

DEC 4 - 1936

RESEARCH BULLETIN

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

OF THE NATIONAL
EDUCATION
ASSOCIATION

VOL. XIV · No. 5
NOVEMBER-1936

Safety in Pupil Transportation

Published by the RESEARCH DIVISION of the
NATIONAL EDUCATION ASSOCIATION
1201 Sixteenth Street, N. W., Washington, D. C.

RESEARCH BULLETIN OF THE

NATIONAL EDUCATION ASSOCIATION

Published five times each year
in January, March, May,
September, and November

President, ORVILLE C. PRATT

Executive Secretary, WILLARD E. GIVENS

Director of Research: William G. Carr, Associate Director: Frank W. Hubbard
Assistant Directors: Richard R. Foster, Ivan A. Booker, Hazel Davis

Research Assistants and Section Heads: Frances G. Bradley, Louise B. Sease, Helen H. Cox,
Anna Haddow, Madaline K. Remmlin, Jennette R. Tandy, and Bernice Woodbury

Executive and Editorial Offices . . . 1201 Sixteenth Street, N. W., Washington, D. C.

Copyright, 1936, by the National Education Association

Entered as second-class matter February 10, 1923, at the Post Office at
Washington, D. C., under Act of August 24, 1912. Acceptance for mailing
at special rate of postage provided for in Section 1103, Act of October 3,
1917, authorized February 10, 1923.

Subscriptions

The payment of the \$5 membership fee of the National Education Association entitles one to receive for one year the Research Bulletin, the Journal, the Annual Volume of Addresses and Proceedings, and certain other publications of the Association. One dollar of each \$5 membership fee is for a year's subscription to the Research Bulletin.

The Research Bulletin may be received regularly thru a special subscription at \$1 per year. Many of the early issues of the Research Bulletin are already out of print. The special subscription at \$1 per year offers an opportunity to maintain a complete file of future Research Bulletins.

Those entitled to receive the Research Bulletin regularly are asked to report at once any change of residence, giving old as well as new address.

Purchasing Copies

Additional copies of this issue of the Research Bulletin may be obtained at the

following prices, postpaid if remittance accompanies order:

Single copies, 25c.

2 to 9 copies—10% reduction.

10 to 99 copies—25% reduction.

100 or more copies—33⅓% reduction.

Orders for Research Bulletins not accompanied by remittance are subject to transportation charges. Make checks payable to National Education Association.

Reproduction of Material in Research Bulletins

Material appearing in the Research Bulletin is copyrighted. However, Departments and regularly affiliated organizations of the National Education Association may reproduce parts of these bulletins for the advancement of education. These departments and organizations need no authority other than this notice previous to such reproduction. In other cases application for the release of materials is required. Address communications to the Research Division, National Education Association, 1201 Sixteenth Street, N. W., Washington, D. C.

CONTENTS

	Page
FOREWORD	200
I. THE PROBLEM OF SAFE TRANSPORTATION.....	201
II. THE SELECTION OF COMPETENT DRIVERS.....	205
III. SAFE EQUIPMENT	209
IV. SAFE TRANSIT PRACTISES	218
V. THE SELECTION OF SAFE ROUTES.....	225
VI. SAFETY PROMOTION	229
VII. BUSINESS PRACTISES AFFECTING PUPIL SAFETY.....	233
VIII. IMPLICATIONS OF THIS STUDY.....	237

LIST OF TABLES

1. Pupil Transportation Programs in 177 Cities over 30,000 in Population, 1934..	204
2. Miscellaneous Standards for School Bus Equipment and the States Having Each Regulation or a Similar One.....	216
3. Regulations Pertaining to the Operation of School Buses and the States in Which These Regulations Apply.....	223
4. Rules for Pupil Conduct and the States in Which Each Rule Applies.....	225
5. Deficiencies in School Bus Construction in the Case of Certain District Owned and Privately Owned Vehicles.....	233

