an opportunity to set the new building back, widening the thoroughfare where it merges into the Boulevard and do away with the bottleneck. There are dozens of such cases occurring where real knowledge of traffic requirements would have prevented loss of opportunity.

## **CROWNING OF ROADWAYS**

Roadways should be crowned sufficiently to shed the water and no more. The pitch should not be greater at one point than at another, except at the gutter where it should be slightly dished in order to make it easier for pedestrians to step over with dry feet. The curved line ordinarily used in crowning is bad because the paving is nearly flat in the center of the street and increased in pitch as it approaches the gutter, thus adding to the danger of skidding.

We might take a lesson from London where the pitch is usually slight but on account of extreme care in laying, the water seldom stands.

An even pitch in a straight line from the center of the street to the gutter is preferable to a curved line. This of course leaves a slight ridge where the two lines meet but so slight that it is negligible.

In some of the wide streets in London with cab stands in the center there is a slight depression about 6' wide running longitudinally and connected with the sewer. A grating in the center of the roadway covering a trough, connected with the sewer, would be of great service to get rid of snow as the grating could be opened and the snow shovelled in. If this plan were adopted there would be no necessity for gutters at the curb as the water would be carried from the curb to the center of the roadway.

## **WIDENING ROADWAYS; ARCADING BUILDINGS FOR SIDEWALKS**

*(From Science of Highway Traffic Regulation, 1920)*

There are many streets already built up which are too narrow for their traffic requirements. The roadways should be widened. There are two ways; one to cut back the buildings on one or both sides of the street, and the other to arcade the buildings on one or both sides of the street. If the buildings are not of much value, the former method should be chosen, but if the buildings are expensive and suitable for their purposes it would be extravagant. In this event we should choose the arcade method applied to one or both sides of the street. In applying this we should remember that there must be left a width of about 2' outside the building projections to provide room for the opening of vehicle doors.

Take as an example the problem of what to do with East 59th Street in New York. The street is 60' wide. Many of the buildings are too valuable to demolish or to be cut back all the way up. They must therefore be arcaded on one or both sides. If arcaded on both sides, a roadway 56' wide will be possible. (56 plus 2 plus 2 equals 60.)



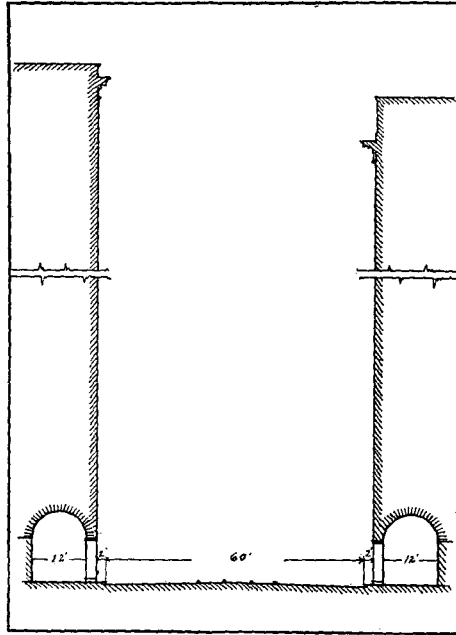


FIGURE 56

If arcaded on one side a roadway 48' wide and one sidewalk 10' wide is possible. (48 plus 10 plus 2 equals 60.)

There should be room for two lines of vehicles on each side of the tram lines. Forty-eight feet will just give this but fifty feet would be better. The sidewalk of ten feet is also rather meagre.

In view of the increasing traffic importance of East 59th Street, it would seem wiser to arcade both sides at once. There will be a little compensation also by this method because we shall not have to move the tram rails.<sup>1</sup>

### NEW STREETS

New streets should not be decided upon without due consideration by engineers trained in traffic work. When plans have been prepared, public hearings should be held and every one given a chance to study the problem. To create a new street is a serious undertaking and whether it be done with good or bad judgment, the results are likely to be permanent. New streets

<sup>1</sup> Unfortunately this recommendation was neglected and eventually the two new buildings on the corners of 5th Avenue will have to be arcaded.

are seldom justifiable until it is certain that those already in existence cannot be made to accommodate traffic by reasonable changes.

### TRAM CAR AND BUS STOPS

Formerly trams always stopped on the far side of the street, except at fire, hospital and school streets, where they stopped at both sides. In 1904, the "near side" ordinance was passed in New York at the instigation of the author but it was soon repealed. In 1914 this ordinance was re-enacted and was made to include buses which, however, have now been excepted.

The reasons given for preferring the "near side" stop were safety and reduction in the necessary number of stops.

As far as safety is concerned, the author believes the "far side" stop to be better, both for trams and for buses. If trams always stopped at every intersection and never ran over it, the "near side" stop would be safer but the compulsory "near side" stops are only at fire, hospital and school streets and lead to confusion as well as to inconvenience. For example, one element of danger with the "near side" stop for trams is that they are apt to over-run the intersection and if fire apparatus or ambulance is coming through the other street it may find in its path a stationary tram which has to start up before it can get out of the way.

Another danger is that a vehicle coming through an intersecting street is uncertain whether the tram will stop before crossing or not and takes the chances of crossing in front of it.

The "near side" stop for trams is better in one respect only, in that it reduces the number of stops, thereby increasing the number of trams that can be run in crowded hours within a given time.

The "near side" stop for buses is a mistake. It is less practical for the bus to approach the curb; it retards following traffic and is dangerous for passengers getting on or off. It has been discontinued in New York for these reasons.

All things considered, the "far side" stop has in most cases the balance of advantage and the compulsory "near side" stop should be discontinued at all streets—fire, hospital and school streets included. Local conditions and requirements, however, should determine whether the near or the far side stop be selected for each particular location. An essential requirement should be that the tram stop be located just before or just beyond a crosswalk. (See Figure 57.)

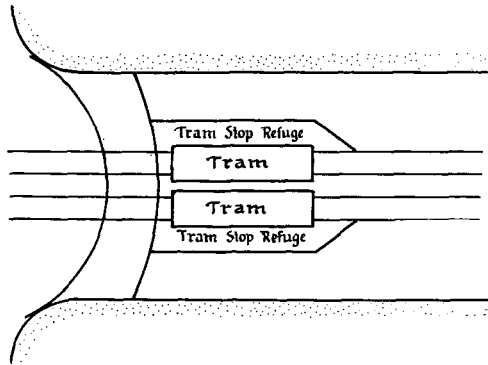


FIGURE 57

Where the blocks are short, as they are in New York on the north and south streets, it is not unreasonable to reduce the number of stops for both trams and buses so that instead of being at every intersection they would be at every second or third intersection.

The stops for trams should be at the important streets and at intermediate streets, dividing the distances between to suit local conditions and having no stop nearer another than one block on east and west streets (about 600') or farther than three blocks on north and south streets, about 700').

Stops for buses should be located, not only according to their distance from one another but also according to local conditions; for instance, where there are no entrances to buildings and consequently no real necessity for other vehicles stopping at the curb. Examples of such places on Fifth Avenue are the Public Library, the Union Club, the Gotham and Waldorf-Astoria Hotels, St. Patrick's Cathedral, etc., etc.

All stops for trams and buses should be clearly marked by signs.

Tram Stop Refuges were first recommended for upper Broadway in New York in the summer of 1913. They are now in rather general use. If a Tram Stop Refuge with a raised platform is furnished the platform should have the end towards the approach of traffic beveled so as to deflect a vehicle striking it. This end should be painted with vertical black and white stripes, the outer or corner stripe being white. The corner should also be furnished with a light at night placed on a stationary standard painted with black and white bands.

If a Tram Stop Refuge has no platform or no platform occupying all of it, it should be outlined by white paint lines or metal markers accentuated by movable standards or traffic mushrooms or both.

There are many streets where there is not sufficient space for a Tram Stop

Refuge if it is to function all the time. In this case a very good plan is to mark out the refuge with paint lines, using traffic mushrooms to accentuate its boundaries. When not in use by people waiting for or getting in or out of a tram, vehicles may disregard it and as the traffic mushrooms are only 4" high, the wheels can straddle them.

### **BUSES VERSUS TRAM CARS**

The very fact that the excessive noise made by tram cars has not been controlled should be sufficient reason for replacing them with buses in all cities.

The noise comes from several sources: First, from the imperfect construction and ramshackle condition of the tram cars themselves and, second, from improperly laid roadbeds and to the bouncing of the iron plates found between the trolley slot and the rail. This latter I believe could be materially, if not entirely, stopped by rubber or felt gaskets and screwing or bolting down the plates. The rails should be laid on a cement foundation so that it will not be necessary to do as they often do now, cut away the pavement and try to force the track into a level position by driving in wedges. Such a makeshift is never satisfactory.

The underground trolley is safer on account of the lack of high tension overhead wires which, if broken, may fall across the highway but it is far noisier due to the bouncing iron plates in the pavement.

As buses are substituted for trams, restrictions should be made as to the kind of tires they use and as to their brakes being kept properly oiled and in good condition.

I am very much in favor of the size and weight of buses being limited on account of the slowly destructive jarring to buildings caused by their excessive weight.

All trams are noisy but I am always surprised every time I go to France, Belgium or England to notice how much less noisy than ours their trams are. As to their buses, there is not very much difference but I think if any it is in favor of the American bus.

### **PLAN OF CITY WHERE NO THREE STREETS CROSS AT THE SAME POINT**

The accompanying plan shows a unit area, one mile square, surrounded by similar areas. The reserved spaces are for parks, play-grounds, municipal buildings, hospitals, opera houses, theaters, schools, churches, etc.

Only the diagonal avenues run north and south and east and west. The lettered and numbered streets run northeast-southwest and northwest-southeast,

so that the sun will strike the houses on both ends during the course of the day. This is thought to be an improvement on L'Enfant's plan of Washington, where the lettered and numbered streets are laid out with the cardinal points of the compass.

Only two streets or avenues intersect at any one point. This avoids the congestion that results where several streets pour their traffic together into a vortex, as for example, at Columbus Circle in New York City.

The avenues or principal streets are 125' wide. This gives 20' for each sidewalk and 30' for each of two roadways, with a central strip 25' wide for trams, walks and bridle paths, trees, etc., as may be required. Wherever necessary the central strip can be used either for a surface tram line, for a depressed railway or for a subway, as shown in Figure 58.

The subway could be widened if necessary so as to provide for four tracks. Indeed, if required, it would be possible to put surface, depressed and subway lines in the same street.

The narrower streets are 75' wide, allowing 15' for each sidewalk and 45' for the roadway, which gives room for four lines of vehicles and space for cabstands and waiting vehicles in the middle.

If tram lines were placed on all the wide streets, the greatest distance necessary to walk from any house to a tram would be one block and a half, and not more than two transfers would be required to get within one block and a half of any other house in the city.

This diagram and explanation first appeared in "Street Traffic Regulation," published in 1909. Subsequently the American City Bureau had a large map of it made which was shown at the City Planning Exhibit in the New York Public Library in 1913 and other places in this country and South America.

### **REGULATION OF VEHICLES AT LARGE GATHERINGS, SUCH AS THE THEATERS, OPERA AND BALLS**

A plan *published first in 1900* was republished in "Street Traffic Regulation" by the author in 1909. It was first put in operation on the night of November 25, 1903, nearly four years after its first appearance, and proved an immediate success, having reduced the time taken to send all the carriages away from the Metropolitan Opera House to less than thirty minutes, and this on the first night of its trial, when formerly it often took an hour and a half.

This plan, with slight changes, is the one still in use. Since it was made, tram rails have been laid in 7th Avenue, more theaters have been built, and all the while traffic has been increasing, and, of course, rendering the conditions more difficult to cope with. This is probably the first plan of its kind ever

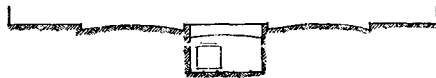
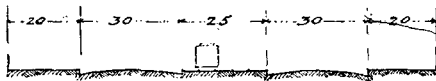
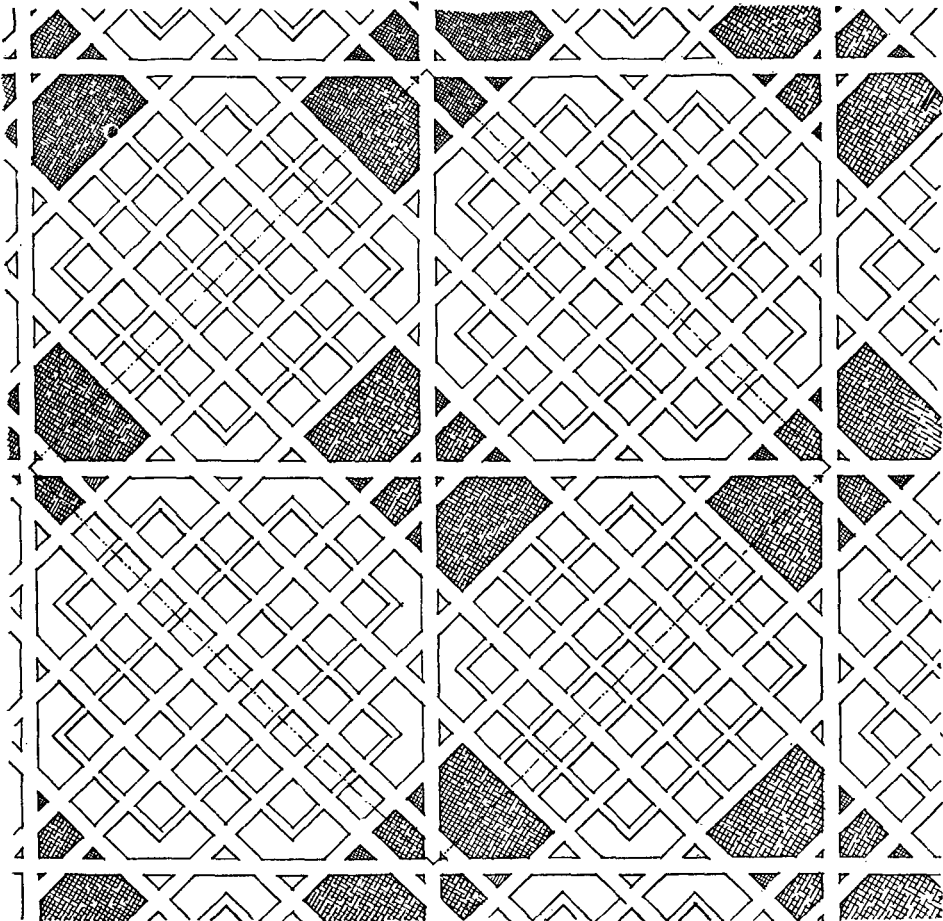


FIGURE 58

made for the handling of traffic at large gatherings, and it has since served as a model. No new principles have been advanced since then, and only minor changes have been made.

The plans at many of the other theaters are still unsatisfactory. Some can easily be improved, while others are difficult of solution.

Quite as serious as the problem around the Metropolitan Opera House have become those at 34th and 42d Streets. Both of these problems can be made much simpler by widening the roadbeds of the two streets, and making room for three lines of vehicles instead of two each side of the tram rails.

As we realize now that we can not remedy some conditions, we should, in the future, use preventive measures. No theater should be allowed to be built which has not an exit for the use of returning vehicles on a street where there are no tram tracks, and even then the number of theaters with exits or entrances near together should be limited within reason, based on experience.<sup>1</sup> The following is the plan herein referred to:

### **SUGGESTIONS FOR THE MANAGEMENT OF VEHICLES AT LARGE GATHERINGS**

“In the article published January 20, 1900, entitled “Reform in Our Street Traffic Most Urgently Needed,” it has been said: “The management of vehicles at the opera, theatres and other entertainments should be carefully studied, and specially trained, expert and competent police assigned to such duties. Vehicles should never be allowed to set down or take up passengers on the left-hand side, but should always proceed in the same direction as the regular traffic of the street.”

To proceed further; other general rules should be laid down to cover all cases and special ones for the opera, theatres and other entertainments in public places.

Waiting vehicles should approach the exit on the right-hand side of the street in single line.<sup>2</sup> This line should be formed far enough away from the exit to prevent congestion of traffic near the door.

At balls and other entertainments where the guests leave at different times, the front of the line should be kept at least 50' back from the exit, so that vehicles in the line can be called out one by one, by number, and come to the front as required.

<sup>1</sup> The above five paragraphs are from The Science of Highway Traffic Regulation, published in 1920.

<sup>2</sup> Large diagrams applying to each theatre or door of theatre or opera house should be placed on the walls of the vestibules, high enough to be seen over the heads of the people standing.

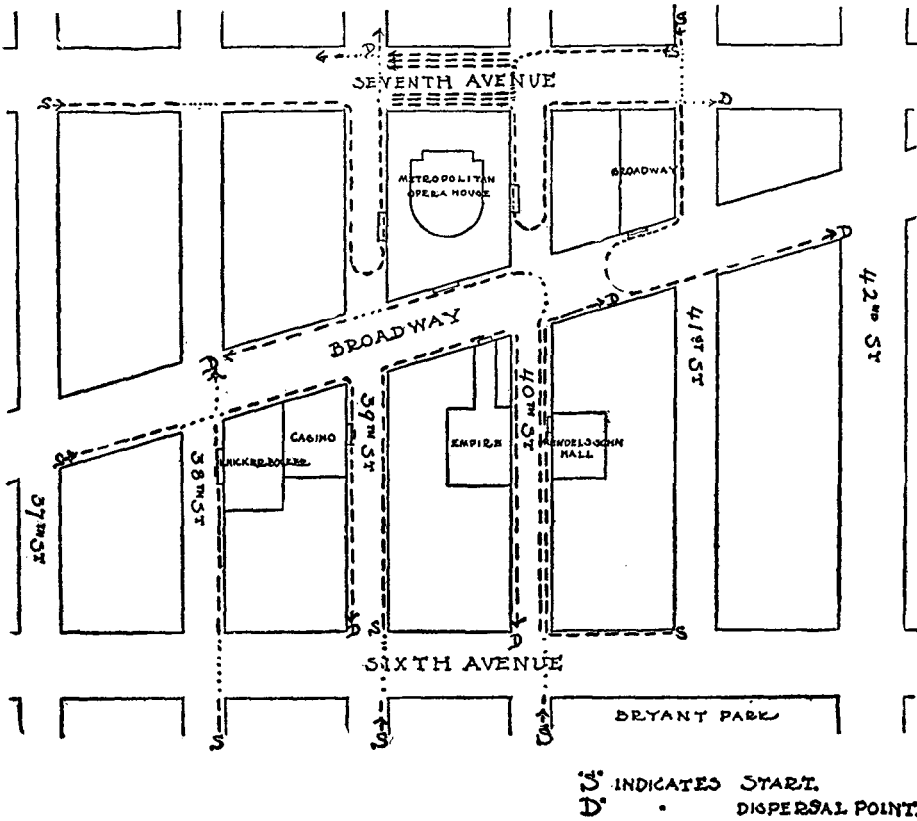


FIGURE 59

At the opera and at theatres, where the audiences leave practically at the same time, the first vehicle in the line should be at the exit at the termination of the performance. If the owners are not ready to take it promptly, it should be sent forward to come in again at the end of the line. After that the others should be allowed to block the way for not more than 15 seconds each and then come in again at the back of the line.

The most difficult problem to handle is that between 38th and 41st Streets, where the Metropolitan Opera House with three exits, the Knickerbocker Theatre, the Casino, the Empire Theatre, the Broadway Theatre and Mendelssohn Hall are located.