LIST OF FIGURES

I. Ten-Year Trend in Pupil Transportation.....	202
II. Percent of Pupils Transported at Public Expense, 1933-34.....	203
III. Number of School Buses of Various Sizes Produced by Bus Manufacturers, 1928-1935	211
IV. Ten Commandments for Safe Driving.....	221
V. Safe Driving Examination.....	222
VI. The School Bus Route.....	227
VII. Certificates Awarded for Safe Driving.....	232
VIII. A Checklist of Important Safety Standards and Practises.....	238

FOREWORD

RAPID EXPANSION of the system of pupil transportation during the past decade and a mounting toll of automobile fatalities and injuries on the nation's highways have brought safety in school bus operation into the foreground as a problem of first importance. Moreover, there is every reason to expect that within a few years a much larger number of children will be transported and that certain traffic hazards will continue to exist. This situation calls for increased attention to matters of safety on the part of school authorities and all governmental agencies which share with them the responsibility for the safe operation of school buses. It demands, too, a more widespread public interest and a better informed public opinion than now exist with reference to the problems involved in safe pupil transportation.

This issue of the *Research Bulletin* directs attention to some of the possible causes of pupil injury associated with school bus operation. More important, it suggests numerous safeguards and safety precautions which have proved effective in eliminating school bus accidents. It indicates some of the common qualities which characterize safe drivers. It outlines certain minimum standards for school bus equipment. It calls attention to safe operating practices and to a number of administrative and supervisory procedures having vital safety implications.

One of the significant contributions which the study makes is to demonstrate that, in most of the states, adequate information about pupil transportation cannot now be obtained from any central agency. It is to be hoped that in many states steps will soon be taken to obtain more complete and accurate reports. That this result may reasonably be expected, is suggested by the following quotations from correspondence pertaining to the study:

1. We have very little of the transportation data called for in your form of May 1936. I have started action looking toward securing the complete information.

2. In filling out your questionnaire regarding transportation, it becomes very obvious that we do not have sufficient records to give us the information we need. We realize this situation and I hope the state board at its next meeting will appoint an official committee to work with me on records for transportation.

Written primarily for local school administrators and schoolboard members, this bulletin is intended as a manual, or practical handbook, which can be used either in evaluating an established system of pupil transportation or in developing plans for safe transportation where a new system is to be introduced. In addition, the bulletin should be particularly helpful to state school officers, legislative committees, and other officials whose duty it is to establish state-wide minimum standards and uniform operating rules. It should be of interest and value also to members of state and local safety councils, to the members of parent-teacher associations, to teachers concerned with safety education, and to other individuals and groups engaged in safety promotion.

WILLARD E. GIVENS, *Executive Secretary,*
National Education Association.

I. The Problem of Safe Transportation

Three million boys and girls are transported to and from school daily in conveyances provided by school authorities. Morning and evening a fleet of approximately 80,000 school buses moves out upon the highways of the nation, to cover routes totaling at least a million miles. There they take their chances with traffic hazards, inclement weather, and all other unfavorable road conditions. If this great program is to be carried out with safety, every precaution must be taken by those responsible for the enterprise.

Purpose

This bulletin is intended to encourage more widespread adoption of the best safety practices. It reviews important legal provisions and official rulings which pertain to pupil safety. It describes actual transportation practices in various states and localities. It contains safety suggestions and recommendations offered by various organizations and agencies concerned with the promotion of highway safety.

Sources and Procedures

The study began with a canvass of the literature already available. Search was then made thru the school laws and motor vehicle codes of all the states for legislation affecting safe school bus operation. The regulations of state boards and departments of education, and the rulings of highway commissions and motor vehicle departments were also analyzed. For the five-year period 1931 thru 1935, the *New York Times* was consulted for reports of school bus accidents. Information and constructive help were obtained thru correspondence and personal conferences with many people, especially the representatives of several national organizations and certain federal and state officials. Helpful reports on present practices were obtained from thirty-six states, the District of Columbia, Alaska, and Puerto Rico in reply to a brief questionnaire submitted in May 1936 to each state and territorial department of education. Thruout the bulletin our in-

debtedness to others is acknowledged in footnote references. Particularly helpful were the transportation manuals of state departments of education and the bulletins (1) *Regulation of Pupil Transportation in the United States*,¹ (2) *Equipment Requirements for Motor Vehicles*,² (3) *Uniform Act Regulating Traffic on Highways*,³ and (4) *School Buses: Their Safe Design and Operation*.⁴

Trends in Pupil Transportation

The transportation of school pupils is not a new form of educational service. It began, according to Farnsworth,⁵ in a Massachusetts school district in 1840. There it continued for twenty-nine years without legal authorization, until in 1869 Massachusetts passed the nation's first school transportation law, providing that

Any town in this Commonwealth may raise, by taxation or otherwise, and appropriate money to be expended by the school committee in their discretion for the conveyance of pupils to and from public schools.