This locality has been selected to show what has been heretofore an almost hopeless tangle and how it can be straightened out.



The Opera and all these theatres do not always end their performances at the same time, but they are liable to overlap each other.

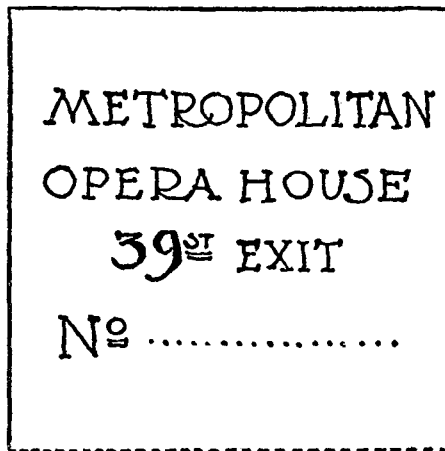
For the sake of argument it is assumed that they terminate simultaneously.

It will be seen by the diagram where it is proposed that each line shall form in single file for each particular exit, how it shall proceed to the exit and how it shall keep on to the point of dispersal.

A numbered check is now given to the driver and to the owner at the entrance, and on the reverse side of this check should be printed the necessary directions.

The form of a proposed check for the 39th Street exit of the Metropolitan Opera House is given as an illustration.

To further facilitate speed and convenience an employee of the Opera House or theatre should ascertain the numbers of, say, the first ten vehicles in line, and put them in order on a blackboard inside the vestibule,<sup>1</sup> and then

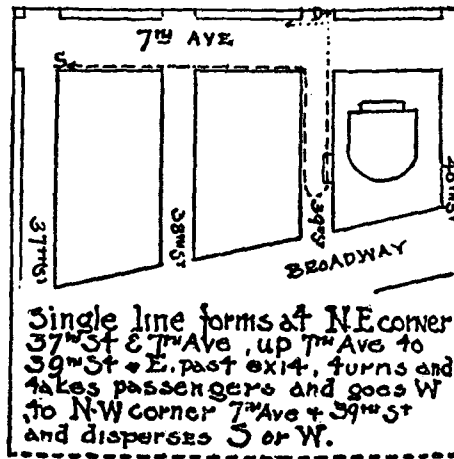


CARRIAGE CHECK.

FIGURE 60

get the next ten, and so on; or, better still, a keyboard, similar to that of a typewriter, manipulated from the sidewalk, with an indicator inside the vestibule, on which the numbers would show in order. By this arrangement those waiting would know of the approach of their vehicles and be ready for them.

<sup>1</sup> There has lately been put in the Metropolitan Opera House a mechanical contrivance which accomplishes this very thing, but it takes two men to work it, whereas the one suggested in this article in 1900 could be worked by one man.



REVERSE SIDE CARRIAGE CHECK.

FIGURE 61

If the porte-cochères of the Metropolitan Opera House were taken away<sup>1</sup> and the sidewalk from the 39th Street door to the 40th Street door, by the way of 7th Avenue, were entirely covered by a roof projecting several feet over the street, so as to cut off any drip, it would facilitate matters, as several vehicles could be filled at the same time. This would also make it easier for people to get out of these doors and the ordinary use of the sidewalk would not be interfered with.

It will be seen by the diagram how 7th Avenue, between 39th and 40th Streets, could be used for vehicles standing where they could be easily found and taken by the owners. In good weather many prefer to have their vehicles stationed where they can find them without waiting for the line.

It is evident that all calling of vehicles would be unnecessary, except where the people come out at different times, as at balls and receptions, and by the use of a system of transparent numbers this also could be easily obviated.<sup>2</sup>

If the proposed plan is adopted, doubtless improvements and changes will

<sup>1</sup> This suggestion, made in 1900, would seem to be equally as valuable now as it was then, and would greatly add to the general comfort, especially on stormy nights. I can see no objection to the same plan being carried out at all the theatres, and the city should grant the necessary permits.

<sup>2</sup> A few months after this article was written the electric carriage call was invented and put in general use. This has proved a most valuable device and would be more valuable if, whenever a line of vehicles extends back for a long distance or around a corner, there were located an extra indicator so that it could be easily seen by the drivers on each portion of the line. Of course, the indicators could all be operated simultaneously from the same switch. In fact, the theatres should be obliged to erect as many indicators as the Bureau of Street Traffic thinks desirable.

suggest themselves and result in a short time in a very simple and perfect system.

To successfully carry out this reform, at first a very ample number of officers should be employed to form and keep the lines, prevent cutting in, etc., and keep the street intersections open. Soon the drivers would become accustomed to it and the number of officers be reduced, and finally probably fewer needed than are employed now.

The creation of a new office should be strongly advocated—that of Commissioner or Manager of Street Traffic. The incumbent should be a member of the police force. He should have under him an efficient staff of officers, all the bicycle police and all other police in control of the general traffic of the streets, and of vehicles at public and private entertainments.

It should be his duty to keep a record of every traffic accident and its causes.

To him notice should be given of private and public entertainments, and he should assign the necessary officers for management of vehicles and furnish them with a plan for the same.

To him all complaints should be made and he should be held responsible for all failures to furnish efficient service.

He should have control of all hack and truck stands, of the examination of drivers of numbered vehicles, including motormen and automobilists, and of the issuing of license cards.

He should see that the rules of the road are posted up in all public stables and at the hack and truck stands.

He should furnish special rules and regulations for vehicles at each theatre and place of public entertainment, and be empowered to enforce them.

In all cases he should be outranked only by the Chief Inspector.

The services that an efficient officer could render in such a position can hardly be overestimated, and his salary should be sufficient to procure the best talent.”

*It is a sad commentary on the intelligence of New Yorkers that they were unable to see what the theater situation was bound to be. There are in several locations now as many as ten or twelve theaters on a single block. Conditions are intolerable in getting to and from them. Already several of the newer theaters have been built away from traffic congestion and in the not far future it will be found advisable to pull down some of those already built and use the land for other purposes. Surely the city government should be able somehow to exercise measurable control to prevent such waste of money by those who have no foresight.*

Conditions are similar now (1929) to what they were in 1903 in the theater

district only of course worse on account of the vast number of theaters which have been allowed to be built there by the short-sightedness of city authorities. The only permanent remedy that there can be is a reduction in the number of theaters. Meantime, palliative measures may be taken by intelligent restriction of the storage of dead vehicles in the theater district and of stationing cabs where they can be summoned quickly by telephone or electric signal.

A plan of the district should be studied with the layout on tracing paper as was done in 1900 and the lines for approaching and departing vehicles decided upon. Staggering the hours at which the theaters begin may help some, but cannot help very much since it would be impractical to stagger them for more than a half an hour, that is, from 8:15 to 8:45, and the same trouble, but worse, would be encountered at the close of the performances.

### PARADES

In "Street Traffic Regulation," published in 1909, the following paragraph appeared in relation to improvement in New York: "Improving the management of parades and so arranging them and directing their routes and times as to avoid unnecessary interference with other interests, and allowing traffic to cross them at short intervals of time. Parades, now that it has become so exceedingly necessary not to impede business, should usually be relegated to streets where there is comparatively little traffic."

In another article, written some years later, it was said that every large city should have a parade parkway with permanent grandstands where all parades could be held and not seriously interfere with traffic. This parade parkway or avenue need not necessarily be within the city proper, but might, in all justice, be located outside the congested part of the city so long as it be provided with ample transportation service.

The saving in the aggregate which such an arrangement would bring about would more than pay for the interest on the money expended. Since we are, or we should be, attempting to restore business and prosperity after the Great War, all saving that can be effected should be most carefully looked into and the best means adopted to bring it about.

### SUGGESTIONS FOR SNOW MANAGEMENT AND REMOVAL

Not until snow on sidewalks is *not* thrown on roadways will the trouble begin to be properly attacked. Snow on sidewalks should be piled on sidewalks next to the curb with spaces left open in front of entrances to doors of buildings. This work, as well as keeping gutters open, should be the duty of property owners.

The street cleaning department should, 1st, clear crosswalks; 2d, use road-

scrapers to carry snow to center of roadway where the width of roadway is sufficient to allow this being done without impeding passage of one line of vehicles on each side of the center pile of snow; 3d, dispose of snow in center of roadway; 4th, dispose of snow piled on sidewalks next to curb; 5th, in soft weather and rain all the regular street cleaning men should turn out to cut cross-drains to gutters.

Work should be begun when the snow begins to fall instead of waiting until a large amount has fallen.

Divide the city into districts, each district under a deputy, and each district being subdivided, each sub-division being under a foreman and all of the regular force trained so that when snow falls the extra men employed may be directed in their work by the regular employees.

### **EMERGENCY TRAFFIC REPAIR VEHICLES**

Often vehicles break down in crowded thoroughfares at busy hours, causing expensive delays.

Emergency repair vehicles equipped with derricks and other suitable appliances should be kept on hand by all large cities as an economical measure to quickly relieve the trouble.

### **THE FAD FOR THE LOW CAR**

Many of our cars, both for private and public use, are now made so low that a person of average height cannot sit up in them and for such people they are most uncomfortable and for all people very dangerous since if you pass over an obstruction in the road, you are very apt to be thrown against the top of the car and your neck sprained. Many people have been hurt in this way and it is hoped that the fad of low cars will pass out before very long. There is no way of course to control such things in private cars but the government should control and specify the height of public vehicles so that there will be ample room for any one of ordinary height sitting in any seat inside with any kind of a hat he is likely to wear and with at least two inches to spare.

### **BY PASSES**

Serious attention should be given by engineers who are working out traffic problems to By Passes, Over Passes, Under Passes and Under and Over Passes, all of which are being used a great deal in some parts of our country and abroad. Space will not permit of a lengthy treatment of this subject here or reproduction of the many excellent drawings which have been published.

## **SURVEYS**

It is not unusual to hear from the head of some committee appointed to work on traffic that the first thing to do is to complete an exhaustive survey of the city to be regulated. It is true that every city and town should have a survey made by experienced city planners with a view to traffic facilitation. It is, however, not the first thing that should be done. Those in charge should immediately get into action and regulate traffic under conditions as they find them. The man who recommends an immediate survey for this purpose is very much like one who upon being instructed to clean a room would first count the specks of dust in it whereas what he really should do is to get a broom and sweep them out and let the survey wait until later on.

## **COUNTS**

There are some cases where counts of vehicles and pedestrians are of great assistance in finding out what to do in traffic regulation but most of them, to my mind, are a waste of money because there are so many other elements to consider in determining the most desirable course that are quite as important as knowing how many vehicles or pedestrians pass a given point that it is a question whether counts are often of any real value.

### **THE TRAFFIC PROBLEM OF NEW YORK CITY**

*Paper Read Before the Harvard Engineering Society, Harvard Club,  
March 8, 1923*

By WILLIAM P. ENO

The traffic muddle in which New York now finds itself is due to several causes, the first being the tremendous increase in motor traffic but almost as important has been the failure to seriously consider propositions which had they been heeded would have forestalled a large part of the present difficulties.

#### **A Few Suggestions Made in the Past**

In 1897 a plan was submitted to the Rapid Transit Commission for cutting through the blocks for two combination systems of subway, surface and elevated roads with bicycle roadways on top. These systems provided for express trains just below the surface, a surface line, an accommodation line up one flight, a local express line up two flights and a bicycle roadway on top. At that time there were practically no modern buildings between Third and Fourth Avenues on the east and Sixth and Seventh Avenues on the west and so for a comparatively small outlay New York could have had two such systems, one on each side of the city, furnishing together sixteen tracks and two bicycle road-

ways. These two systems could later have been supplemented by two additional ones of the same kind—one east of Third Avenue and the other west of Seventh Avenue, raising the total to thirty-two tracks and four bicycle roadways,—thirty-two tracks with greater capacity and at a fraction of the cost of our present subways.

The convenience of such a plan cannot be over-estimated since there would have been no north and south distances to walk, but simply east and west to the nearest of these systems where the cars could be boarded and transfers secured for desired levels.

This plan was pigeon-holed as has been almost everything of a constructive nature, due to the lack of receptivity and imagination of public officials.

Another plan suggested in 1901 provided for a greater Grand Central Station above the Harlem River from which all railways with terminals at New York should radiate. The first subway, that on Fourth Avenue, would have served as a feeder to these, running from the Battery northward but passing under instead of over the Harlem River with stations situated about half a mile apart throughout the length of the city so that a train could be boarded by going only a short distance. Passengers would then have transferred above the Harlem River to the road they wanted to take, luggage being checked at the local station, placed on trucks and wheeled on to open cars, to be distributed at the Greater Grand Central Station above the Harlem River. The Fourth Avenue subway could have been supplemented, if necessary, by one on the west side and so have given a dual service to the Greater Grand Central Station.

As you know, for years back, the present Grand Central Station has been periodically altered or pulled down and rebuilt to accommodate increasing traffic. A few years from now the same thing will happen again as the capacity of the station is already beginning to be inadequate.

Instead of purchasing land in the vicinity of 42d Street it would have been possible to sell enough to buy all that could be required in the future above the Harlem River, thus providing for all time for all roads now leaving the present Grand Central Station as well as for others which might require terminals later.

Some minor matters no one of which is in itself of extreme importance but the aggregate of which would amount to a very great deal, can be mentioned.

In 1910 Broadway was widened, from 26th Street to 33d Street, but not sufficiently to allow free passage for an extra line of vehicles on each side of the tram line, so that little was gained although the cost of the work including setting back of vault lines and projecting windows and entrances was an un-

warranted expense unless something of real value was to be gained for the public. This work will sometimes have to be done over again if the object for which it was originally undertaken is to be obtained.

Before the McAlpin Hotel was built, steps were taken to bring to the notice of the city engineers the importance of straightening out the front of the building so that the roadway between 33d and 34th Streets could be made wide enough to allow for two lines of vehicles on the east side of the tram line, but nothing was done. The architect when approached said that had the City Engineer called attention to the matter before the steel was ordered the owners would have been glad to have followed this suggestion as it would have made a better building and they would have been willing to sacrifice the few feet of land to straighten out their front. Sometime in the future perhaps, to correct this mistake, the front of the building will have to be arcaded in order to put the sidewalk under the building instead of where it is now.

In November, 1917, an effort was made to induce the authorities in New York to select the right streets instead of the wrong ones between 14th and 59th Streets for one-way traffic. No attention was paid to this and a happy-go-lucky, catch-as-catch-can plan was adopted, adding much to the expense and failing lamentably to accomplish what a better studied plan would have made possible. There are many such instances, too many to mention here.

\* \* \* \* \*

I have enumerated these few examples to give you some conception of what we have lost already by being indifferent. It is for highway traffic regulation engineers to suggest steps which may in the aggregate amount to a good deal, as for instance, the widening of the roadway on East 59th Street to 56 feet, and placing the sidewalks beneath the buildings. Removing the Strauss monument to some place where it will be ornamental without being detrimental to traffic and devoting the space it now occupies to the scientific stationing of vehicles. Another instance is the desirability of substituting for the present system a system of traffic crowns which is suitable for both rotary and block systems. The rotary system is the only one which has demonstrated its ability to distribute traffic evenly over the whole surface of the street and on Fifth Avenue it would add at least 25 per cent and probably more than 50 per cent to the traffic capacity of the street surface. The Detroit crowns are situated at the center of intersections of two streets where they can signal in all four directions and at intersections where they are not installed, lights are hung which work on the same system as those in the crowns and so give a continuous block if one is desired. The present system of towers on Fifth Avenue is eminently successful from the point of view of its promulgators so far as it represents the interests of the stockholders of the Fifth Avenue Bus Line and the tenants on the Avenue, since it drives other



traffic away and makes more room for their clients. It is in other words, class legislation, good for the few and bad for the many, employing more traffic policemen in a limited area than any other place in the world.

Another instance is the Park Avenue situation from 32d Street to the Harlem River which should be studied with a view to obtaining the greatest traffic capacity for that thoroughfare both for moving and stationary vehicles. Consideration of the advisability of an elevated vehicular belt line on the water fronts of the city. The advisability of constructing a corkscrew subway running back and forth between the rivers. Cutting back the corners of streets on a scientific instead of on a rule-of-thumb radius. Relocating of many tram-tracks, especially on curves. Doing away with some of the tram lines and substituting bus lines. Marking out of all available space for the stationing of vehicles where it can be done without interfering with moving traffic. Restriction or even elimination of the stationing of dead vehicles during crowded hours in the congested portions of the cities. Utilization of paint lines as is being done in other cities and many of the new kinds of dummy cops and other traffic guides under competent direction. Physical, mental, moral and road tests for all automobile drivers, good throughout the United States with re-examination on substantiated complaint or accident.

Luckily interest in such matters is being brought to the attention of the universities and engineers are beginning to fit themselves for this work in the future, than which there probably is nothing of greater importance.

To sum up, I wish to call attention to the absolute necessity of standardizing the General Regulations so that they will be the same throughout the whole country, also to the fact that the more scientific principles of traffic regulation cannot be entirely entrusted to the various police departments but must be worked out by highway traffic regulation engineers who have had the advantage of scientific training for this particular purpose. The role of the police should be confined to that of assistants or prompters to the public with authority to enforce reasonable compliance with General and Local regulations. The courts should know their business in regard to traffic violations and support the police in the spirit of the law rather than in its letter.

The education of the public in the regulations they are expected to follow is the keynote to this subject. Laxity in continuing this principle so well begun and followed for years is responsible now for at least part of our trouble.

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### **A LOGICAL TRAFFIC PLAN FOR PARK AVENUE.**

The so-called "Miller Plan" which is now in partial operation on upper

Park Avenue is unfortunate because the one-way traffic roadways are so wide that pedestrians are in extreme danger when crossing. The Avenue is 140 feet wide between building lines and between curb lines 110 feet, or more than enough for a plan similar to that in effect on the Champs Elysées in Paris (See Figures 22 and 23 on pages 65 and 66) since the roadway of the Champs Elysées occupies but 93 feet whereas we have 110 feet on Park Avenue or 17 feet more than on the Champs Elysées. Figure 62 shows how the plan should be developed.

The two side roadways are each 30 feet wide or wide enough for two lines of standing vehicles and two lines of moving vehicles. The central roadway is 40 feet wide or ample for two lines of moving vehicles in each direction. The two strips extending the entire distance between the street intersections with refuges at the ends are 5 feet wide. The refuges are the usual height and the parts between are raised one step above the refuges and are covered with gratings for ventilation for the railway beneath. These strips furnish a walk for people to go to or come from cars stationed in ranked formation on the left side of the side roads. The center roadway has in its center a refuge 5 feet wide and the side roadways have in their centers refuges  $2\frac{1}{2}$  feet wide.

If the fire department objects to raised refuges, those marked "A" can be marked by paint lines and electric lighted mushrooms.

Vehicles are not supposed to stop on the central roadway.

This plan although intended primarily for that part of Park Avenue above the Grand Central Station, can with slight modifications be used down to Union Square.

It is too bad that the Miller plan was put into effect, but I believe the expense of the change would be fully justified by the increased safety and convenience. There may be some physical changes in supports needed, but they are probably not prohibitive.

### **SAFETY FOR TRAFFIC OFFICERS**

(For articles on Police Horses, Equipment and Uniforms see "Street Traffic Regulation," pp. 43 and 44, or "Science of Highway Traffic Regulation," pp. 22-3-4.)

Notwithstanding that traffic regulation in the U. S. was begun over twenty-five years ago, almost nothing has been done to insure the safety of traffic officers and in my opinion, it is a shame that this matter has not been given serious attention by the authorities. There are several ways of doing this.