Between 1870 and 1890, similar laws were passed in five states and between 1890 and 1910 in twenty-five additional states. In twenty-three states the provision of transportation facilities is now mandatory under certain conditions. In Missouri and Nevada it may be made mandatory in any district by vote of the people. In six states the law permits the transportation of pupils living more than a specified minimum distance from school. In fifteen states transportation is legally permissive at the discretion of school authorities. In Florida and Utah, the only states without specific legislation on the subject, general legislation authorizing school authorities to promote education and do all things needful for the maintenance and success of the schools has been interpreted to include pupil transportation. By 1920 pupils were being transported in all the states, whether or not specific legal sanction had yet been given.

¹ Eddleman, James C. *The Regulation of Pupil Transportation in the United States*. Bulletin of the Bureau of School Service, Vol. 6, No. 3. Lexington: University of Kentucky, 1934. 81 p.

² National Highway Users Conference. *Equipment Requirements for Motor Vehicles*. Washington, D. C.: the Conference, 1936. 127 p.

³ U. S. Department of Agriculture, Bureau of Public Roads. *Uniform Act Regulating Traffic on Highways*. Washington, D. C.: Government Printing Office, 1934. 46 p. (Act V of the Uniform Vehicle Code)

⁴ National Safety Council. *School Buses: Their Safe Design and Operation*. Chicago: the Council, 1936. 14 p.

⁵ Farnsworth, Burton K. "Basic Principles Must Be Established for Pupil Transportation." *Nation's Schools* 12: 39-42; August, 1933.

In spite of the fact that pupil transportation has been provided in certain cases for nearly a century, it is in some respects a new problem. Methods of transportation have changed—and are changing. The number of pupils transported is mounting rapidly. Figure I, based on the number of pupils transported in the decade since 1924, shows how rapidly the program is expanding. The development in certain states has been remarkable. New York, for example, which in 1927 was transporting only a little more than 10,000 pupils, now transports more than 100,000.⁶

Three factors have been especially important in producing the trend noted above: (1) improvements in our system of public roads, (2) new developments in motor bus construction, and (3) widespread efforts to provide better educational opportunities for rural children by consolidating small schools. Highway improvements have made it possible to transport pupils several miles within a rela-

tively short time. With good roads, too, have come better equipment and more regular schedules. The success of the movement for consolidated schools is readily shown. There were 12,674 consolidated schools in 1924; 17,248 in 1934. There were 165,417 one-room schools in 1924; only 138,542 in 1934. Since all these factors and others are still operative, there is every reason to expect that during the immediate future pupil transportation will continue to increase in volume and in relative importance.

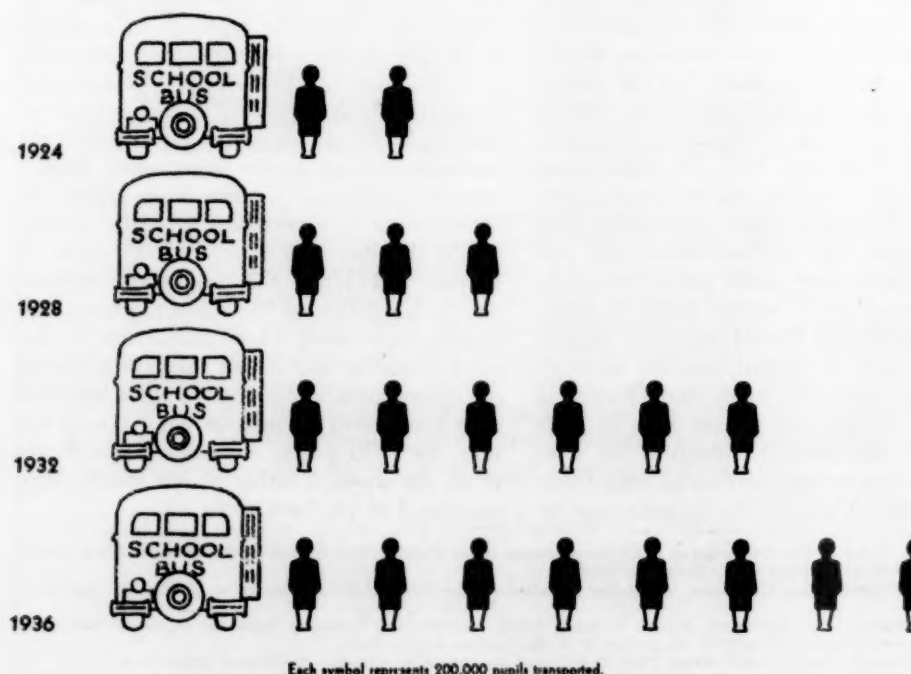
Transportation in the Various States

The problem, to be sure, is not of equal relative importance in all the states. Some transport relatively few of the pupils enrolled; others, a substantial percent, depending largely on the sparsity of population and the prevailing attitude toward consolidated schools. Figure II indicates the general volume of pupil transportation in each state.

⁶ Griffin, Francis E. "The Board of Education and Its Child-Transportation Program." *American School Board Journal* 92: 21-22; April, 1936.

FIGURE I

TEN-YEAR TREND IN PUPIL TRANSPORTATION

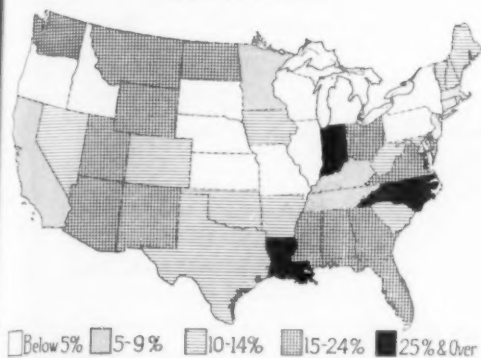


Each symbol represents 200,000 pupils transported.

Research Division, National Education Association

FIGURE II

Percent of Pupils Transported at Public Expense, 1933-34



Research Division, National Education Association

Sources: (1) Enrolments—U. S. Office of Education, *Statistics of State School Systems*, p. 49; (2) Pupils transported—Blome, David T., "Some Consolidation Statistics," *School Life* 21: 224; April, 1936

Record of Safety Thus Far Established

Generally speaking, pupil transportation has been conducted with few serious accidents. During the five-year period 1931 thru 1935 only nine school bus accidents were reported in the columns of the *New York Times*. There are no figures for the nation as a whole,⁷ but from individual states come such reports as:

Alabama—During the year 1934, there was not a single fatal accident in transporting 125,100 pupils more than 10,000,000 bus miles.⁸

Delaware—During the period 1924-25 to 1934-35, 45,000 school children were transported over approximately 5,000,000 miles without a serious injury resulting from the negligence of a school bus driver.⁹

Illinois—During 1935, there were six accidents involving school buses, but these accidents did not result in a single injury or death.¹⁰

⁷ There is at present, no possible source for complete and reliable information about accidents to school children associated with pupil transportation. In nine states no report of any kind is required in case of motor vehicle accidents. In most of the states, a report to the local police or the sheriff is sufficient. In only eleven states must a report be made to some designated state official. Five of these eleven states compile statewide summaries but do not report the number of children killed or injured in school bus accidents. State departments of education usually have the best information available, but a majority of these admit that their information is incomplete.

⁸ Blome, H. P. *Improving the Safety of School Bus Transportation*. Berwyn, Ill.: the Author. Unpublished ms. p. 2. (35 p.)

⁹ Letter from William Ball, supervisor of transportation in the Delaware State Department of Public Instruction, June 8, 1936.

¹⁰ Letter from H. H. Harrison, traffic engineer, Illinois Division of Highways, June 19, 1936.