The hat should be white. The best hat that I know of is an aluminum

helmet in use in Belgium. It is extremely light, not heavier than an ordinary felt hat but better ventilated and more comfortable than anything I have ever tried on, also an excellent protection in case of rain. Samples should be sent for by the authorities here and the helmet adopted. Burgomaster Max of Brussels can give particulars.

Another good protection is a white Sam Browne belt with a strap over

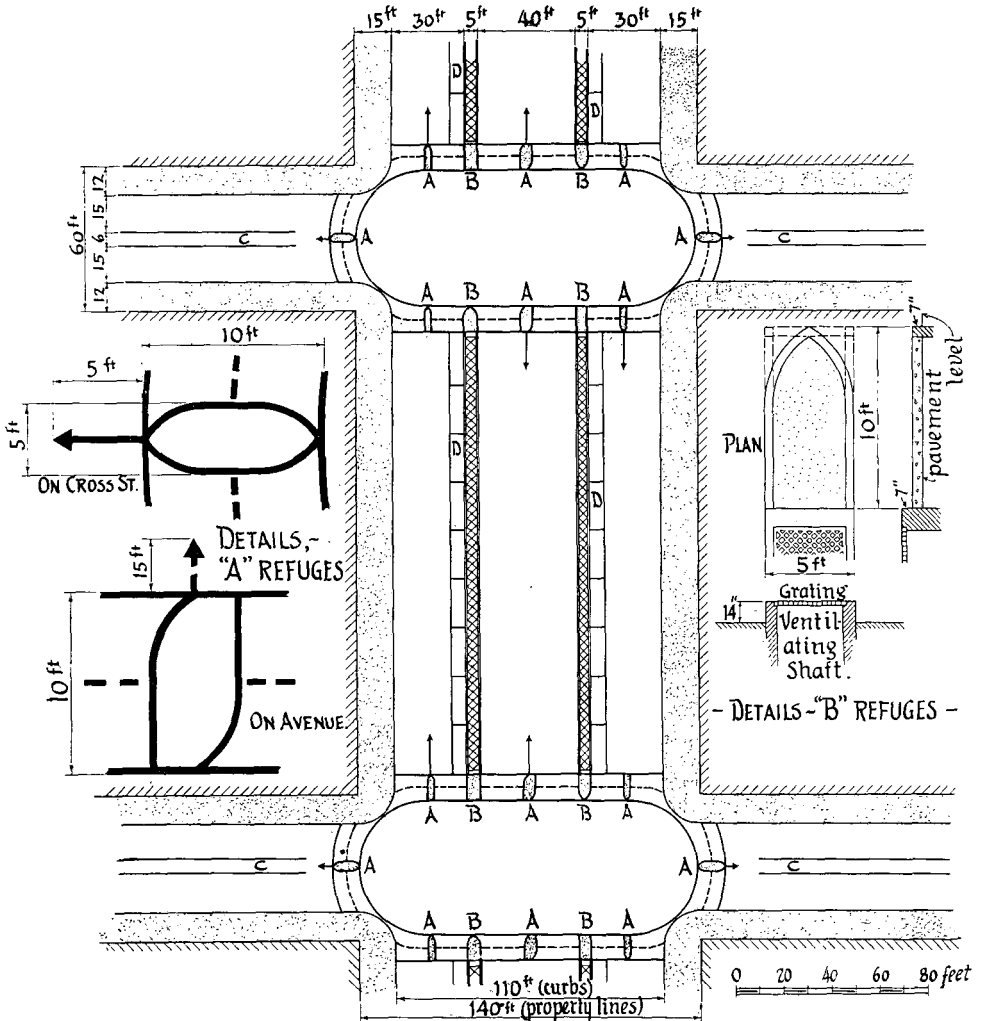


FIGURE 62

Park Avenue, New York City—Plan for improving traffic conditions and increasing safety of pedestrians.

each shoulder instead of over one. This was suggested more than twenty years ago but has never been put in general practice.

White gloves should also be used and in rain a white rubber coat is essential. In England they reported that the white rubber coat was so expensive that they were experimenting with one or two white rubber sleeves in a black coat but I don't think that that is as good as an all white coat and the difference in cost should not be allowed to interfere when the safety of our deserving public servants is in question.

There is no harder work than that of a traffic officer at an important intersection and he should not only be given everything possible to make him comfortable but everything that can be added to make him safe. The things mentioned will add much to his security.

Ample illumination of the spot where the traffic officer stands should be afforded. A spot-light is not nearly so good as a hanging light placed some distance above the officer with a reflecting shade.

It is not lack of appreciation by the authorities or by the people of the traffic officer's work but simply stupidity and lack of enterprise which has characterized so many of our politicians that the matter of the traffic officer's safety has been given practically no thought.

### **TRAFFIC OFFICERS' HAND SIGNALS**

Excellent hand signals have been used in the United States, especially in New York, but they still lack uniformity and very often too much movement is made. You will however find some of our traffic men in New York whose signals are simple and good.

In taking this matter up I should advise making a study of those now used in London, in Brussels and in Tokyo, all of which are simple and understandable and photographs should be easily obtainable through the courtesy of the authorities in those cities.

### **DRIVERS' HAND SIGNALS**

With the increase of cars which are closed-in in front and from which it is difficult to make hand signals, if any attempt to standardize these signals is made, it should be confined to such signals as can be easily simulated by an arm semaphore attached to the car.

So far, the committees who have investigated this subject have been in favor of but one signal which shall indicate caution. However, this signal can be made in such a way as to mean, first, caution, and second, information as to what the driver is going to do.

Silhouette 1 shows arm extended horizontally to indicate caution, but a

car turning to the left, silhouette 2, would automatically swing the driver also a little to the left and therefore also automatically lower his arm, whereas if he were turning to the right, it would raise his arm as shown in silhouette 3. Silhouette 4 shows the driver indicating to those behind that they can pass and simply means raising and dropping the arm slightly. If the driver is sitting on the right hand side of the car, these signals would be adapted for that condition.

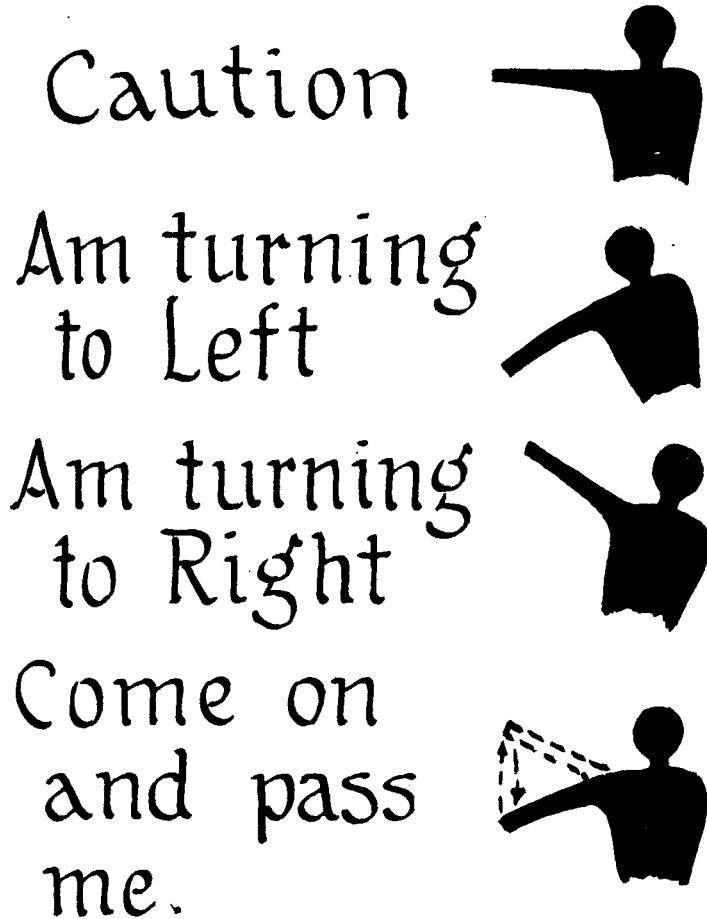


FIGURE 63

#### DISCARDED MOTOR VEHICLES

It has become evident that the problem of the discarded motor vehicle is one which must have prompt attention. It is not unusual to see discarded

motor vehicles at the side of roadways, left there to disintegrate. A reasonable plan to prevent this in future should be adopted in all states.

The plan I have to suggest is that the police—both state and municipal—be directed and empowered to prevent the depositing of discarded motor vehicles on any land which does not belong to the owner of the discarded motor car without written permission and that a suitable fine be imposed in case of infraction. In addition to this, I believe that where possible the states, municipalities and townships should provide dumps for this purpose where old cars can be deposited on the payment of a reasonable fee sufficient to maintain in slightly condition what might be called a cemetery for motor vehicles. The dump should be hidden by hedges and shrubbery so as not to create an eyesore. Old cars make bad filling but by controlling the dump this can be obviated to a certain degree.

### **IMMUNITY FROM ARREST FOR FOREIGN DIPLOMATS IN TRAFFIC ACCIDENTS**

If foreign diplomats are involved in traffic accidents they are absolved from arrest. The United States Government has done this as a matter of courtesy and I think it is quite right in doing so as diplomats are our guests but if the foreign diplomat is to blame for the accident then the United States Government should assume the responsibility, just as though one citizen or his property had been injured by another.

### **UNNECESSARY TRAFFIC NOISES**

Traffic noises have increased to such an extent, largely due to thoughtlessness for the comfort of others that something must be done to modify them.

Screaming brakes, the use of sound signals, except for necessary warning, noisy starting devices, the open cut-out, unskillful shifting of gears and the rattling of machines are mostly due to carelessness.

There is no doubt that traffic noises could be materially reduced, probably as much as fifty per cent and possibly seventy-five per cent by proper action of the police and by proper regulation as to construction, equipment and maintenance of cars.

I therefore suggest that the head of every police department should issue an order to the members of his force to reprimand drivers for any unnecessary noise caused by bad handling of cars (including tram cars, buses and trucks) or due to the fact that their cars are out of order, and the driver's name, number and address and vehicle number if it has one be taken and such other particulars as may be available for identification and report same at his precinct station or at police headquarters for record and action if necessary.

## PART VIII

### APPENDIX

#### HISTORICAL SYNOPSIS OF THE DEVELOPMENT OF HIGHWAY TRAFFIC REGULATION SINCE 1899

*The material from which I have drawn this brief summary of the important steps in the growth of traffic regulation on the public highways is taken from notes dictated at my special request by Mr. Eno and from scrap books and files in the office of the Eno Foundation. It covers a period of thirty years of continuous effort devoted to improving traffic conditions, and laying the foundations of a true science of highway traffic regulation. To this Mr. Eno has devoted both time and money in generous measure with no expectation of financial return. In fact it has been a civic labor of love of international proportions, for London, Paris, Brussels, Berlin, Tokyo and other foreign centers, as well as many cities in the United States, have sought his advice and help. The Paris correspondent of the "Pall Mall Gazette" of London, wrote to his paper in July, 1912,—“Mr. William Phelps Eno belongs to that generous class of American which consecrates its leisure to the good of humanity.” The second of his series of books, of which the present volume is the fifth, was written in French and the third and fourth have been translated into Japanese.*

*Mr. Eno hesitated to print this sketch because of its essentially personal character. Such a quality is inevitable in any historical summary, however brief. For many years he worked practically alone, studying the various phases of the problem, planning solutions and bringing them to the attention of public officials and the public generally. Now that the traffic problem is recognized as one of the most serious which confront the world today, it might be said that too many are interesting themselves in it—not that this of itself is an evil but so many would-be reformers are advocating remedial measures which neither remedy nor reform but often tend towards confusion and delay.*

*The records from which the following has been written are kept in the offices of the Eno Foundation for Highway Traffic Regulation, Inc. They comprise voluminous files of letters and other documents and twenty-eight large scrap-books of newspaper clippings, American and foreign, and manuscript notes and letters. These may be consulted, by arrangement, by anyone who is interested. It may be readily seen that only the “high spots,” and not all of those, can be touched upon in a historical outline as brief as the following must of necessity be.*

*In view of Mr. Eno's reluctance to print this historical sketch I told him I*

would gladly assume all editorial responsibility and would see it through the press. In these minor tasks, I have kept the record in the first person, as narrated to me by him. The reader is reminded, therefore, that while the story is his the mistakes are mine.

C. J. TILDEN,  
*Vice-President,*  
*Eno Foundation for Highway Traffic Regulation, Inc.*



FIGURE 64.

An Annual Parade of the Mounted Traffic Squad of New York, about 1908.

### WORK IN THE UNITED STATES

On January 20, 1900, I published an article "Reform in our Street Traffic Urgently Needed," on February 10, "Suggestions for the Management of Carriages at Entertainments" and on February 5, 1901, "Rules of the Road Revised." These three articles were reprinted in various newspapers and magazines and so widely quoted that it was evident public interest in the subject was being awakened. I reprinted them in a pamphlet on February 1, 1902, en-



titled, "Suggested Rules and Reforms for the Management of Street Traffic—Designed to Minimize Accidents and Prevent Confusion, Delay and Blockades." This pamphlet contained a perforated slip requesting the signatures of those interested in the subject. Among those slips returned were many from the New York Police and Fire Stations indicating a practically unanimous desire on the part of the personnel of these departments for the encouragement of traffic regulation.

On February 15th, 1902, I wrote to the then Police Commissioner of New York City asking for a conference on this important question of regulating the city's traffic. His answer contained the following paragraph:

"With regard to the conference, it does not seem to me that such is necessary or desirable, inasmuch as the duties of this department do not comprise the framing of laws or ordinances but rather their enforcement. Inasmuch as I am so very very busy with the enforcement of the law, unless it should appear that such a conference is desirable I must ask you to excuse me."

On January 1, 1903, Major General Francis Vinton Greene accepted the position of Police Commissioner, at the request of Mayor Low and with the promised support of District Attorney Jerome, to fill out the unexpired term of his predecessor. General Greene began this work on February 1, 1903.

In response to a letter from me to General Greene, I received the following reply:

January 13, 1903.

Dear Sir: Your favor of January 11, together with the suggested rules and reforms for the management of street traffic has been received, for which I am very much obliged. \* \* \* I intend at an early day, as soon as a few more pressing matters (and there are only a very few more pressing than the congestion of street traffic) are disposed of, to take up this matter with a view to improving the present conditions, which are very bad. At that time your suggestions will have very careful consideration and I shall then probably ask you for a personal conference.

Very truly yours,

F. V. GREENE,  
*Police Commissioner.*

This letter was encouraging as showing interest by one who was not only an able Police Commissioner but also an army officer of unusual distinction, a diplomat and a business man of known record.

I wish also to mention in this connection the name of Captain A. R. Piper who was Deputy Police Commissioner in charge of traffic under General Greene and whose work was especially worthy of remembrance in connection with street traffic regulation.

About this time I put the "Rules of the Road Revised" in the form of an ordinance. It was sponsored by Jacob A. Cantor, then President of the Borough of Manhattan but unfortunately he got it before the wrong committee. The history of this part of the work the reader can find in detail in PART I. Suffice it to say that it was held up by the interested opposition of a member of the Board of Aldermen and the work delayed until October 30, 1903, when after having made a careful examination of the City Charter, the Penal and Sanitary Codes I discovered that an ordinance on the subject of traffic was superfluous as it was covered by Sec. 315 of the City Charter. The City Charter takes precedence over ordinances.

General Greene, on being shown this reference, signed the regulations as Police Regulations the same day and these regulations, with their revisions, have continued to be the governing factor in traffic regulation in the city of New York for twenty-five years.

These police regulations under the caption of "Rules for Driving" are herewith reproduced. They are the first printed police traffic regulations in the world.

One of the questions that gave us great trouble was the fact that for several years there was no provision whereby a traffic officer could issue a subpoena and an offender against a traffic regulation had to be either let go or the traffic officer had to forthwith accompany him to a police station, thereby leaving his post of duty for that purpose. After tedious efforts, however, we succeeded in getting this matter corrected.

On December 2, 1903, I sent the following letter to General Greene:

Dear General Greene: Would it not be possible from now till January 1st to spare more mounted police for the management of traffic. There is a noticeable improvement on Fifth Avenue and as an educational measure the good that is accomplished will be more or less lasting. I am aware that the three men that are there have been robbed from other places and that those places suffer in consequence but the showing that is being made and the good done is second to none. No one regrets more than I that your remaining term is so short for with you and Captain Piper where you are for another year I am sure that the street traffic in New York could be as well regulated as it is in London if you could only get a large enough force.

There seems to be a growing demand for our folders. Fifty-five thousand are distributed and in press and more ordered. I am very much disappointed and disgusted that the signs have not yet been furnished and put up.

It seems as though there was some influence at work to delay them until you go out of office. Today I have been promised that they would be in place Monday at latest.

# **Rules for Driving**

**COPIES OF THESE RULES CAN BE OBTAINED  
AT ALL POLICE STATIONS.**

**Rules for Driving Issued by the  
Police Department of the  
City of New York.**

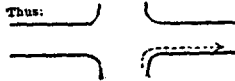
**Article 1. Importance of Keeping to the Right,  
Passing, Turning, Crossing and Stopping.**

Sec. 1. Slowly moving vehicles shall keep to the right and as near the right-hand curb as possible, so as to leave room in the middle of the street for vehicles going at a greater speed.

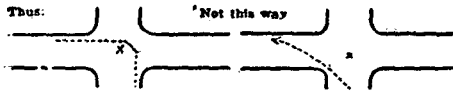
Sec. 2. A vehicle meeting another shall pass on the right.

Sec. 3. A vehicle overtaking another shall pass on the left side of the overtaken vehicle and not pull over to the right until entirely clear of it.

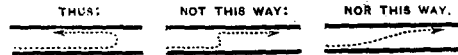
Sec. 4. A vehicle turning into another street to the right shall turn the corner as near the right-hand curb as practicable.



Sec. 5. In turning into another street to the left the vehicle shall turn around the center of intersection of the two streets.



Sec. 6. A vehicle crossing from one side of the street to the other side shall do so



Sec. 7. No vehicle shall stop with its left side to the curb except on established cab, hack and truck stands.

Sec. 8. Unless in an emergency, or to allow another vehicle or pedestrian to cross its path, no vehicle shall stop in any public street or highway of this city, except near the right-hand curb thereof and so as not to obstruct a crossing.

#### Article II. Signals.

Sec. 1. In slowing up or stopping, a signal shall always be given to those behind by raising the whip or hand vertically.

Sec. 2. In turning, while in motion, or in starting to turn from a standstill, a signal shall be given by raising the whip or hand, indicating with it the direction in which the turn is to be made.

#### Article III. Right of Way.

Sec. 1. On all the public streets or highways of the city all vehicles going in a northerly or southerly direction shall have the right of way over all vehicles going in an easterly or westerly direction.

Sec. 2. The officers and men of the Fire Department and Fire Patrol, with their fire apparatus of all kinds, when going to, on duty at or returning from a fire, and all ambulances, the officers and men and vehicles of the Police Department, United States mail wagons and all physicians who have a police permit, shall have the right of way in any street, and through any procession.

Sec. 3. Subject to the preceding section of this article, surface cars, running on tracks laid in the streets especially for their use, shall have the right of way along such tracks, between cross streets, over all other vehicles; and the driver of any vehicle, proceeding upon the track in front of a surface car, shall turn out immediately upon signal by the motorman or driver of the car.

Sec. 4. No vehicles shall so occupy any street as to interfere with or interrupt the passage of cars or other vehicles.

#### Article IV. Speed.

No vehicle shall proceed at any time at a greater speed than the law allows and is safe and proper under the conditions then obtaining. (See City Ordinances for speed-rate limits; also for regulations for lights and sound signals.)

#### Article V. Definitions.

Sec. 1. All avenues and streets with a parkway in the middle shall be considered as having but one roadway.

Sec. 2. The word vehicle includes equestrians and everything on wheels or runners, except street cars and baby carriages.

**Police Department of the City  
of New York.**

**300 MULBERRY STREET.**

October 30, 1903.

**Traffic Regulations.**

Section 315 of the Greater New York Charter gives the right to and makes it the duty of the Police Department "to regulate the movement of teams and vehicles in streets, bridges, squares, parks and public places."

Sections 1, 6 and 7 of Article I are authorized by the section of the Charter above quoted. Sections 6 and 7 are applicable only to crowded thoroughfares. The other rules here printed are based upon the provisions of the Penal Code, the City Charter, and the City Ordinances, reference to which can be obtained at every police station.

All drivers of vehicles are requested to comply with these rules in order to facilitate traffic, prevent blockades, avoid accidents and loss of life, and diminish the loss of time and money due to the lack of observance of rules for the regulation of street traffic.

Members of the Police Force will strictly enforce the foregoing rules.

F. V. GREENE,  
Police Commissioner.

Please do not suppose that I wish to interfere or dictate in any way what should be done but as you know I have been working on this thing for a long time and am much interested to have it succeed and the time we can count on is only a few days.

The placing of more mounted men at the same time the signs are put up is what I should very much like to see.

Yours very truly,

WM. P. ENO.

General Greene's reply:

Police Department, City of New York,  
December 7th, 1903.

Dear Mr. Eno: Your letter of December 2d was duly received. After talking the matter over with Captain Piper I have decided to make the Fifth Avenue Mounted Squad consist of a roundsman and five men, between Thirteenth and Fifty-ninth Streets, which will give posts ranging from seven to eleven blocks in length, and I think will improve the service in the handling of traffic on Fifth Avenue. The mounted men already there have done excel-

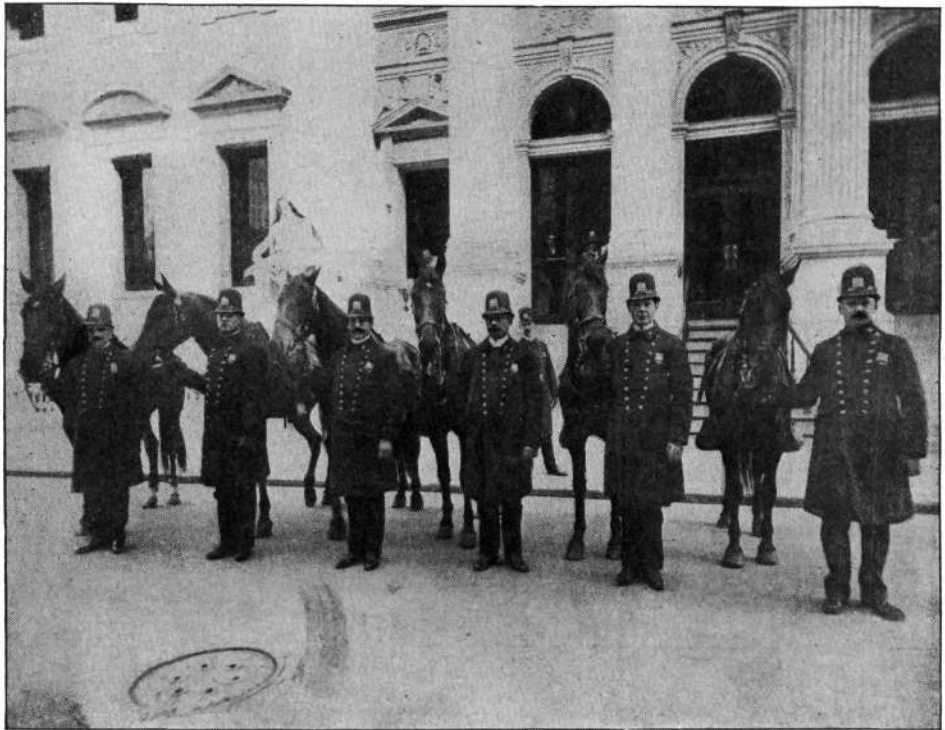


FIGURE 65.

The World's First Mounted Traffic Squad, New York City, 1903.

lent work, and I think it is proper to increase the force at the expense of the Park, where the necessity for their services at this season of the year is somewhat diminished.

I am sorry to hear of the delay in putting up the traffic signs and regret that that is a matter beyond my control.

Sincerely yours,

F. V. GREENE,  
*Police Commissioner.*

Letter to the New York Chamber of Commerce:

13 South William Street,  
New York, Dec. 8, 1903.

To the Committee on Street Traffic Regulation,  
New York Chamber of Commerce.

Gentlemen: I send with this letter some of my publications on Street Traffic Regulation hoping that they may be of service to you in the work which I am very glad you are to take up, believing that your committee, with the influence which the Chamber of Commerce has, can do much better than an individual. These publications are the result of several years of study and work.

Something has already been accomplished. The public has been awakened to the deplorable condition of affairs, due to lack of traffic management, and demands a proper system.

I have had printed 50,000 folders which are being issued by the Police Department and more can be had if required.

The signs, alluded to in my article of November 14th, I hope will be up by the time you receive this letter.

The object of the folders and signs is to teach the drivers the proper methods of driving and at the same time to enlist them as enforcers themselves of traffic regulation. Once they know their rights they will resent having them interfered with by drivers who do not observe the Rules of the Road.

Three mounted policemen have been put on 5th Avenue and are doing exceedingly good work but we need more immediately.

The work has so far, to a large extent, necessarily been confined to certain limited areas but the object lesson being taught will be far reaching.

Some definite plan is necessary for the future. The one which has met with greatest success abroad is through a Commissioner of Street Traffic who is a member of the police force. If such a plan is adopted here, the Charter will have to be amended to empower the Mayor to appoint him. He should frame such rules and regulations as are from time to time required, and experience calls for them. They should be passed upon by the Police Board, approved by the Mayor and become law.

\* \* \* The general duties of the police are increasing in proportion to the growth of population but the importance of traffic regulation enforcement increases in proportion to the number of people and vehicles that pass through our streets within a given time. If we were to say that the duties of the police (other than traffic duties) were increasing in arithmetical progression and the traffic duties in geometrical progression, it would not be far from the truth.



If a building seventy-five feet high is replaced by one three hundred feet high, its population is practically multiplied by four but the street upon which it stands remains the same width. Our residential population is doubling every few years, but there is no increase of room in our streets. The same may be said of the suburban population which comes to New York daily for business purposes. \* \* \*

Yours very truly,

WM. P. ENO.

On December 9th, 1903, the new ordinance of the alderman passed and on December 10th I wrote the following letter to the Mayor:

New York, Dec. 10, 1903.

To His Honor, the Mayor of New York.

Dear Mr. Low: I am sending you a copy of a letter to the Chamber of Commerce. I also include an article which I published November 14th and the ordinance which I introduced year before last. When you see the Aldermanic Ordinance just passed you will observe that most of the clauses are taken from mine but the wording somewhat changed.

The little folders which I have had printed and which are being issued by the Police Department are, so far as they go, a revision of my proposed ordinance. It does not so much matter about the difference in wording, except that it would be, perhaps, as well to have the ordinance and the police regulations uniform. What is serious, however, is the interpolation of several clauses which will work mischief and the omission of others which are the most needed of all at the present time.

I am in hopes, as you will see by my letter to the Chamber of Commerce Committee, that this whole subject will be taken out of the hands of the Aldermen permanently and without unnecessary delay. Captain Piper and I were at work most of yesterday afternoon revising the ordinance and meet again today. Tomorrow I hope to send you a copy of our suggestions.

I trust you will be able to find time to give this matter some of your personal attention, as I believe nothing is of more importance for the welfare of the city at the present time.

I have arranged the papers I am sending you so as to be easily read in proper order.

Very sincerely yours,

WM. P. ENO.

On the same day that General Greene signed the Police Traffic Regulations I asked him to have signs made in regard to vehicles keeping near right hand curb but as he had no authority to do this he referred me to the President of the Borough, Mr. Jacob Cantor, to whom I went and he immediately assented to the proposition. These signs were erected on December 12, 1903, and are still used in New York. They are believed to be the first traffic signs used in the United States.

# SLOW MOVING VEHICLES KEEP NEAR RIGHT-HAND CURB.

RULES FOR DRIVING CAN BE OBTAINED AT ALL POLICE STATIONS.

FIGURE 66

On the same day, I wrote the following letter to the Police Commissioner:

New York, Dec. 12, 1903.

General F. V. Greene, Police Commissioner,  
300 Mulberry St. City.

Dear General Greene:

The ordinance passed by the Aldermen comes up at a public hearing Monday at 11:00 o'clock at the Mayor's office. It has been carefully gone over and I am sending you a list of the changes which seem necessary to free it from serious objections. I enclose you copy of a letter I am sending to Mayor Low.

If you will give me your efficient help once more I think we can get the matter straightened out. A letter from you to the Mayor would strengthen his position, as he trusts very much in your good judgment.

I have been intending to suggest for your consideration the advisability of your asking the papers to call attention to the signs now on Fifth Avenue and to the folders and to say that the instructions on the signs apply to all streets and that neglect to obtain the folders by drivers is inexcusable. A word from you in this connection will carry much weight.

Yours very truly,

WM. P. ENO.

Reply from General Greene:

Police Department of the City of New' York,  
300 Mulberry Street,  
December 14, 1903.

Dear Sir:

Your letter of December 12th is received. Captain Piper will represent me at the public hearing on the Right of Way Ordinance this morning and will state what I have already stated to the Mayor at his request, namely, that, while the Police Department regrets that the changes have been made in the ordi-

nance so that it differs from the form in which it was submitted as the result of consultation with the Department, yet, it is deemed best that the present ordinance should be approved and put into effect and that these changes can be corrected by subsequent amendments.

Yours very truly,

F. V. GREENE,  
*Police Commissioner.*

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Unfortunately, on January 1st, 1904, Mayor Low and Police Commissioner Greene's terms of office expired but luckily Captain Piper remained in charge of traffic. A hiatus in traffic regulation now began, the new Commissioner not supporting the Deputy Commissioner and it was almost impossible for the latter to continue the work.

However, as arranged for by General Greene, a Traffic Headquarters at No. 1 East 27th Street was established on December 12, 1904.<sup>1</sup>

On December 24, 1904, I published an article illustrating a proposed dummy cop, picture of which will be found on Page 38 of this book. I give this as I believe it was the first designed.

On November 21st, 1905, the plan for traffic at the Metropolitan Opera House and neighboring theatres which you will find on Page 126 of the book, was put into effect by Deputy Police Commissioner Piper and on the morning of November 22d, he telephoned to me to look in the New York Herald of that date and immediately hung up. The article was headed "New Traffic Rules Empty House in Little More than Half Hour." I was sorry not to see the name of Captain Piper mentioned as he was responsible for putting my suggestions into effect.

On January 1, 1906, Major General Theodore A. Bingham was appointed Police Commissioner and on January 6th, I wrote him the following letter:

January 6, 1906.

To General Bingham,

My dear Sir:

I am sending you a pamphlet containing a synopsis of what was done in street traffic regulation beginning six years ago and extending up to last January. If you are interested, the articles in the larger wrapper will give you a more complete knowledge of the development of the work and of its future uses.

My relations with General Greene and with Captain Piper were most cordial. I was very anxious to have the same relations with Mr.——— but found it impossible.

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<sup>1</sup> Curiously enough, the building chosen was on the site of our old stable behind our house on Fifth Avenue in which I had lived since 1869 until a few years before this time.

I am sure I can assist you to undo the mistake made by Mr.----- and to perfect future traffic management. If you should wish to avail yourself of my services please command me. I should, however, tell you that I am not looking for any position or personal advantage.

I am sending you this without the formality of an introduction though we have many mutual friends.

Assuring you of my wish to be of assistance to you personally as well as to perfect the work to which I have given so much of my time and energy, I am,

Yours very truly,

WM. P. ENO.

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Early in February, 1906, Deputy Commissioner Piper resigned and was unfortunately replaced by one without experience in traffic regulation. This Deputy replaced the police regulations by the ordinance which had been passed in 1903. This was due to his not having been informed as to the history of the adoption of the Police Traffic Regulations on October 30, 1903. He apparently did not know that the provisions of the City Charter took precedence over ordinances. The regulations were also taken out of the Police Manual, to remain out of it and out of use generally until restored by the efforts of Deputy Commissioner Frederick A. Bugher in 1907.

On May 26th, 1907, I published a pamphlet entitled "How to Improve City Car Service." This was revised and reproduced in my first book on traffic entitled "Street Traffic Regulation" published in July, 1909, from which I quote the following Preface:

## PREFACE

The work of which this volume treats was begun in 1899. A complete history since its beginning has been kept in a series of scrap books comprising all the data that could be obtained from other countries, besides local articles, clippings, letters, photographs, cuts, etc. It was at first taken up because of personal realization of needless inconvenience through the blocking of streets by ungoverned traffic and difficulty in getting carriages at the opera and theater. Its usefulness in saving life, time and money became so apparent that it has since interested me absorbingly.

The greatest difficulties I met with, in my unofficial capacity, were the indifference and ignorance of city officials, and their slowness in realizing their duties in regard to the development of a thing that was new to them, and I have often been forced to be disagreeably insistent in order to accomplish anything at all.

It took several years to get traffic regulations started, but shortly after that had been attained, a change of administration upset the most important part, and it became a choice as to whether to abandon what I had given so much effort to accomplish, or to try to bring it back again to where it had been. I chose the latter. It has now progressed far beyond that point. The work on the streets is carried on by an exceedingly well trained and faithful body of men. The office organization however, is sadly undeveloped, lacking a complete system for the keeping of records. There is still much to do in simplifying and improving special regulations. The granting to the Police Department of ample power of summons and complaint is absolutely necessary to avoid useless hardships to citizens and waste of time by the police officers.

I am more fully aware than any one else how imperfect and incomplete is this book. Much of it has been rewritten several times as my knowledge has increased. I have decided, however, to publish it without waiting any longer, as something of the kind has been sadly needed, and there is no other work on the subject. \* \* \*

WILLIAM PHELPS ENO.

June 3rd, 1909.

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I quote from the Introduction:

#### INTRODUCTION

Regulation of street traffic was unknown in New York up to January, 1900. Although traffic was much less than now blockades were frequent throughout the city. Many unnecessary hours and often the greater part of a day and night were consumed in transporting merchandise from point to point, especially in the downtown shipping districts. Charges were increased proportionately with the time consumed. Conditions were execrable so far as time, economy, comfort and safety were concerned, and the police, without systematic direction, were powerless and in fact practically at the mercy of the mob. Collisions between policemen and truckmen, cabmen and others were of common occurrence, and it was only by resort to the "night stick" that in many instances blockades could be cleared away.

When I began this work ten years ago there was no Bureau of Street Traffic, no Traffic Squad and not one officer employed on street traffic duty. As the police manual says: "It may well be doubted now whether the business of New York could get on without the Traffic Squad. It is vital to the life of a great city that its life-blood, namely

traffic, should circulate." The work has so increased that it has already become necessary to organize it in 4 precincts as follows:

- A. At City Hall, Manhattan.
- B. At 36 E. 9th St., Manhattan.
- C. At 1 E. 27th St., Manhattan.
- D. At 118 Waverly Avenue, Brooklyn.

The Traffic Squad, proper, on December 31, 1908, consisted of 680 men. To these should be added the detail of 32 men to the License Squad, really traffic duty, and of 31 from the Bridge Squad for traffic duty at theatres, making in all 743 men or about 7½ per cent of the whole Police Force. Of this number, 138 men are mounted and 18 are on bicycles. All policemen when on the streets should attend to traffic duty when emergency or necessity requires, so that really a much greater part than 7½ per cent of the police work is devoted to Street Traffic Regulation, which has now become of more importance than any other one thing that the Police have to do with. It is a question for the future whether or not there will be a part of the Police Force designated as the Traffic Squad. *Traffic regulation, to a greater or less degree, is the duty of every uniformed officer; the only members of the force who have no traffic duty are the ununiformed detectives.* The creation of the Traffic Squad outside of its relation to special work has done a great deal of good in bringing to the front a new and better average type of policeman.

*Unless the height of buildings is regulated by law, or by taxation in proportion to their height, or by a combination of the two methods; unless a complete plan for underground rapid transit, sewers and pipe galleries be adopted, before more obstructive subway work is undertaken, no street traffic rules or regulations or enforcement of them can possibly provide for the natural increase of surface traffic, either on the sidewalks or on the roadways of New York City.*

*What would have cost practically nothing but a little forethought, a few years ago, will now require tens, and, if continued, hundreds or perhaps thousands of millions, eventually.*

*It is the old story of "a stitch in time saves nine," and it is also a serious reflection on the intelligence of the citizens of New York that they have not sooner taken sufficient interest in these matters of civic government and, by blotting out corrupt politics and appointing decent men, and running their city on business principles, avoided such costly blunders.*

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Copies of this book were supplied to the entire Traffic Squad of New York, numbering something like seven hundred and forty-three.

The following are a few of the letters received in acknowledgment of the book:

October 13th, 1909.

My dear Mr. Eno:

Your book on Street Traffic Regulation is a great credit to your ability and long continued effort in the interest of the City of New York. The majority who read and study it, will appreciate only the results of your labor. To me the book is a record and history of many hard fought battles, fights against stupid, ignorant opposition; fights against political pull; fights against tradition and fights against custom. The people little know how long and how persistently we fought the opposition which arose with every new step we took, but in your book almost every paragraph to the initiated is a record of one more fight won. The City owes you a debt of thanks (which you will never receive) for the great assistance you have rendered the several city officers who have from time to time taken an interest in better traffic regulation; it owes you a debt too, for the time and money you have so freely given in this traffic work.

The placing of a concise set of regulations in the hands of drivers and police; the cautionary signs for slow moving vehicles, and the mounted police regulating traffic are monuments to your energy and intellect, and you should be proud of the architecture and position of these monuments.

Wishing you even greater success in your efforts abroad, I remain with many thanks for the copy of the Regulations,

Sincerely,

ALEXANDER R. PIPER,

*Captain U. S. Army, Deputy Police Commissioner in charge of traffic.*

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303 North Street, Buffalo, N. Y.,  
October 14, 1909.

Mr. W. P. Eno,  
1771 N Street, Washington, D. C.  
My dear Sir:

I have just been looking over your book on Street Traffic Regulation of which you were good enough to send me a copy, and it reminds me how deeply the city of New York—and through it, all the large cities—are indebted to you for the persistent, intelligent and well directed efforts which you have made for ten years past to improve the traffic conditions on crowded thoroughfares. The traffic regulations of the Police Department were first issued in 1903, when I was Police Commissioner, at your suggestion and in accordance with the recommendations of Deputy Commissioner Piper whom I had sent to London to study the problem there. These regulations have never been revoked but have been modified and improved, with increased experience, until now the traffic is regulated in a manner befitting a city of its importance; and the slim young patrol-

man on his well groomed horse is now one of the best known and most popular sights in the city. It is impossible to imagine, now, the existence of traffic without the regulations. Their suspension for an hour during the busy part of the day would result in blockades involving large financial losses and would probably precipitate a number of riots.