¹¹ Reports from state departments of education, June 1936, except in the case of Utah and Wisconsin. The report from Utah comes from R. E. Hammond, Utah state tax commissioner, in a letter of June 1, 1936; that for Wisconsin from W. A. Burdick, director of the Highway Safety Department of the Wisconsin State Highway Commission, in a letter of June 11, 1936.

¹² *National Safety News* 29: 36; June, 1934.

¹³ Moore, D. H. "An Economical County Transportation System." *American School Board Journal* 85: 68; October, 1932.

¹⁴ Blome, H. P. *op. cit.*, p. 2.

¹⁵ *Ibid.*

¹⁶ *School Life* 21: 246; May, 1936.

¹⁷ Replies from state departments of education to one of the questions in our inquiry on safe transportation, submitted in May, 1936. See "Sources and Procedures," p. 201.

Florida, Georgia, Idaho, Kansas, Michigan, Missouri, Nebraska, Rhode Island, South Carolina, South Dakota, Utah, and Wisconsin—No pupils are known to have been injured in school bus accidents in 1934-35.¹¹

To the further credit of those responsible for pupil transportation may be cited the unusually fine safety records of certain school districts. The Charles Feilbach School for Crippled Children makes the proud boast of "no child injured in a million bus rides."¹² Lake County, Florida, operates 27 buses to carry daily 1000 children, an average distance of 10 miles. The system has been so carefully planned and administered that no single serious injury to any pupil has ever occurred.¹³ Wasco Union High School in California also has a perfect score—not a single accident, collision, or injury in over 15 years of operation.¹⁴ Barstow Union High School in California claims the same distinction, adding further that there have been but 4 vehicle delays enroute in the last 2 years of operation. This school, incidentally, also claims the longest bus route in the United States, a loop route of 104 miles.¹⁵ Then there is the record of Sioux City, Iowa—1000 pupils a day in 17 buses for 17 years without an accident in which a child was injured.¹⁶ One of the 17 drivers has been on the job the whole of the 17-year period; 2 have served 16 years; another, 14 years. These and other districts are setting safety records worthy of emulation.

Yet in spite of the general good record for safety which has been established, preventable accidents occasionally do result in the death or serious injury of school pupils. The need for vigilant attention to safety problems is demonstrated by the following accident reports from 11 states.¹⁷ During the past few years—not more than 5 years in any case—297 school bus accidents have occurred in the 11 states.

Eighteen pupils were killed; 209 were seriously injured. According to the reports received, most of these accidents, with proper precautions, might have been prevented. Furthermore, just as there are districts with unusually fine safety records, there are others with high accident records. For example, between October 18, 1934, and January 24, 1935, there were 10 accidents in one school district.¹⁸ Five pupils were struck by passing automobiles after alighting from buses. One accident involved striking a car which stopped suddenly ahead of the bus; another, colliding with a car as the bus was passing a truck and trailer; another, skidding into a parked car on a curve; another, forcing a car off the road and causing it to strike a pole; and the last, collision with a car as the bus entered a main road.

It is the occasional accident and the rare case of negligence that seem to justify this bulletin. A single preventable school bus accident is one too many.

Scope of This Study

The material presented here deals primarily with safe pupil transportation in rural school districts. The problem is more urgent in these districts than in urban centers, not only because more rural children are transported, but because equipment standards tend to be lower and operating regulations less strict than those enforced by city school authorities. A number of city school districts have extensive pupil transportation programs. As early as 1930, 84 percent of the cities over 100,000 in population were providing transportation for certain handicapped pupils and 58 percent for certain normal children to whom no school was reasonably accessible. Smaller cities, too, have their transportation programs, as Table 1 reveals. This bulletin should prove helpful to city school officials to the extent that common safety problems are found in rural and urban areas. Most of the safety suggestions offered are applicable in city school systems. There is no discussion, however, of the special hazards associated with pupil transportation in urban districts.

In the same manner, the bulletin is restricted almost entirely to safe motor bus operation, because buses far outnumber school convey-

TABLE 1.—PUPIL TRANSPORTATION PROGRAMS IN 177 CITIES OVER 30,000 IN POPULATION, 1934

Type of transportation	Number of cities	
	1	2
No transportation provided.....		60
Transportation for atypical children only.....		42
Transportation for certain normal children as well as atypical children.....		75

Source: Hill, Henry H. "City School Transportation as a Method of Economy." *American School Board Journal* 89: 35; August, 1934.

ances of all other types. Safety problems exist, to be sure, in cases where children are transported by means of horse-drawn wagons, sleighs, boats, taxicabs, special trains, street cars, and other vehicles. But the consideration of special problems associated with these forms of transportation lies beyond the scope of this study.

In connection with motor bus operation, the bulletin deals with both district owned school buses, and with those privately owned and operated under contract. Altho in some measure the problems of safety are different as related to these two types of school transportation, they are to a considerable degree the same. Reports from 20 states and the District of Columbia indicate that the privately owned school buses are the more numerous—20,147 to 8,641, respectively—or, in these states, a ratio of 2.3 to 1. Each type is so widely used that neither can be ignored in this discussion.

Organization of the Report

The bulletin has eight sections of which this is the first. The second deals with the selection of competent bus drivers; the third, with the provision and maintenance of safe equipment. Safe practises on the part of drivers and pupils are then outlined, this being followed by a section on the selection of safe routes. The discussion then turns to some of the less direct influences on pupil safety, including certain forms of safety promotion and various business practises affecting pupil safety. The final section reviews the salient facts and important implications of the bulletin.

¹⁸ This report on an unnamed school district is given by G. B. Butterfield, assistant secretary of the Hartford Accident and Indemnity Company, in a memorandum of July 13, 1936.

II. The Selection of Competent Drivers

No school bus is safer than the driver who operates it. Two of the contrasting cases cited in the preceding section of this bulletin illustrate this fact—one a school district without a pupil injury in seventeen years of operation; the other a district where ten accidents occurred within a period of three months. The same conclusion is suggested by the accounts of nine school bus accidents which appeared in the *New York Times* between 1931 and 1935, inclusive.¹ Eight of the nine apparently were due to negligence on the part of the drivers. Neither the finest of equipment, roads remarkably free from traffic hazards, excellent driving regulations "on paper," nor all of these combined, are effective pupil safeguards if incompetent drivers are employed.

Responsibility for Selecting Capable Drivers

Obviously, major responsibility for selecting competent school bus drivers must be assumed by local boards of education, even under the best of circumstances. State legislatures, state departments of education, and state highway officials have responsibilities which they should not neglect. General basic qualifications for school bus drivers ought to be specified in the state's motor vehicle code and in the official rulings of the state's education and highway departments. Such laws and rulings make it much easier for local schoolboards to weed out undesirable applicants, to resist local pressure, and thus to secure well-qualified drivers. But local schoolboards must interpret and apply these regulations, they must usually adopt other supplementary standards, and they must exercise good judgment in evaluating certain personal traits and qualities which no set of rules can adequately describe.

In the absence of appropriate state laws and regulations, schoolboards must assume almost complete responsibility for obtaining competent drivers. How generally this must be done, and the implied need for more rigid

statewide standards, is suggested in the following paragraphs.

Minimum Age

The qualification mentioned most frequently in state laws or regulations² is an acceptable minimum age for school bus drivers. In Oklahoma, only "an adult" may be employed, unless he is endorsed by at least five patrons. In 12 states, drivers must be at least twenty-one years old.³ Twelve prescribe eighteen years as a minimum;⁴ another, seventeen years;⁵ and 6 specify the minimum age as sixteen.⁶ Thus only 13 states require school bus drivers to be adults; 19 specifically authorize the employment of minors; and 16, by the absence of state regulation, permit their employment. In contrast, 33 states have established twenty-one years as the minimum age for drivers of public motor buses. Surely there is no good reason why the driver of a commercial vehicle serving the general public should be more mature than the driver of a school bus.

Pupil Drivers

In the states where minors are allowed to drive school buses, older pupils—usually high-school students—are often employed. In no case do these drivers constitute a large percent of the total number of drivers, but there are several states where the practise is not uncommon.