The plan for street traffic regulation owed its inception to you, and you have followed it up consistently and persistently to its present almost perfect development; and in so doing, you have conferred a benefit upon New Yorkers, and the dwellers in other large cities, of very large proportions. I beg leave to congratulate you heartily upon the success of your efforts.

Sincerely yours,

F. V. GREENE,  
*Maj. Gen. U. S. A., Police Commissioner of  
New York City when the work was started.*

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October 9, 1909.

My dear Mr. Eno:

I am very greatly obliged to you for sending me a copy of your very interesting book on the Traffic Regulations. I have enjoyed it very much.

You certainly are to be congratulated on the results of your efforts, for you worked against tremendous odds, and a provincialism that is one of the most singular characteristics of this city. You have won, however, and you must feel very happy over the outcome.

Yours very truly,

GHERARDI DAVIS,  
*First Deputy Police Commissioner  
when traffic work was begun in New York.*

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President's Office, Yale University,  
New Haven, Conn.  
October 12, 1909.

My dear Mr. Eno:

I have more than once expressed my enthusiastic approval of the work which you have done and are doing for sensible and practical methods of street traffic regulation. Anybody who compares New York today with New York a dozen years ago will see the difference. Anybody who knows the inside history of the matter will understand how much of that difference is attributable to Mr. William P. Eno.

Faithfully yours,

ARTHUR T. HADLEY.



Smithsonian Institution,  
Washington, D. C.,  
November 4, 1909.

Mr. William Phelps Eno,  
1771 N Street,  
Washington, D. C.

Dear Mr. Eno:

I wish to thank you for your very interesting, instructive and valuable work on *Street Traffic Regulation*, a copy of which I found at home a few days since.

It is full of suggestion on the subjects of which it treats, and cannot fail to be of great service to all cities that have the traffic problem to contend with. Every person who has occasion to use the streets of any of our cities is indebted to you for what you have done and what you will do through the influence of this book, and the future development of plans along the same line.

Congratulating you upon the success which you have thus far obtained under difficulties that would have discouraged most men, I am,

Sincerely yours,

CHARLES D. WALCOTT,  
*Secretary of Smithsonian Institution.*

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In 1909 I went to Europe to study public carriage service in London and Paris.<sup>1</sup> While there I accumulated data for a report on this question and on my return to America, the report was published in pamphlet form (February 12, 1910).

In 1912, Miss Sophie Irene Loeb made an investigation similar to mine and on her return from Europe we cooperated successfully in getting this service reformed in New York and afterwards in some other cities. Miss Loeb's excellent work made this possible. I do not believe I could have accomplished it alone. My pamphlet was used as a basis.

Sometime after that, at the request of Mayor Gainor I went with the Inspector in charge of traffic and laid out all the cab stands in New York City, including Brooklyn and Coney Island. I had succeeded before this in getting some cab stands put in the middle of the streets, on the London plan, and more of this kind were added on these trips.

I quote here a few letters received about this time as they throw an interesting light on the state of traffic regulation at that stage in its development and the feeling which certain prominent men had towards it:

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<sup>1</sup> The history of the work in France and England is given in a later part of this appendix.

New York Transportation Co.,  
49th St. & 8th Avenue,  
New York, N. Y.

Feb. 5, 1910.

William Phelps Eno, Esq.,  
1771 N Street,  
Washington, D. C.

Dear Sir :

The excellent results of the educational work you have done in New York are, I think, apparent to all who are concerned in conducting any form of public or private transportation service, and I should like you to know that I as one of them highly appreciate what you have done.

With many thanks, believe me,

Very truly yours,

R. W. MEADE, *Pres.*

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Graduate School of Yale University,  
New Haven, Feb. 23, 1910.

Mr. William P. Eno,  
Saugatuck, Conn.

My dear Mr. Eno: It is always a great pleasure to receive your published papers. You have been at this matter of regulating the street traffic for some time, and have done it so carefully, skilfully, and intelligently that it has done very much to accomplish the object which you sought to gain with the greatest possible co-operation and the least possible friction. You are a public benefactor and I take off my hat to you.

Trusting to see you whenever you are in New Haven, I am,

Truly yours,

ANDREW W. PHILLIPS,  
*Professor of Mathematics.*

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Yale Club, New York,  
February 25, 1910.

Dear Mr. Eno:

I have not only read your book, here in the library, but derived lively satisfaction from the fact it was you who had left his mark. It is worth while to have started a wave now far outspreading, and I am proud of you. Some of these days when I come across a photo of an elaborate escalator equipment proposed for 5th Avenue and 42d Street and which appeared in the daily press at the time, I shall inscribe on it, "killed by the man who knew a better way" and send it for your scrap book.

Yours very truly,

CHAS. D. SEEBERGER,  
*(Inventor of the Escalator)*

(Letter of Archibald Hopkins, of the Court of Claims, to the Cincinnati "Inquirer," March 3, 1910.)

Washington, D. C.,  
March 3, 1910.

### The Regulation of Street Traffic.

One of the most noticeable things about the life of the time and one of the most universal is the very active movement in evidence for the beautification and general improvement of cities. It includes not only everything that goes to make a city attractive and beautiful, but everything that can contribute to the comfort or convenience of its citizens. One of the latest matters, despite its importance, to receive attention, has been the regulation of street traffic. Every one at all familiar with conditions in the congested suburbs of any of our large cities, but especially of New York, is aware of the danger and delay which has been attendant upon the regular movement of traffic. There has been no system nor effective regulation, every one having been left to take his chances and get on as best he could. Accidents were numerous and the loss of time very serious.

It seems strange that such an intolerable state of things should not have been taken in hand by the municipal authorities, but such was the case, and it was left to a public-spirited citizen, observant and alert, to make a careful study of the situation and suggest improvement and remedies. Mr. William Phelps Eno, of New York, after familiarizing himself with foreign methods, about ten years ago devised a system which comprised all the best foreign ideas on the subject, in combination with those he had evolved as peculiarly applicable to New York. He first induced the Police Department to detail a handful of officers to test his plan, and so well was it found to work that there has grown up now a large, especially selected traffic squad who keep things moving everywhere throughout the city without the clashing, friction and exhibition of objurgatory energy found necessary in other days. Mr. Eno was ably seconded by Mr. Frederick Bugher, Assistant Police Commissioner, and they have together brought the system up to a point of perfection which has found eager imitation both in London and Paris.

161 Devonshire Street,  
Boston, Mass.,  
January 20, 1911.

William Phelps Eno, Esq.,  
Washington, D. C.

My Dear Mr. Eno:

The following is the passage of my address before the Interstate Commerce Commission on January 11th referring to you:

"Ten years ago the crying demand in New York and in all the large cities, the greater threat of the future, and the embarrassment of the present, was the congestion of traffic. Everyone of you remember what the condition in New York was ten and nine years ago. One of those theorists, a man with brains, and with public spirit, William Phelps Eno, came to the conclusion that traffic regu-

lation on the New York streets would remove congestion; that it would save immense time to the passers, to the working men, as well as to the pleasure seeker. It then seemed as if that city would need to put through new streets in order that the traffic might move through that great and growing city. And today, with an extraordinary increase of population and of business in New York, you pass through its streets, teeming with vehicles and with human beings, practically without interruption—why? Because William Phelps Eno was willing to and able to bring to the attention of the people of New York and of the officials of New York as he has since to the officials of Paris and of various other cities in Europe and America, the possibility, by thought and regulation, of making that traffic move practically without interruption through existing streets. That is scientific management applied to the solution of that problem.”

The reference was in connection with the delays in freight transportation.

Yours very truly,

LOUIS D. BRANDEIS,  
*Since appointed Associate Justice of the  
Supreme Court of the United States.*

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February 19, 1912.

My Dear Sir:  
Mr. Wm. P. Eno,

It gives me pleasure to add my testimony to the value of your work and studies in the matter of handling street traffic in large cities.

No one, so far as I know, has ever written upon the subject. While you have deeply studied it and given the results of your work in publications of the utmost clearness and value.

You have performed a valuable public service and it is only to be hoped that authorities in charge of traffic will be willing merely to use the results of your work, placed ready before them and only needing to be utilized.

Wishing you continued success in your chosen work and with warm regard.  
Believe me,

Very sincerely yours,

THEO. A. BINGHAM,  
*Brig. Gen'l U. S. Army (retired), formerly  
Police Commissioner, City of New York.*

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The Outlook  
287 Fourth Avenue  
New York

Office of  
Theodore Roosevelt

February 29th, 1912.

My Dear Mr. Eno:

I have received your book on street traffic regulation. You have done a genuinely valuable piece of work. No one can compare the condition of the

traffic in New York streets, and especially the down-town traffic, after your work was done with that of ten or twenty years ago without realizing the value of your service to the city. When I was Police Commissioner, I was necessarily in touch with this whole question, and am therefore in a position to recognize what you have done.

Sincerely yours,

THEODORE ROOSEVELT.

Mr. William P. Eno,  
1771 N Street,  
Washington, D. C.

Oakdale, Long Island, N. Y.,  
Feb. 29th, 1912.

Dear Mr. Eno:

No one knows better than I how hard you have worked and how much you have accomplished in improving conditions relative to the movement of vehicular traffic in New York City. Having served four years as Deputy Commissioner of Police in charge of street traffic, I consider myself qualified to speak of the great assistance you have given to the New York Police Department in the working out of the traffic regulations. You will, no doubt, remember the many hours you and I worked together over the exact wording of each paragraph of the regulations. I shall always be indebted to you for your assistance. If your ideas, especially with reference to public hacks, could be put in force without political interference, it would work wonders for the hack using public and would also greatly facilitate the general movement of street traffic. One of the most needed reforms in New York City today is the proper licensing of all drivers especially those driving public vehicles for hire. I know of no better system than the one suggested in your book. It has done a great deal of good because it has interested the public and explained to them the practical side of the regulation of street traffic. When I was Deputy Commissioner of Police I caused to be distributed to each member of the Department attached to traffic precincts a copy of your book and I assure you that they benefited by reading it. \* \* \*

You need no better illustration of what the public thinks of the regulation of traffic in New York than was given last summer when an effort was made to abolish the traffic police. Your work had much to do with the way in which the citizens rose and demanded of the legislature that the New York Traffic Police be kept intact. \* \* \*

Assuring you of my highest regard.

Believe me sincerely,

F. H. BUGHER,  
*Formerly Deputy Police Commissioner  
in charge of Traffic for four years.*

To Mr. Wm. P. Eno,  
Washington, D. C.

The Fifth Avenue Association,  
New York.

March 12th, 1912.

William Phelps Eno, Esq.,  
1771 N Street,  
Washington, D. C.

Dear Mr. Eno:

I am sure that no one thinks of the regulation of traffic in this great city of ours without its at once suggesting your name.

\* \* \* \* \*

When we organized this Association several years ago, I hailed with delight the generous and earnest way in which you responded to my requests to help us in doing something along traffic lines. You came to our meetings; you delivered inspiring and instructive addresses, and you enabled me to distribute your most valuable book on this whole subject among some of our leading people. When you were not able to be in this city, you helped me with your advice by letter, and you aided me to make better replies to statements concerning traffic that I thought should be combated.

Personally and officially, I have been extremely interested in your work. \* \* \* May I express the hope that while you are going abroad to undertake more work there, you will not neglect us? We need you very much and, as an Association, we are very appreciative of what you have done for us, and for our section.

Yours very truly,

ROBERT GRIER COOKE,  
*President.*

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Chamber of Commerce of the State of New York  
65 Liberty Street, New York

March 15, 1912.

William P. Eno, Esq.,  
1771 N Street,  
Washington, D. C.

My Dear Mr. Eno:

I learn from our mutual friend, Mr. George E. Ide, that you are about to go abroad to renew your studies and labors in connection with the traffic regulations in large cities.

The public-spirited and very effective work you have done along those lines in this city is worthy of commendation and is highly appreciated by those who are familiar with the same.

I wish you a pleasant journey and a most successful experience abroad.

Yours very truly,

B. HEPBURN, *President.*

The Merchants' Association of New York  
54-60 Lafayette St.,

William P. Eno, Esq.,  
1771 N Street,

March 16, 1912.

Washington, D. C.

My Dear Sir:

The people of New York are under great obligation to you as the originator of effective measures for abolishing the chaos of team traffic which formerly prevailed in our streets. From your valuable suggestions and your energetic work proceeded the methods formulated by Captain Piper and adopted by General Greene, then Commissioner of Police.

The Traffic Squad was organized as the instrument for giving effect to the suggestions originated by you, and it has since continued to be a most useful means of traffic regulation.

The Merchants' Association has been continuously interested in this subject and particularly in promoting the work of the Traffic Squad and has, therefore, become familiar with your useful and untiring work in this connection. On its behalf I am glad to make acknowledgment of your useful public service in organizing street traffic, and thereby promoting the interests of business men and the comfort and convenience of citizens.

Yours very truly,

*The Merchants' Association of New York.*

HENRY R. TOWNE,

*President.*

In 1911 the New York Traffic Squad was threatened with extinction. This carefully picked and highly trained body of men had achieved distinction for the efficient part they played in directing traffic. A new deputy commissioner in charge of traffic, possibly inspired by some older members of the force who were jealous of the Traffic Squad's popularity decided that all the members of the force should share in this work. This was under consideration when the following letter dated June 28, 1911, was received from the Traffic Squad Benevolent Association of the Police Department of the City of New York:

“On behalf of the members of this Association, who as you already know, comprise nearly all of our famous Traffic Squad, I desire to call your attention to a matter of great concern—which might also be called a disaster—that is about to overtake us, and to ask your valuable assistance in saving from extermination that well known splendid body.”

Another letter on July 1st says:

“Trusting you will continue your efforts in the matter at hand and assuring you of the everlasting gratitude of the men involved for your success in the matter of such vital importance to them.”

The trouble that the Traffic Squad was in was due to the fact that the Deputy Commissioner in charge of Traffic at that time did not understand the situation but after our interview he changed his views completely and did all he could to undo what had been done. On July 22, I received a telegram signed by the president of the Traffic Squad Benevolent Association as follows:

“Accept everlasting gratitude of members of Traffic Squad Benevolent Association for your loyal support of amendment to Jackson law saving Traffic Squad.”

Other letters:

New York, Aug. 3, 1912.

My dear Mr. Eno,

Thank you for the very attractive French copy of your work on Traffic Regulation—what a tremendous amount of labor you have expended on this important subject! and how appreciative city governors *ought* to be.

With renewed congratulation and best wishes,

Very truly yours,

THEO. A. BINGHAM,  
*Formerly Police Commissioner of New York City.*

President's Office,  
Woodbridge Hall.

Yale University,  
New Haven, Conn., Aug. 27, 1912

My dear Mr. Eno:

Your traffic ideas are so good that I am much pleased and not at all surprised to see them in a French dress. The more widely they can be circulated the better.

Faithfully yours,

ARTHUR T. HADLEY.

The Quarter-Deck—Sea Gate,  
New York Harbor, New York,  
Sept. 8, 1912

Dear Mr. Eno:

I have just received your excellent little work in French on Traffic Regulation. Paris certainly needs their application. Can we ever convince New Yorkers that isles of safety are not inventions of the Wicked One? Many thanks for the book.

Yours very sincerely,

GHERARDI DAVIS,  
*First Deputy Police Commissioner  
when traffic work was begun in New York.*



In 1914 we succeeded in obtaining a small building on West 57th Street where drivers of public vehicles secured their licenses and the meters of taxicabs were tested. Sometime afterwards, we got a larger building (50' x 200') extending from 57th to 58th Streets.

In September, 1914, I got permission to try out rotary traffic at 57th Street and Fifth Avenue, New York, but it was not until December of the same year that a trial was made. I, however, was not furnished with the signs that were essential and the thing was badly done but notwithstanding it worked remarkably well and would have continued had it not been for the fact that because it did work so well the members of the Traffic Squad were afraid that their services would not be needed when this plan was adopted generally and they had enough influence to have it discontinued. It remained in effect for about a month. This was the first trial of rotary traffic at a simple right angle intersection.

In 1915 rotary traffic was adopted in Detroit at the intersection of Grandview Avenue and Farmer Street where the space for an inscribed circle is 62½ feet, which is rather too small. However, at last reports it was still in operation. After that it was tried in New Haven, Connecticut, where George, Church and Meadow Streets and Congress Avenue converge. I believe it is still in successful operation there. In 1918 it was put in operation in Washington at the intersection of 16th and K Streets but discontinued on account of interference by special interests.

Rotary Traffic has been spreading all over the world and is taking the place of the block system to great advantage where there is sufficient room for an inscribed circle of 75 feet or more within the corners of the streets.

During the last few years I have taken less interest in traffic in New York because of the indifference of the authorities and, may I also add, incompetence? The work, however, has not been neglected but has continued largely in other countries where the authorities seem to be more openminded.

A good deal of my time was also taken up, beginning in the spring of 1917 until after the Armistice, in organizing and directing the Home Defense League of the District of Columbia with which I was entrusted by the President. In 1917 I issued a Home Defense League handbook for which there was a large demand from other cities. The following letters which were received will give some information in regard to it:

Narragansett Pier, R. I.

July 26, 1917

My dear Mr. Eno:

Received with much pleasure your pamphlet of "Home Defense League." You are in your element and can do fine work now. I'm glad because I think

what you will do will be a suggestive model both for the present and the future. In every way the "lay-out" is admirable.

With warm regards and best wishes,

Very sincerely,

THEO. A. BINGHAM,  
(Major-General) formerly Police Commissioner of New York.

---

69 East 77th Street, New York City,  
July 27, 1917

Dear Mr. Eno:

That is a fine bit of work you are doing in the Home Defense League of Washington.

Does it mean that you are spending the hot summer in Washington? I shall probably have to go to Washington next week and am wondering if you will be there and if you can put me up.

These are great days.

Sincerely yours,

F. V. GREENE,  
(Major-General) formerly Police Commissioner of New York.

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City of New York,  
Office of the Mayor,

August 7, 1917

Hon. William P. Eno,  
Saugatuck, Connecticut.

Dear Mr. Eno:

I was glad to receive your plan for home defense in the City of Washington. I have sent it to the Police Commissioner. You are to be congratulated on your part in this good work.

Yours very truly,

JOHN PURROY MITCHELL,  
Mayor.

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I was also occupied on the Governmental Emergency Committee as Chairman of the Committee on Transportation of War Workers to and from Governmental Departments. When this work was completed, in the spring of 1919 I became Chairman of the Highways Transport Committee Advisory Board, which was a sub-committee of the Highway Transport Committee of the United States Council of National Defense, and Chairman of the District of Columbia Highways Transport Committee. In connection with the work I quote the following:

EXTRACTS FROM CIRCULAR LETTERS FROM HIGHWAYS TRANSPORT COMMITTEE,  
COUNCIL OF NATIONAL DEFENSE, U. S. A.

December, 1918.

The vitally important subject of highway traffic regulation, which is inalienably linked up with the broad subject of highways transport is to be given specialized attention by the District of Columbia Highways Transport Committee, the Chairman of which is Mr. William P. Eno, a recognized authority on the subject of traffic regulation.

Mr. Eno has not only been recognized by authorities in many countries as eminently qualified to present a detailed traffic program, but distinct recognition has been given to his advanced views on this subject in the adoption by the authorities of Paris of his highway traffic regulations. Mr. Eno was active in connection with the organization of the first traffic squad in the city of New York, and instrumental in bringing about traffic regulation of that city.