In support of this arrangement it is argued that (1) high-school boys can be employed for considerably less money than adult drivers; (2) they will always be at school, ready to start promptly at the close of the day's session; and (3) they are accustomed to school routine and will cooperate better with school authorities in carrying out the instructions given to them. In Montgomery County, Ohio, where until recently student drivers were regularly employed, the authorities were well satisfied with the plan.⁷

¹ Also referred to earlier, see p. 203.

² The term "regulation" is used here, and thruout the bulletin, to mean an official ruling by any duly authorized state agency which has the full force and effect of law. It includes requirements established by education or highway departments, but does not refer to suggested standards which local boards may ignore.

³ These states are: Arizona, Delaware, Indiana, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas, Utah, and Virginia.

⁴ Arkansas, California, Connecticut, Florida, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New Mexico, Oregon, and Washington.

⁵ Colorado.

⁶ Idaho, Iowa, Kansas, Montana, North Carolina, and South Dakota.

⁷ Carson, J. D. "Why Expensive Transportation of School Children in Privately Owned Buses?" *American School Board Journal* 87: 41; October, 1933.

Other districts, however, find them less satisfactory—for example, the district where one student driver racing with another overturned his bus, killing one child and injuring others;⁸ and the one where a student driver started up before the pupils were loaded, breaking the leg of his own younger brother.⁹ Insurance companies, too, have found them poor risks for liability insurance, as is shown by the following testimony:

One serious problem we face in the matter of school bus safety is the practise of having student drivers. We would like to see drivers for school buses be at least twenty-one years of age. We ourselves decline risks when school buses are driven by students.¹⁰

In some cases student drivers may prove quite satisfactory, but their employment should probably be the exception rather than the rule. It is generally conceded that they tend to be less level-headed in emergencies, that they are less able to maintain proper discipline on the bus, and that they are inclined to drive recklessly.

Maximum Age

Altho the age of a safe driver is usually thought of in terms of the minimum age of responsibility, some attention should also be given to maximum age. Advancing years bring changes which definitely affect driving skill. For example, vision is more likely to fail than to improve, and general health is likely to become poorer. Tests made at Massachusetts State College show that brake reaction time¹¹ grows increasingly slower after twenty-three years of age, changing from an average of .41 seconds at age twenty-three to an average of .47 seconds at age sixty-five.¹² Other tests reveal a distinct loss in coordination between eye and hand in steering an automobile after the age of fifty-five years.¹³ It is significant, too, that 97.8 percent of the drivers of public buses and 96.4 percent of the drivers of com-

mercial trucks are between the ages of twenty-one and forty-five.

No statewide regulation with respect to a maximum age for school bus drivers is known to be in use; neither is it possible at this time to suggest an optimum age limit. Local regulations vary, some fixing the limit at sixty years, others at sixty-five or seventy. Blome recommends that no school bus driver be employed or retained beyond sixty-five years of age.¹⁴ The Kentucky and Nebraska state departments of education suggest that local boards employ no driver more than fifty years of age.

License Requirements

There are eighteen states in which every school bus driver must have either a special bus driver's license or chauffeur's license.¹⁵ In most cases this special license is in addition to some ordinary form of driver's license. In twenty-one other states no special license is required, but a system of ordinary drivers' licensing is in use and school bus drivers must have the regular license.¹⁶ Nine states require no license.¹⁷

The states requiring drivers' licenses and chauffeurs' licenses follow different standards and procedures in issuing them. In some cases the application for license is a mere formality and little or nothing is done to exclude unfit drivers. Other states enforce certain age requirements and give whatever tests are considered necessary if the applicant has any obvious mental or physical handicap. Still others exercise considerable care in issuing licenses, giving rather thoro driving tests to all applicants. In three states, Montana, Ohio, and Rhode Island, a certificate issued by the local or county schoolboard is required in addition to other necessary licenses.

Experience Requirements

About one-third of the state laws and regulations specify that school bus drivers shall be

⁸ Reported by G. B. Butterfield in a memorandum on school bus accidents, June, 1936.

⁹ An accident which occurred a few years ago in a consolidated school district in Webster County, Nebraska.

¹⁰ Letter under date of June 13, 1936, from G. B. Butterfield.