January 4, 1919.

## (a) Uniform State Traffic Law

On account of the number of agencies working on laws in the various states, and in view of the fact that there will be so much interstate highway traffic, the Highways Transport Committee has tried to bring together the various interests so that a uniform set of traffic laws may be submitted to the states. Already much work has been done by our National Committee to co-ordinate the work of other organizations, and a resolution was passed at the recent Highway Convention in Chicago endorsing the movement to draft a set of uniform regulations. It is hoped that we will be able to forward to each of the state organizations a summary of what has been accomplished and suggestions can be made and legislation introduced where it is satisfactory to the various states. Suggestions will be welcomed by the national office.

## (b) Police Traffic Regulations

Mr. William P. Eno, considered a world's authority on police traffic, has associated himself with the Washington Committee, and it is hoped that with his advice and guidance a uniform set of police traffic laws can be adopted throughout the country. While our people moved around into the various states before the war, since that time they have been even more active and it is now more important than ever that these drivers of motor vehicles should know the traffic regulations. If these police traffic regulations are uniform it will simplify travel, and with the ever increasing number of motor vehicles if this work is carried out it will be of great benefit to the Nation. Mr. Eno will direct a campaign through our organizations to develop this work.

*Executive Committee*

Walter R. Addicks  
 David Beecroft  
 Arthur H. Blanchard  
 Robert Grier Cooke  
 William P. Eno  
 Richard W. Meade  
 Joseph K. Orr  
 George H. Pride  
 Samuel W. Taylor  
 Elmer Thompson  
 Jefferson DeMont Thompson

## NATIONAL HIGHWAY TRAFFIC ASSOCIATION

OFFICE OF THE PRESIDENT  
 BROADWAY AND 117TH STREET  
 NEW YORK CITY

*President*

Arthur H. Blanchard

*Vice-President*

David Beecroft

*Secretary*

Elmer Thompson

*Treasurer*

George H. Pride

May 8, 1919.

Mr. William P. Eno,  
 Chairman, Highways Transport Committee,  
 Advisory Committee,  
 1771 N Street, Washington, D. C.

Dear Mr. Eno:

Your favor of May 7th containing latest draft of the "General Highway Traffic Regulations," dated May 8, 1919, at hand.

It gives me pleasure to state that the National Highway Traffic Association hereby adopts as its standard the "General Highway Traffic Regulations" as printed and amended under date of May 8, 1919.

\* \* \* \* \*

Anticipating the pleasure of seeing you in New York on the 14th, I remain, with kindest regards.

Sincerely yours,

ARTHUR H. BLANCHARD,  
*President.*

AHB/C

Washington, D. C.  
 February 18, 1920.

Mr. Charles Thaddeus Terry,  
 100 Broadway,  
 New York City.

My Dear Mr. Terry:

I am writing a new book on traffic and there is one statement in it which I am not sure will hold water. It is as follows:

"If, however, the United States Government should pass a Federal Highway Traffic Act now, results could be obtained almost immediately. The Act should apply to the District of Columbia and to the territories and to all post roads. It would then without interfering with states rights become National, since no vehicle could travel on a post road which did not comply with the Federal Act."

The point is whether "no vehicle could travel on a post road which did not comply etc." The book is in the printers' hands now so if you could write me by return mail I should be deeply grateful.

Yours very sincerely,

WM. P. ENO.

Mr. William P. Eno,  
1771 N Street,  
Washington, D. C.  
My Dear Mr. Eno:

February 19, 1920.

I have yours of the 18th inst. and hasten to reply to your inquiry.

The statement which you make and which you propose to put in your book is correct and sound for the reason that the United States Government has superior jurisdiction over post-roads. Furthermore, a Federal Highway Traffic Act, such as you mention, would doubtless be so drawn, at least it could be so drawn, as not to interfere with any police powers of any of the states, even though the roads affected were not, strictly speaking, post-roads.

With cordial personal regards and best wishes, I remain,

Very faithfully yours,

CHAS. THADDEUS TERRY.

*(Formerly Counsel for the Automobile Association of America and the National Automobile Chamber of Commerce.)*

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I also include the following:

The Secretary of the Interior  
Washington

February 26, 1920.

My Dear Mr. Eno:

You are doing an invaluable work—a pioneer work—for you are meeting one of the most vexatious problems of our time. To bring order out of chaos is more than a man's job.

Cordially yours,

FRANKLIN K. LANE,  
*Secretary of the Interior.*

Mr. William Phelps Eno,  
1771 N Street,  
Washington, D. C.

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Robert Lansing  
1323 18th Street  
Washington, D. C.

February 28, 1920.

My Dear Mr. Eno:

It is a matter of congratulation to the public that you are about to publish a new volume entitled "Science of Highway Traffic Regulation," because there has been so general a recognition of the value of your earlier book upon this subject.

As a pioneer and as a master in the field of regulating traffic in our streets in order to avoid collisions and to safeguard life your views based upon careful study and practical experience will be of the utmost value. What you, a single

individual, have already accomplished in bringing order out of chaos in the crowded streets of our cities and in lessening the possibility of accidents will be a monument to the great public service which you have so generously rendered.

It is as one who has been benefited by your labors that I desire to express my thanks and appreciation to you, with the hope that you will continue to give the world the results of your further study of this great subject of traffic regulation.

With my sincere regard, I am,

Very cordially yours,

ROBERT LANSING.

*(Resigned as Secretary of State of the U. S. of America,  
February 14, 1920.)*

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Supreme Court of the District of Columbia  
Chambers of Justice Siddons

March 8, 1920.

My Dear Mr. Eno:

I am very glad to learn that you are about to publish a book on the "Science of Highway Traffic Regulation." There is no one so competent to do this as you, and I trust I shall not be accused of flattery if I add, that in your unremitting zeal and disinterested labors in a cause that daily becomes more and more vital to people everywhere, you have revealed the crusader's character and spirit.

It may not be amiss to recall what I personally know of your efforts in behalf of Traffic Regulations in the nation's Capital.

It is now about eight years since you enlisted me in your body of disciples to spread the gospel of sound regulation, and many an hour was spent by them under your leadership, in the study of the underlying principles of the subject, and in the formulation of those principles in clear, concise and simple terms appropriate for enactment into law. During the period that I served as one of the Commissioners of the District of Columbia, further progress was made in the adoption, for the District, of most of the regulations then proposed, and since I have been a member of the Supreme Court of the District, we have continued in association in perfecting and promoting the adoption of the regulations as far as possible.

The latest work in which I had a share was done in connection with the Highways Transport Committee of the Council of National Defense, and then it was that the larger aspect of this matter was driven home upon me.

It would unduly lengthen this letter to point out the reasons of the national importance of standardization of and uniformity in Traffic Regulation. Enough to say that the motor driven vehicle has become an enormous factor in interstate commerce, and the frontier lines between the States of the Union are becoming more and more vague and shadowy as the automobile tends to obliterate them. It is not too much to say that a sound body of General Highway Traffic Regulations, if adopted, will greatly aid in the unification of the

people of the country, promote commerce and diminish the tragedies directly due to improper regulations or none at all.

In conclusion, let me say that I trust your book will have a wide circulation if for no other reason, for its educational value, and education on the subject is the chief prop of effective regulation.

Very sincerely yours,

F. L. SIDDONS.

Mr. William P. Eno,  
1771 N Street,  
Washington, D. C.

(At the present time Mr. Siddons occupies the position of Chief Justice of the Supreme Court of the District of Columbia.)

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In March, 1920, I published the "Science of Highway Traffic Regulation" and herewith give the Foreword:

### FOREWORD.

"Street Traffic Regulation," the first book on the subject, published in 1909—nine years after actual work was begun and six years after the General Police Traffic Regulations were officially adopted in New York—led to immediate international interest on account of what they had accomplished in this country.

In the autumn of the same year the work was well started in Paris, but unforeseen interference necessitated a return in 1910 and again in 1912, when "Le Problème de la Circulation" was issued in the French language, 10,200 copies being distributed to officials and drivers. This book put the matter in simple and concrete form, resulting in the Regulations being officially adopted in Paris on July 10, 1912, followed by practically all of the recommendations contained in the book being put into effect.

In 1913-14, it was very generally reported that Traffic Regulation was better in Paris than in any city in the world.

The war, unfortunately, has largely undone what had been accomplished. This, however, can be easily and should be speedily remedied.

The Council of National Defense, U. S. A., through its Highways Transport Committee, has devoted itself during the past eighteen months towards the standardization of General Highway Traffic Regulations.

"The Science of Highway Traffic Regulation" brings the subject up to

date, and if its precepts are followed will result in much saving of life, time and money.

I take this opportunity to correct a rather common misapprehension in regard to what the French papers have seen fit to call "Le Systeme Eno." This system consists primarily in the education of the public in the Regulations which they are expected to follow. It is because of this basic principle that the system has been successful wherever given a fair trial. Secondly, the system comprises the adoption of all the plans, methods and principles contained in "The Science of Highway Traffic Regulation," which will have accomplished its errand if it can drive its lesson home.

My sincere thanks are due to the many organizations, committees, individuals and publications which have given valuable assistance in the work. Without such help, success would not have been possible.

April 3, 1920.

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City of New York Board of Estimate and  
Apportionment,  
Municipal Building,  
Division of Public Improvements

April 29, 1920.

Mr. William Phelps Eno,  
Washington, D. C.

My Dear Mr. Eno: I have received a copy of "The Science of Highway Traffic Regulation" for which I am undoubtedly indebted to your kindness. I have read with interest the various papers and suggestions made by you as to traffic regulation. In this book, however, you appear to have put together the most valuable of all of these suggestions and I am particularly glad to have this little volume, and assure you of my appreciation of your kindness in sending it to me.

Yours very truly,

NELSON P. LEWIS,  
*Chief Engineer.*

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Pasadena, California,  
May 22, 1920.

Dear Mr. Eno:

Thank you for your book. As I read it I was impressed by the advance you have made. It is a most difficult engineering problem (this circulation of humanity) and it is rendered more so because so largely psychological in its character. You not only deal with the public at large, but, what is more serious, the minds of officials.



You are leaving something to posterity—keep at it!

As ever, yours truly,

CHAS. D. SEEBERGER,  
(*Inventor of the Escalator*)

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30 Church Street,  
New York City,  
September 16, 1920.

Mr. Wm. P. Eno,  
Saugatuck, Conn.

Dear Mr. Eno:

Your name is identified with the best thought that has ever been devoted to the subject of traffic and also with the establishment of uniformity of regulation. For these reasons, in addition to the kind cooperation which you gave me during my short term of office in the Police Commissionership, I shall be grateful to you for sending me this book.

Very truly yours,

DOUGLAS I. MCKAY.

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Washington, D. C.  
November 22, 1920.

Hon. Richard Crane,  
Prague, Czecho-Slovakia.

My Dear Mr. Crane:

My cousin, Miss Morgan, has sent me your letter to her of October 25th. I am interested in Mr. Richard Bienert's request for "two representative policemen to come to Prague for a month or two to instruct the police of this City in the regulation of traffic." I believe that if you could get two such men it would be well to keep them a little longer, especially as the extra expense would be simply the salaries for the extra time employed and the travelling expenses would be no greater. I think you would need them six months instead of two and if men could be found who spoke the language there, it would be far better than if they spoke only English. I will make inquiries and see what I can find out and then write you again. The men here in Washington are most of them very poor. The best I know of are in Detroit and New York City.

Yours very sincerely,

WM. P. ENO.

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Legation of the United States of America  
Prague, Czechoslovakia, Dec. 20, 1920.

My dear Mr. Eno:

I was very glad to receive your letter of November 22d, and appreciate

the personal interest you are taking in the matter of traffic assistance for the City of Prague.

There are large numbers of Czechs in the cities of America, and it may be possible to find two policemen who speak Czech. The matter of salaries is difficult on account of the rate of exchange. I have advised Mr. Bienert of the receipt of your letter. I wish it were possible for you to come to Prague yourself. Can you not consider it?

Very sincerely yours,

RICHARD CRANE.

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I finally found two men I thought would answer. After much correspondence with their Government officials it was decided that with the exchange as it then was it would be impractical to pay the men's travelling expenses and their regular wages while they were absent from their work in Detroit and so that had to be given up.

In May, 1921, Yale University<sup>1</sup> called a conference on Highway Traffic Regulation. The purpose of this conference was threefold: "(1) To consider some of the problems which have arisen in connection with Highway Traffic. (2) To consider various means by which traffic may be controlled or regulated. (3) To stimulate public interest in regulation of highway traffic in order to secure more rational and effective legislation and a higher degree of public safety." I was asked to write the first paper presented at the conference, entitled, "The Science of Highway Traffic Regulation." The New York Traffic Squad was represented by Patrick F. Crane, President of the Traffic Squad Benevolent Association, who took this opportunity to bring to me a certificate of honorary membership in the association.

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<sup>1</sup> At the Commencement exercises of Yale University, June 20, 1923, Mr. Eno received the honorary degree of Master of Arts in recognition of his service to the public in work for the regulation of traffic. In presenting him for this degree the chief marshal, Professor William Lyon Phelps, said: "William Phelps Eno, Yale B.A., 1882. Prepared for Yale in Paris and St. Germain. The originator and master of the organization of modern street traffic, by which science he has saved much time and many lives. Some years ago, on emerging from the opera one evening, he was compelled to wait half an hour for his carriage, and the confused scene distressed his orderly mind. He gave attention to the problem, and the results speak for themselves. The regulation of street traffic in the large cities of America and Europe is his mobile monument. His book, the only complete treatise on the subject, has been translated into various languages, and his advice has been sought by the authorities of London, Paris, Brussels. He is Chairman of the Committee on Traffic Regulation in Washington. His creation of the Eno Foundation for Highway Traffic Regulation is only one of his services. He has saved many pedestrians and drivers and the only obstacle to the absolute success of his work is the ever present one of human stupidity."



FIGURE 67.

This was the second time honorary membership had been conferred by the Association, the first recipient having been Deputy Commissioner Frederick H. Bugher, formerly in charge of traffic in New York City and later Police Commissioner.

A second conference on Highway Traffic Regulation under the joint auspices of Yale University and the State of Connecticut took place April 9/11, 1924, and was an occasion of great interest as it brought together perhaps the best minds that had been at work on this subject in this country. The paper presented at this conference entitled, "Highway Traffic Regulation and Control with Particular Reference to the Prevention of Accidents" was subsequently revised and printed in pamphlet form by the Fifth International Road Congress. With further revision it constitutes Part VI of this book.

For many years the Chamber of Commerce of the United States had been talking about taking up the subject of highway traffic regulation and in December, 1924, the first conference on Street and Highway Safety was called in Washington and there have been one or more conferences since. The results might have been better had the Chairman assumed the responsibility himself and given the subject careful study but due to his many duties and lack of time for this purpose he delegated the work to others who in turn appear to have dele-



FIGURE 68.

gated the matter to a subordinate and this has led to the confusion of traffic regulation rather than to its simplification—the object most desirable to attain.

In the spring of 1926 I issued my fourth book on traffic, entitled, “Fundamentals of Highway Traffic Regulation” and in the same spring I went to Europe, spending most of my time in Paris and London on the study of traffic regulation in those cities. I include herewith the following Introduction:

## INTRODUCTION.

This is my fourth book on highway traffic regulation. The first was entitled "Street Traffic Regulation," published in 1909; the second was entitled "Le Problème de la Circulation," published in Paris in 1912; the third was entitled "The Science of Highway Traffic Regulation," published in 1920.

I would not publish this book quite so soon were it not for the fact that there are several things being done in traffic which are bad and to which the attention of the public and of the officials should be directed at once before they go further. The first and worst is the attempt to synchronize the block system. Others are the elimination of the left hand turn where unnecessary; too many streets chosen for one-way traffic; through traffic streets in cities which are on the same grade as other streets; wrong methods of using paint lines, especially at cross-walks, etc.

Students of traffic are only just now beginning to realize the harm which the synchronized block system is doing because it not only delays traffic and wastes street traffic capacity but because it increases danger instead of safety.

This book is essentially for students of traffic, although it is hoped that it will be interesting to laymen who take an interest in the subject. It is by no means a complete discussion, but is strictly confined to the fundamentals of HIGHWAY TRAFFIC REGULATION. It is written after twenty-five years of intensive application and practical experience preceded by many years of study of the subject here and abroad.

I had intended to include in this book other things besides the absolute fundamentals for the regulation of traffic, but have decided to leave them for a larger book to be prepared later. The things omitted include the Management of Vehicles at Theaters, A Discussion of Refuges as used in Paris and especially of those in London (the working drawings of which have been kindly sent me by Sir Henry Maybury, Director General of Roads of Great Britain), a revision of a paper read before the Harvard Engineering Society on March 8, 1923, entitled "The Traffic Problem of New York City," a history of the development of traffic regulation in the United States from 1899 to the present time, A Method for Snow Removal for Cities, Trimming of Trees on City Streets and Country Highways, Lighting of Roadways, Traffic Police Signals, Training of Traffic Police, Traffic Police Equipment to Reduce their Danger and Increase their Comfort, etc., etc.

WM. P. ENO.

March 3, 1926.

In 1927 I went to Europe again for the same purpose. In 1928 I spent much of my time in perfecting the organization of the Eno Foundation and in writing this, my fifth book, "Simplification of Highway Traffic."

Much of my time since I moved to Washington in 1902, until I gave up the fruitless effort in 1923 was spent in trying to get proper regulation in effect in that city. On account of interference by various interests, however, I found it impossible to be of much assistance to my fellow-citizens of Washington. Records have been kept in special scrap books devoted to this purpose, now numbering four and in files which can be referred to if desired by students of traffic at the office of the Eno Foundation. In December, 1923, I made a report on highway traffic conditions in Washington to the Senate Committee on the District of Columbia, from which the following is an extract:

Dec. 7th, 1923.

REPORT ON HIGHWAY TRAFFIC TO THE SENATE COMMITTEE ON THE  
DISTRICT OF COLUMBIA.

Gentlemen:

In order to understand the situation in Washington from a traffic standpoint, it is necessary to analyze the subject and divide it into different sub-headings.

*The Physical Situation.*

The city of Washington is, without any shadow of a doubt, the easiest city of its size in the world in which to regulate traffic. It is, perhaps, the only good-sized city that has had the advantage of being planned before being built.

The roadways are already wider on an average than those of other cities and the streets themselves have, most of them, been laid out with reservations (locally called parkings) between the sidewalks and the building lines for grass plots, trees, shrubs, etc., but as the city grows the curb lines can be set back, thus widening the roadway and shoving the sidewalk over part or all of the reservation.

All widenings of roadways should, however, be made only as their necessity becomes obvious and then under the direction of competent highway traffic regulation engineers, public hearings being given before final adoption.

It would be a great advantage to immediately round off the corners of the sidewalks on a scientific radius where this has not already been done instead of retaining the rule of thumb rounded off corners which are a menace and a hindrance to traffic. This should, of course, be begun in the congested parts of the city, gradually radiating out so that eventually all corners would be so cut off.

The proportion of sidewalk width to roadway in congested sections should be about as one is to three. That is, if a street is one hundred feet wide the roadway should be sixty and each sidewalk twenty feet wide. The desirability of these exact proportions, however, may be somewhat dependent upon local conditions and considerations as to the subject of ranking and parking.

Raised isles of safety and zones of safety marked by paint lines, traffic standards, signs and mushrooms are most necessary in Washington for the safety of pedestrians and the canalization of vehicles. Raised isles of safety, however, should never be permanently constructed unless first tried out with wooden isles since the expense of constructing permanent ones is considerable and there is no way of being absolutely sure of being right except by experimentation as is the custom in foreign cities. Then again, no raised isles of safety should be permitted where they are a menace to traffic and especially to the free passage of fire apparatus and therefore when any are contemplated, the Fire Department should be taken into conference. Past experience here, in New York, and elsewhere, has demonstrated how expensive are errors in judgment in the matter of changing curb lines, car-tracks and erecting raised isles of safety. Under no circumstances should any of these things be done without the advice of the best kind of engineering talent that can be obtained from those who have given these matters exhaustive study. Four of our universities are already taking an active interest in highway traffic regulation and soon there will be an ample number of engineers available who have specialized on this subject, and are competent to undertake traffic work. Meantime, there are a few engineers, city planners and landscape architects able to be of practical assistance now.

#### *Ranking and Parking.*

The problem of ranking and parking is now one of the principal worries of every city. Washington, however, on account of its wide streets and open spaces, has a better opportunity to provide for more vehicles ranked or parked where they do not interfere with moving traffic than any other city of equal size in the world. If this matter is scientifically mapped out and controlled it will eliminate a large part of the trouble.

#### *Special Regulations.*

Next in importance to familiarity with the General Regulations are the special regulations to be brought about through lines, signs, standards, bumpers, dummy cops, semaphores, crowns, lights, etc., to guide the movements of pedestrians and drivers. If these are intelligently employed they will accomplish more than if more traffic men were employed and, of course, very economically. However, it is essential not only for traffic, but for many other reasons to increase the police force in Washington at the present time by a large number as soon as possible and by a gradual annual increase thereafter to keep up with the growing population. Full details of this can be obtained from "The Science of Highway Traffic Regulation" and from the records compiled by the Eno Foundation, all of which are at the service of the Senate Committee at the headquarters of the Foundation.

#### *Traffic Regulations in Washington.*

As already stated, traffic regulation was begun in New York in 1903, and since 1904 a continuous effort has been made to bring about similar activities

here, but mostly without avail. In 1914, when Mr. Justice Siddons was chairman of the Board of District Commissioners, we succeeded in having a set of general regulations similar to those in New York put into effect here, unfortunately somewhat spoiled through interference of local officials. Conditions began to be much better. However, the succeeding Commissioners did away with this set of regulations and substituted a set much too long, badly conceived, confusing and insufficiently distributed. In December, 1922, a committee of nine on traffic was appointed by the District Commissioners, but unfortunately its composition was such as to make it a foregone conclusion that it could not be successful, and on February 9th the chairman of this committee resigned having found it impossible to bring about effective results with the combination then in power. Conditions have continued to become steadily worse until it is believed the people are thoroughly disgusted at the unnecessary number of accidents and deaths constantly occurring. As a matter of fact, Washington has no complicated traffic problem compared with those of most other cities.

A plan based on long experience was formulated at the time the committee was appointed by its chairman, setting forth the necessary measures to be adopted to bring about effective traffic regulation. It is a pity that a matter of so much importance to our city should be allowed to longer continue, not only because methods already tried and proven successful would eliminate most of the trouble in Washington, but because Washington if it had a really good system would furnish an example to the rest of the country instead of being a death-trap and a reproach.

Political combinations and rings, in a city where politics are supposed not to have undue influence, should be eliminated, and so far as traffic is concerned they can be and will be when the citizens realize what tragic suffering they are responsible for as well as commercial injury to the city.

WM. P. ENO.

## WORK IN EUROPE

### ENGLAND

In the spring of 1909 I went to Europe to make a study of public carriage service in London and Paris. Upon reaching London, I called at New Scotland Yard and was rather surprised to find that they were familiar with my work and were most helpful, giving me an opportunity to study their records and methods.

The English have always handled their street traffic with a dignity, courtesy and effectiveness which is a valuable lesson to all countries. In my many trips abroad, beginning as a child, I have admired and watched the methods employed in London in regulating their traffic.

I returned to London in 1910 and again in the spring of 1924 to continue my studies. The day I left for Paris, June 1st, 1924, I saw by the paper that



they had decided at New Scotland Yard to start one-way traffic streets and to limit the stopping of vehicles to the left hand curb at theaters. They had also become interested in the use of white paint lines on the pavements but had not at that time decided to employ them.

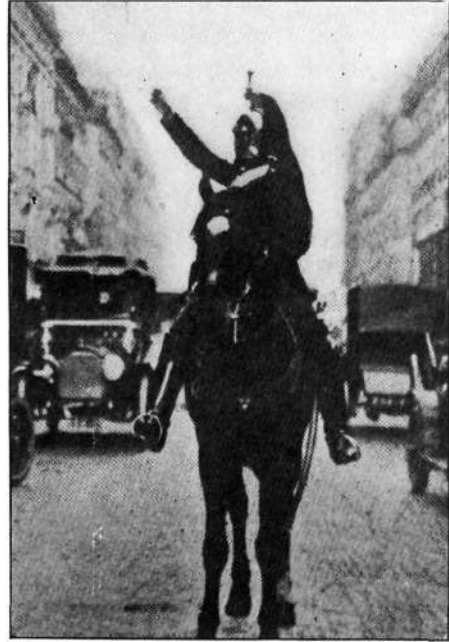
In the spring of 1926, Sir Henry Maybury, Director General of Roads of the Ministry of Transport, was in New York and went over the situation there with me. I expected to see him in London later in the year but when I was in Paris, the general strike in London came on and I decided not to go because I knew that Sir Henry as well as the people at New Scotland Yard must be too busy to attend to anything else. On my return to America I had letters from Sir Henry telling me that they had put in rotary traffic at Piccadilly Circus and were gratified at the results. In the spring of 1927 I was again in London and found that they had already extended rotary traffic to seven other places. They were also employing white lines on the pavement in a way slightly different from my method but perhaps as good. At any rate, it is very effective. At this time, I again met Mr. Frank Elliot, Assistant Police Commissioner in charge of traffic. I am glad to say that both Sir Henry Maybury and Mr. Elliot are now members of the Honorary Advisory Board of the Eno Foundation.

#### FRANCE

In the spring of 1909 I went to Paris and spent some time in watching their attempt to regulate traffic which was as ineffective as ours had been in New York before 1903. I sent one of my books by messenger to M. Louis Lépine,<sup>1</sup> Préfet de Police, and received back by hand within two hours a note asking me to come to his office the "day after tomorrow at ten o'clock." On arrival there I found Mr. Lépine and his staff. He told me that he had already had the New York Traffic Police Regulations translated and requested me to look them over and correct anything that I found wrong. He questioned me before his staff quite carefully and told me that he had decided to try one-way traffic in some of the narrow streets and to have the Municipal Guard act as mounted traffic policemen. I approved of the first suggestion but counseled him not to try the mounted men until both horses and men were trained for the purpose. Before I left he inquired what he could do for me. I told him that I was in Paris after having

<sup>1</sup> At the same time that I sent a book to the Préfet of Police, I sent one to Dr. Bertillon, so well known on account of the Bertillon system of identification. I received a note back, asking me to call any afternoon after three o'clock and a couple of days afterwards I did so and found a man whom I have always wished I had seen more of. He was most kind and courteous, spending the whole afternoon with me, explaining and illustrating his system of thumb prints. I remember very well one remark he made. He told me he was sorry for me because I was trying something new and so had he. Before leaving he asked if I would mind if he took my photograph in the criminal chair.

been in London, especially to study the details of the public carriage service and that anything he could do that would facilitate me in this would be deeply appreciated. He thereupon detailed for my service Inspector Parris who was at my orders during the time I was in the city. Inspector Parris went with me to show me the methods of examining the drivers of public and private vehicles which were most thorough even at that time—trials of drivers for infractions—the Pound, etc.



Mounted Traffic Officer in New York, and Mounted Municipal Guard in Paris.

FIGURE 69.

After I had seen Mr. Lépine, my old friend, Colonel Philippe Bunau-Varilla,<sup>1</sup> former engineer of the Panama Canal, became interested in the work and through his efforts the newspaper "Le Matin" started a campaign for its success. Mr. Hugues LeRoux, who later became Senator, was put in charge of the work and under him, Mr. Wm. H. Dumont, his secretary. The example of "Le Matin" was followed by many of the other papers in France.

<sup>1</sup> Colonel Bunau-Varilla is a member of the Honorary Advisory Board of the Eno Foundation.



FIGURE 70.

Photograph of the author taken by  
Dr. Bertillon himself.

In 1912, just after I had gotten out my book in French, I received a letter from Dr. Bertillon which I reproduce here.

Préfecture de Police  
Direction Générale des Recherches.  
Service de l'Identité Judiciaire.

Paris, Aug. 1, 1912.

Mon cher Monsieur Eno

Moi aussi j'ai conservé un souvenir très vivace de votre visite, la première, dites vous, que vous ayez faite lors de votre arrivée à Paris. J'ai suivi avec grand intérêt vos efforts pour régulariser la circulation et j'ai admiré les résultats que, progressivement, vous avez obtenus. Je ne me suis pas contenté d'admirer, j'en ai profité moi-même comme tous les Parisiens. Dix fois peut-être vous m'avez sauvé la vie par vos règlements si bien compris de la circulation. Je suis, en effet, malheureusement arrivé à l'âge où il ne faut plus compter sur le coup de jarrêt spontané qui, au dernier moment, vous sauvera de votre inattention. Grâce à vos règlements, où je suis passé maître, je sais en effet à l'avance le trajet que mes ennemis, automobiles ou hippomobiles, sont désormais astreints à suivre.

Jugez si je vous suis reconnaissant de ce résultat et combien la lettre aimable que vous avez bien voulu m'écrire m'a rendu fier.

Veillez agréer, Mon Cher Monsieur Eno, l'assurance de ma très haute considération.

(Signed) A. BERTILLON.

P. S.—Puisque vous avez conservé un si bon souvenir de votre portrait signalitique, je me permets de vous en adresser deux nouvelles épreuves.

I never saw him afterwards as he died before I returned to Paris in 1920. Just before leaving Paris for America in December, 1909, I received a written request from a member of the Municipal Council who owned or controlled two of the daily papers to send him all information that I had on traffic. This I did from America and had much of it translated into French for him. I did not know the use to which this gentleman was going to put my information nor did I realize it until some months afterwards when I got word through letters and newspaper clippings that traffic matters were not progressing satisfactorily in Paris. In the spring of 1910, I returned to Paris and found that this gentleman had about completed a book on traffic, the first half of which was apparently meant to show how bad were the things that I had recommended and the second half to recommend the same things in his own words as being his own ideas. This volume he succeeded in getting the City of Paris to publish at public expense. He had also formulated an ordinance which was largely founded on the information with which he had been furnished and this ordinance had been passed. Unfortunately, this gentleman through his newspapers had considerable political influence and continued for nearly two years to stand in the way of effective traffic regulation. Ascertaining how matters stood I decided to place the matter before the *Chambre Syndicale des Cochers et Chauffeurs de Voitures de Place de la Seine*. I therefore called at the *Bourse de Travail* and met the secretary (the head) of the Syndicate and asked him how the new ordinance pleased them and also how they liked the Police Regulations which I had left with the *Préfet de Police* the year before. He said they did not like the ordinance because it was changed so frequently, resulting in many unjust arrests of the members of the *Chambre Syndicale*. They did, however, like the traffic police regulations and wanted to have them put in effect in place of the ordinance. The Secretary sent for the heads of the two other syndicates, *l'Union Syndicale des Transports et Manutentions* and *Le Federation Nationale des Entrepreneurs de Transports* and after a brief conference they decided that they were all in favor of the Police regulations and would cooperate with me. The following morning a delegation of the *Chambre Syndicale des Cochers et Chauffeurs de Voitures de Place de la Seine* called at my hotel and formally presented me with a certificate of honorary membership in their association.

During the rest of my several weeks' stay in Paris, the heads of the three syndicates met with me from time to time to see if we could improve the proposed police traffic regulations before again presenting them to the *Préfet de Police* with the request that they be adopted. At the request of the Syndicates, before leaving Paris, I wrote a letter addressed to *Le Préfet de la Seine*, *Le Préfet de Police*, *Le Président et les Membres du Conseil Municipal*, *Le Prési-*



FIGURE 71.

dent et les Membres de la Chambre de Commerce, Les Membres de la Commission de la Circulation, setting forth a tabulated comparison of the proposed Police Regulations and of the Ordinance of the Municipal Councillor. This was mimeographed and sent to them all before I sailed for America. On my return to New York I published a pamphlet entitled "Street Traffic Conditions, Public Carriage Service and Automobile Licensing in London and Paris."

Some months afterwards I received a cable from Paris stating that the Chambre Syndicale des Cochers de Chauffeurs de Voitures de Place de la Seine were contemplating a strike on account of the ordinance which they considered unjust. I replied suggesting that the strike be postponed until I reached Paris and that I was writing a book, to be translated into French in the hopes that it would help to bring about sane traffic regulation. The manuscript was completed in February, 1912, and sent ahead to be translated before my arrival in April. The book was ready for distribution shortly afterwards. Ten thousand paper covered volumes and three hundred cloth bound volumes were printed and distributed by the three driving syndicates and by the Préfecture de Police.

The proposed Police Regulations were approved by the Préfet July 10, 1912, and distributed in folder and in placard form through the Préfecture.

## LETTER FROM COLONEL PHILIPPE BUNAU-VARILLA.

Paris, le 11 Mai 1912.

53 Avenue d'Iéna, Paris.

Mon cher Ami,

Il y a entre l'oeuvre que vous avez poursuivie et la mienne plus de points communs que l'on ne pense.

Le système circulatoire de l'être vivant comprend les gros vaisseaux, les artères, qui portent la masse du fluide sanguin aux petits vaisseaux, aux artérioles, et celles-ci le distribuent aux moindres de nos molécules vivantes.

De même ce corps colossal qu'on appelle l'humanité a un système circulatoire qui comprend les artères principales et les artérioles de distribution.

Les unes et les autres sont également indispensables.

J'ai consacré ma vie à la plus colossale de ces artères, au Canal de Panama. Vous avez consacré la vôtre aux artérioles en nombre infini qui distribuent les produits de l'industrie de l'humanité à chacune de ses molécules : l'Homme.

Votre oeuvre a été large et féconde parce qu'elle prenait sa racine dans un sentiment désintéressé de dévouement à la collectivité.

Elle a été couronnée d'un succès brillant parce que l'esprit scientifique en a dicté les étapes.

Elle a rencontré sur son chemin la résistance passive de l'égoïsme et de l'ignorance, mais elle en a triomphé.

Vous pouvez avec orgueil regarder l'ordre, la méthode et la discipline qui aujourd'hui remplacent dans beaucoup de grandes villes, notamment à New York, la confusion, l'irréflexion et la violence.

Votre oeuvre en Amérique est complète. Vous êtes venu en France l'y poursuivre, poussé par ce mystérieux attrait qui ramène l'homme vers la patrie de ses ancêtres. Vous fermez ainsi la longue boucle qui a poussé en Angleterre d'abord, puis en Amérique, Jacques de Henne, encore citoyen de Valenciennes à la fin du sixième siècle. Vous avez déjà fait beaucoup ici, mais tout n'est pas terminé. Quand il en sera ainsi, votre système, de Paris gagnera tout l'univers.

C'est vous qui aurez été le chef d'orchestre d'une harmonie inespérée.

Et vous aurez, en déterminant le rythme, rendu un grand service à tous.

Serviteurs communs de la circulation artérielle de l'humanité, nous pourrons quand sonnera l'heure nous endormir en pensant que nous n'avons pas été tout à fait inutiles.

N'est-ce pas là la récompense suprême de l'effort.

À vous

P. BUNAU-VARILLA.

Formerly chief engineer of the Panama Canal, co-signer with John Hay, of the Hay-Bunau-Varilla treaty, which made the Panama Canal possible; first minister from the Republic of Panama to the United States, and decorated several times for valuable engineering work at the front during the late war.

Before leaving Paris on August 4, 1912, "Excelsior," one of the Parisian papers, asked me for a plan to solve the traffic problem at the Rond Point on the Champs Elysées. This was published in that paper July 29, 1912. It appeared

**RÈGLEMENTS**      CONCERNANT LA  
CIRCULATION SUR LA      **VOIE PUBLIQUE**

**OBÉISSANCE.**

1. — Les conducteurs de tramways, wattmen, mécaniciens, cochers, chauffeurs, cyclistes, etc., obéiront toujours, et en n'importe quelle circonstance, aux signaux donnés par les agents de la police, soit à la voix ou par la main, en tout ce qui concerne l'approche ou le départ d'un endroit quelconque, le chargement ou le déchargement de voyageurs, de marchandises, etc.

2. — Le fait que l'on ignore ces règlements ne saurait être une excuse pour ne point s'y conformer.

*On pourra se procurer des copies de ces Règlements à la Préfecture de Police et dans tous les Commissariats de Police.*

Tout conducteur de tramway, wattman, mécanicien, cocher, chauffeur, cycliste, etc., est tenu d'observer ces règlements, afin d'éviter des embarras de voitures, de faciliter la circulation, de prévenir les pertes de temps, d'argent, etc.

La Police a ordre de veiller à ce que ces règlements soient observés.

— 2 —

**ARTICLE PREMIER. — Qu'il est important de tenir sa droite, en passant, tournant, traversant et stoppant.**

1. — Tout véhicule, excepté quand il en dépasse un autre, doit se rapprocher du trottoir à droite. Mais dans les rucs dont les trottoirs sont étroits, on ne doit pas s'approcher tout près du trottoir afin de ne pas gêner les piétons, et quand cela est nécessaire on ira pas.

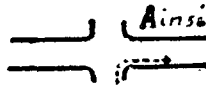
2. — Tout véhicule qui en rencontre un autre venant en sens contraire doit le doubler à droite.

3. — Tout véhicule doit passer à la gauche de ceux qui vont dans la même direction et ne revenir sur la droite qu'après les avoir complètement dépassés.

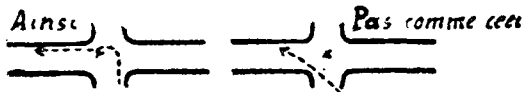
4. — Dans toute voie publique, divisée dans le sens de la longueur par des viaducs ou des tranchées, des refuges, des terres-pleins, etc., les véhicules passeront à droite. Toutefois des dérogations pourront être autorisées.

5. — Tout véhicule qui tourne doit se tenir sur sa droite (voir § 1).

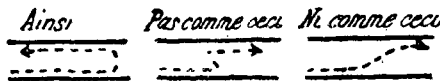
Pour tourner à droite :



Pour tourner à gauche :



6. — Tout véhicule traversant la voie dans sa largeur se comportera.





— 3 —

7. — *Places et carrefours ayant un refuge central.* — D'une manière générale, sur toutes les places au centre desquelles il existe un refuge, un square ou un monument public, les voitures devront traverser en tenant la droite, et en contournant le refuge, le square ou le monument.

8. — *Circulation des voitures dans l'Avenue des Champs-Élysées.* — La partie centrale de la chaussée des Champs-Élysées comprise entre les refuges est exclusivement réservée aux voitures automobiles et véhicules à moteurs mécanique; les voitures hippomobiles, cycles, tandems, tri-porteurs, devront seuls suivre à droite les parties de la chaussée entre les refuges et les trottoirs.

9. — Tout véhicule s'arrêtant, doit le faire de telle façon qu'il ait le trottoir à sa droite, sauf dans les voies où la circulation est prescrite dans un seul sens.

10. — Aucun véhicule ne doit s'adosser au trottoir. Il doit se placer toujours parallèlement à la rue.

11. — Aucun véhicule, sauf dans un cas imprevu ou à moins que ce ne soit pour laisser le passage à un autre véhicule ou aux piétons, ne s'arrêtera sur la voie publique, excepté si c'est auprès du trottoir de droite et de façon à ne pas gêner les piétons. Les omnibus et autobus devront autant que possible serrer le trottoir de droite en s'arrêtant.

12. — Dans toutes les rues qui n'auront pas au moins 9 mètres entre trottoirs, il est défendu à tout conducteur de voiture de stationner vis-à-vis d'une voiture déjà arrêtée du côté opposé.

13. — Les véhicules qui seront obligés de faire demi-tour prendront toutes les précautions nécessaires pour ne pas gêner la circulation.

— 4 —

**ART. II. — Signaux.**

1. — En ralentissant ou en s'arrêtant, on doit faire un signal à ceux qui suivent en levant le fouet ou la main, verticalement.

2. — Quand on tourne ou quand on se met en marche, on doit indiquer avec le fouet ou la main la direction que l'on prendra.

3. — On doit avertir avant de reculer, et pendant que l'on recule, on doit veiller à ne pas bousculer ou blesser ceux qui sont derrière.

4. — Aucun véhicule ne pourra circuler s'il n'est muni des avertisseurs et feux réglementaires.

5. — Les trompes d'avertissement ne doivent servir que pour cet usage. On ne doit pas en user plus qu'il est nécessaire, surtout la nuit.

6. — Les cycles, tandems, tri-porteurs, doivent être munis d'un appareil sonore avertisseur fixé à la machine, dont le son puisse être entendu à 50 mètres, et qui sera actionné toutes les fois qu'il sera nécessaire, et seulement dans ce cas.

**ART. III. — Droit de Priorité.**

1. — Les voitures de la police, des ambulances, de la poste, des sapeurs-pompiers ont un droit de priorité sur toutes les autres voitures.

2. — Les tramways ont la priorité de passage avant tout autre véhicule, excepté aux croisements de voies.

— 5 —

Les cochers, etc., qui se placeraient sur les rails en avant d'un tramway, doivent se retirer au premier avertissement du conducteur, wattman ou mécanicien.

3. Dans les rues où des signaux de direction sont apposés, tous les véhicules suivront rigoureusement la direction indiquée.

4. — Aucun véhicule ne doit stationner sans nécessité.

5. — A l'approche d'une pompe à feu (ou de tout autre danger) un véhicule doit se ranger aussi près que possible du trottoir de droite.

#### ART. IV. — Vitesse.

1. — Aucun véhicule ne dépassera la vitesse réglementaire et justifiée par les circonstances.

2. — A la traversée des voies, les véhicules ralentiront leur allure.

#### ART. V. — En Dépassant les Tramways.

Les conducteurs ralentiront leur marche, et arrêteront leurs véhicules, au besoin, à proximité des arrêts fixes et facultatifs des tramways, lorsque des voitures ou des trains s'y trouveront arrêtés pour prendre ou laisser des voyageurs.

#### ART. VI. — Contrôle.

##### Surveillance des Chevaux.

1. — Aucune voiture ne stationnera sur la voie publique sans être gardée ou sans que les roues des véhicules soient solidement retenues par une amarre ou une chaîne.

2. — On n'abandonnera jamais les rênes d'un cheval que l'on monte ou que l'on conduit.

— 6 —

#### ART. VII. — Véhicules

1. — Sous aucun prétexte, on ne se servira d'un véhicule construit ou couvert de telle façon qu'il empêche le cocher, etc., de distinguer nettement les voitures qui le suivent ou qui sont à côté.

2. — Aucun véhicule ne sera construit ou chargé de façon à gêner la circulation générale.

3. — On ne pourra, sous aucun prétexte, utiliser ou conduire un véhicule chargé de fer ou d'autres matériaux, pouvant causer un bruit inutile en s'entrechoquant, à moins que l'on n'ait amorti ce bruit.

4. — Aucun véhicule ne peut être conduit par une personne âgée de moins de dix-huit ans et n'ayant pas les aptitudes nécessaires.

5. — Il est interdit de s'accrocher à l'arrière d'un véhicule quelconque.

#### ART. VIII. — Conditions et traitement des chevaux

1. — Les propriétaires ne pourront mettre en service des chevaux impropres à fournir le travail pour lequel on les emploie. Il est interdit également d'utiliser des chevaux vicieux ou atteints, soit de maladies contagieuses, soit de plaies ou de difformités repoussantes.

2. — Aucun conducteur ne fera claquer son fouet.

— 7 —

**ART. IX. — Droits et devoirs respectifs.  
des piétons, cochers, etc.**

La chaussée est avant tout destinée aux véhicules, mais il demeure bien entendu que les piétons doivent la franchir en sécurité. Il faut donc que les conducteurs de tramways, cochers, etc., usent de toutes les précautions nécessaires pour ne pas blesser ou gêner les piétons qui, eux, ont le devoir, avant de quitter les trottoirs ou les refuges, de regarder devant eux et de surveiller les véhicules ou tramways qui approchent.

Les piétons ont donc tout avantage, au point de vue de leur propre sécurité, à prendre les précautions suivantes :

Lorsque l'on traverse la voie publique, il faut autant que possible, le faire à angle droit et de préférence à un passage régulier.

On facilitera ainsi la circulation et l'on rendra la besogne des chevaux moins pénible, puisque souvent il faut les arrêter brusquement en leur « cassant » cruellement la bouche, pour éviter de blesser des passants plus ou moins négligents.

Cette négligence des piétons ne saurait être, dans aucun cas, une excuse pour les cochers, etc., qui ne doivent ni les gêner, ni les blesser.

Les piétons se servant du trottoir suivront leur droite. Et dans les rues où les trottoirs sont étroits ils prendront le trottoir de droite. Ils éviteront de s'arrêter juste à la traversée d'une rue, ils le feront de préférence sur les côtés du trottoir. Ils éviteront aussi de stationner inutilement à la sortie des théâtres ou des endroits de réunion publique.

*Approuvé,*  
10 Juillet 1912

LÉPINE,  
PRÉFET DE POLICE.

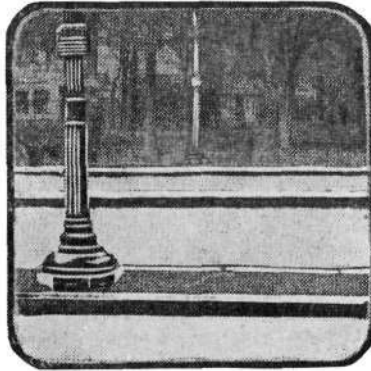
Imprimerie HERBERT CLARKE,  
338, rue Saint-Honore,  
PARIS;

*Excelsior* — *Aug 13-13.*

**L**e triomphe du système Eno.

Une fois de plus, les principes de l'Américain William Phelps Eno, l'importateur en Angleterre et en France du système de circulation giratoire, viennent de triompher. C'est le système des trois refuges qu'il préconisa que le préfet de police ordonna récemment comme le seul capable d'améliorer la circulation des véhicules aux Champs-Élysées.

Déjà, entre le rond-point et le Grand Palais, il existe trois séries de ces triples



*Le triple refuge aux Champs-Élysées.*

refuges, canalisant ainsi la circulation des automobiles et donnant naturellement une plus grande sécurité aux piétons. Les deux refuges extérieurs de chaque série sont ceux qui existaient jadis, mais qu'on a écarté l'un de l'autre; au milieu, on a édifié le refuge central, qui sera bientôt surmonté d'un reverbère.

Naturellement, le système des trois refuges sera généralisé d'un bout à l'autre de la splendide voie parisienne.

**FIGURE 72.**

afterwards in a pamphlet I wrote for The Third International Road Congress. I understood this plan had been approved in 1913 but shortly after that the Avenue d'Antin, now the Avenue Victor Emmanuel III, caved in over the catacombs, delaying the work and in 1914 the war came and everything stopped. Since that time, up to the date of this writing, each time I have been in Paris, I have called this matter to the attention of whatever Préfet de Police happened to be in office and they all approved the plan but it was not until I saw the



FIGURE 73.

present Préfet, M. Chiappe, who had requested M. Guichard, Directeur Général de la Police Municipale to bring me to see him that the matter was taken up seriously. A consultation followed with the engineers sent by the Préfet and early in December, 1927, the plan was put in operation at the Rond Point, fifteen years and five months after it had been furnished to the "Excelsior" and published by it.

To resume the story from the summer of 1912, the work was carried on through pamphlets and newspaper and magazine articles. Through the efforts of M. Hennion, Préfet de Police who succeeded M. Lépine, many of the things which I had tried to get done before were put into effect, among them were the placing of cabstands in the middle of the streets, increasing the number of one-way traffic streets, spreading apart the two existing refuges on the Champs Elysées and putting another between them, dividing traffic into four alleys instead of three and making it safer for pedestrians. This plan had been suggested in an article published many years earlier and also in *Le Problème de la Circulation* in 1912. The drawing in that book was used for the installation.



In December, 1925, the French Government conferred upon me the Legion of Honor for work done in France.<sup>1</sup>

“L’Événement” October 3, 1916.

Reported from the front.

#### Le Système Eno

On reste étonné de la facilité avec laquelle la circulation intense et ininterrompue s’effectue sur les routes. Les longs et interminables convois automobiles sont doublés par les rapides camionnettes sanitaires, les cavaliers ont leur piste spéciale sur les bascotés du chemin et de placides gendarmes, drap rouge à la main, remplacent aux carrefours le traditionnel agent et le légendaire bâton blanc si chers aux boulevardiers.

Les voitures hippomobiles de ravitaillement en vivres ont des parcours qui leur sont exclusivement réservés pour la plus grande joie des pauvres chevaux des conducteurs—et des impatients automobilistes. Il y a un sens obligatoire, une réglementation sévère de la circulation, un code de la route, un véritable système Eno intelligemment pratiqué.

Après la volonté créatrice, après l’idée directrice, se manifeste l’esprit de méthode d’application qui coördonne les efforts dans l’harmonie des rendements.

#### BELGIUM.

Letter from the Belgian Ambassador:

Ambassade de Belgique, Washington, D. C.,  
May 4, 1920.

Dear Mr. Eno: I have received from Mr. Max, the burgomaster of Brussels, a letter in which he asks me for information concerning the traffic regulation in the American cities.

I have already sent to Mr. Max your very interesting book on that subject but I am writing to suggest that, in case you pass through Brussels during your trip in Europe, you pay a visit to Burgomaster Max whom I am informing of your probable visit. No one is better qualified than you to express opinions and give information about the traffic regulations, especially as to their application to Brussels.

With best wishes for a very good trip abroad, and with kindest regards, believe me, dear Mr. Eno,

Yours very sincerely,  
BARON DE CARTIER.

On my arrival in Brussels, I called upon Mr. Brand Whitlock, at that time our Ambassador to Belgium and he accompanied me to the City Hall where Burgomaster Max had his offices. I was much pleased at my reception and de-

<sup>1</sup> In Mr. Eno’s scrap books there are many letters from French officials congratulating him at this time on the honor conferred upon him. Also many newspaper clippings about the use of the Système Eno in the World War, one of which is reproduced as a fair sample of the many.—C. J. T.

lighted to find that Burgomaster Max had a deep knowledge of traffic regulation and had himself done most creditable work even at that time. Since then, we have maintained a correspondence and sent each other whatever we had that we thought would be interesting.

I did not see him again until the spring of 1927 when I went from Paris to Brussels to see him. When I arrived I found in his office the best equipped traffic officer, as to uniform, that I have ever seen. I have spoken elsewhere in the book about the white enamelled aluminum helmet. The uniform was extremely well fitted and well designed. He had riding breeches and leggings and his coat was admirably adapted for the purpose.

Burgomaster Max had also summoned the manufacturers of some of the signs used in Brussels to show me their excellent products.

After that we motored around the city to see the white paint markings and the traffic signal lights which are described elsewhere in this book. They had investigated the American methods of signal lights and decided not to adopt them.

Burgomaster Max is a member of the Honorary Advisory Board of the Eno Foundation.

#### GERMANY.

On April 9th, 1926, I wrote to Baron Maltzan, German Ambassador to this country, sending him a copy of "Fundamentals of Highway Traffic Regulation" and I received the following reply:

German Embassy, Washington, D. C.  
April 12, 1928.

My dear Mr. Eno,

I thank you very much for your kind letter of April 9th, contents of which I appreciate very much. Your books on Traffic Regulation would be exceedingly interesting to police authorities in Germany and, therefore, I accept with greatest pleasure and many thanks your kind offer, to send me a few copies.

I am, my dear Mr. Eno,

Yours very sincerely,

(BARON) MALTZAN.

On July 15th, 1926, I wrote to Police Major Seyffarth, sending him a copy of my book as he had intimated that he would like an extra copy as the one sent by the Ambassador was retained in the Home Office.

Since that time, Major Seyffarth and I have been in regular correspondence and he has kindly sent me descriptions and photographs of work done in Berlin.

On April 7th, 1927, Baron Maltzan, who had already viséd my passport in

order that I might go into Germany on traffic work, sent me a special laissez-passer with letters to the authorities.

Just as I was going, the next day, to Berlin, I received a telegram from Major Seyffarth saying that he was ill with the grippe so I went to London instead and on my return to Paris, I too was taken with the grippe which prevented my visit to Berlin but I am in great hopes of going there on my next trip to Europe.

I judge from my correspondence with Major Seyffarth that he has ability to handle traffic with skill. In a letter dated July 28, 1928, Major Seyffarth enclosed me a few photographs which he took himself of the rotary traffic at the Rond Point on the Champs Elysees in Paris saying, "I remember the difficulties there before the introduction of the rotary system" and I was glad to get this confirmation of the success of the plan there from a reliable outside source, in addition to what the Paris authorities had said about it.

Major Seyffarth is a member of the Honorary Advisory Board of the Eno Foundation.

### **WORK IN AUSTRALIA**

In about 1904, Mr. Alfred Edward of Sydney, New South Wales, Australia, became much interested in traffic and we have been in correspondence ever since. We missed each other in London in 1920 but I saw him in New York and at my home in the country and found him most interesting. His work is worthy of all commendation. He has written a good deal about traffic, including a small book entitled, "Lectures on the Regulation of Traffic" published in 1920. This goes especially into the duty of traffic officers and is well worth reading. He has recently sent me two long magazine articles from "Motor Life" referring to my work and illustrated with cuts from my books.

For many years, Mr. Edward gave up his own business for the purpose of devoting his time to traffic betterment in Australia. He was for a good many years at the head of the Traffic Department in Sydney, but has now retired in order to attend to his own affairs. He is a member of the Honorary Advisory Board of the Eno Foundation.

### **WORK IN JAPAN**

In 1913, the Japanese Ambassador in Washington, took a great interest in traffic and I gave him such data as I thought might be useful. He said he was going to have *Le Problème de la Circulation* translated.

Some years after that, a Japanese gentleman living in Washington asked permission to translate "The Science of Highway Traffic Regulation" published in 1920 but he died before he was able to take it up.

In 1923, Mr. Ynsai Takahashi, Commissioner of Shiznoka, Japan, came to this country to study police methods, among them being highway traffic regulation. He got in communication with me and we had several talks together in New York. He too said he would like to translate "The Science of Highway Traffic Regulation." However, nothing happened until April 1926 when I received a letter from Mr. N. Fujioka, Chief of the Traffic Section of the Metropolitan Police Board of Tokyo, as follows:



FIGURE 74.

Ginza Street, in Tokio, famous as the Broadway of Japan, now has traffic cops, 1920.

Tokyo, Japan, April 12, 1926.

Dear Sir:

Please pardon me for thus abruptly approaching you with a request for the gratuitous permission to translate your recent publication, "The Science of Highway Traffic Regulation" which I am finding very interesting. I do not think

I can find anywhere else the real key to the solution of the traffic problem in Tokyo which is now practically in a deadlock.

If your book is now introduced to Japan, it may eventually lay the foundation of the Metropolitan traffic system. I am also personally interested in bringing the Japanese public in touch with such an instructive work.

Awaiting your reply, I beg to remain,

Yours sincerely,

N. FUJIOKA,  
*Chief of the Traffic Section of  
The Metropolitan Police Board.*

Mr. Fujioka translated "The Science of Highway Traffic Regulation" and after that, my next book, "Fundamentals of Highway Traffic Regulation" and since then has sent me Japanese magazines containing some of my articles. I have recently received the following letters from him:

Metropolitan Police Board,  
Tokyo, Japan, Aug. 10, 1928.

Dear Mr. Eno:

I was very pleased indeed to receive your letter of the 14th ultimo as well as a copy of your letter of the 15th of February.

I learned that you are going to honour me as one of the members of the Honorary Advisory Board of your institution. If so, I shall esteem it a great honour. I trust that your new book will be of great value to the world. I am looking forward to receiving a copy.

You mentioned to me that you are preparing to pay a visit in our country in the near future. When will you be able to do so? I hope that your trip to Japan will materialize as soon as possible and you will give us many instructions regarding Traffic Regulation. Please let me know previously when you can come. I am sure that our people will be greatly appreciative of your very kind advices.

Even though I should change my present business in the future, I made up my mind to devote myself to the "Study of the Traffic Problem." I would be glad to have the opportunity to welcome you and to reciprocate your great many kindnesses.

Ambassador Matsudaira and his family arrived here very recently but I have not yet seen him. I hope to see him before he leaves here again.

I am very busy writing a new book in connection with traffic problems and in establishing new regulations which control motor cars, both of which were furnished much information by your suggestions. I have forwarded to you under separate cover copy of each of the above mentioned books.

Apologizing for not having written to you earlier, I am,

Very sincerely yours,

N. FUJIOKA,  
*Chief of Traffic Section.*

Metropolitan Police Board,  
Tokyo, Japan, Sept. 27, 1928.

Dear Mr. Eno:

I have to own with thanks the receipt of your esteemed communication of the 30th ultimo. I understand that you made me one of the list of your Honorary Advisory Committee.

It is with great regret that I learned you are unable to come to our country in the near future. However, I may have a chance to have the pleasure of meeting you in your country in the future.

I think I shall have a chance to see Ambassador Matsudaira shortly. If I see him, I shall certainly convey your message to him.

I have forwarded to you under separate cover two copies of pamphlets which were published recently and also a photo of a Traffic Crowsnest which was designed according to your suggestions.

With grateful feelings for your kindness, I am,  
Sincerely yours,

N. FUJIOKA,  
*Chief of Traffic Section.*

Some of the drawings sent me by Mr. Fujioka and what he has written demonstrate that he has one of the best traffic minds in the world and it was a great pleasure that his name was added to the Honorary Advisory Board of the Eno Foundation.



**FIGURE 75**

The traffic crowsnest spoken of in Mr. Fujioka's letter of September 27, 1928.

**WORK IN OTHER COUNTRIES**

Besides the correspondence from the countries already mentioned there are in the scrap books and files of the Eno Foundation many letters from officials in China, South America and other countries, as well as newspaper clippings, some printed in languages I cannot read and some in English, showing the widespread interest in traffic regulation which has become so important to all the world.

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