¹¹ This refers to simple brake reaction time as distinguished from complex, reflex, and discriminatory reactions.

¹² Massachusetts State College Psychological Laboratory. *Research on Driving Skill*. Report of FERA Project XS-F2-U25. Amherst, Mass.: the College, 1935. p. 7-8.

¹³ *Ibid.*, p. 9-11.

¹⁴ Blome, H. P., *op. cit.*, p. 4.

¹⁵ Alabama, Arkansas, California, Colorado, Delaware, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, Ohio, Oklahoma, Utah, and West Virginia.

¹⁶ Arizona, Connecticut, Idaho, Indiana, Kansas, Kentucky, Maryland, Montana, Nebraska, Nevada, New Hampshire, North Carolina, North Dakota, Oregon, Rhode Island, South Carolina, Texas, Vermont, Virginia, Washington, and Wisconsin.

¹⁷ Florida, Georgia, Louisiana, Mississippi, New Mexico, Oklahoma, South Dakota, Tennessee, and Wyoming.

experienced. In the states having some regulation of this kind,¹⁸ the usual requirement is either one or two years' experience; sometimes, only the general provision that the driver be "experienced."

Physical Fitness

Except as freedom from physical handicaps is a prerequisite to obtaining the necessary chauffeur's or driver's license, few states have regulations with respect to the physical fitness of drivers. Arkansas, Florida, Indiana, Kentucky, New Jersey, Ohio, Pennsylvania, Rhode Island, and the Territory of Alaska are exceptions to this rule, the requirements ranging from Florida's "good health, physically sound, and alert" to a health certificate issued on the basis of a thorough physical examination. Indiana, New Jersey, Ohio, and Rhode Island require annual health examinations. For example, in New Jersey, "the medical examination shall be made annually within ten days before the opening of school in September, and reported on the prescribed form."

The need for such requirements was strikingly illustrated in a survey made in Florida just before the adoption of the present school transportation code. Among 1000 drivers examined, two were deaf, two were blind in one eye, three had had one leg amputated, and six were more than sixty years old. A number of others were considered physically unfit for their jobs by the examining physicians.¹⁹

The Committee on Safety of the National Association of Motor Bus Operators has recommended:

That all bus drivers must undergo physical examination before being employed and twice each year after employment and that only men who are in physical condition that will enable them to drive safely be employed or retained in employment as bus drivers. Such physical examination must include vision and hearing tests.²⁰

Character

The character and habits of a school bus driver should be considered almost as carefully as those of a teacher. More than a fourth of

the states specify, either in their laws or official regulations, that drivers shall be of good moral character and shall have good habits.²¹

Other Qualifications

Occasionally certain personal traits and qualities are listed in the state regulations such as, "neat, pleasant appearance"; "tactful in the management of children"; "be able to read and write the English language"; "be capable of maintaining order on the bus without friction"; and "a reasonable degree of efficiency in the use of first aid treatment." One state requires the driver to be of the same race as the pupils riding in the bus.

Sample Requirements

As examples of rather thoroughgoing regulations with respect to the qualifications of drivers, the standards recently adopted in Kentucky may be cited:

*Age*²²—No one should be employed to drive a school bus who is less than eighteen or more than fifty years of age.

Health certificate—No one should be employed to drive a bus who is not able-bodied or who has a communicable disease. He must be strong enough physically to handle the bus with ease. He must have normal use of his body, as use of both hands, both feet, both eyes, and both ears. He must present a certificate from a reputable physician, after a careful examination, annually.

*Vision*²³—He must present a certificate from a reputable oculist as to his vision.

Morals—No person shall be employed or kept in service as a driver of a school bus who uses intoxicating liquors; he must not use tobacco while in the bus or on the school grounds; and he must refrain from the use of profane and indecent language.

Character—He must be thoroughly reliable, and of good repute; a person whom the children will respect, and whose actions should result in constructive influence over the pupils. He must be capable of maintaining order.

Experience—He shall satisfy the employing authority of his ability to drive a school bus by citing driving experience and by giving reliable references.

License—He must hold a driver's license. No one should be employed as a school bus driver who has had a driver's license revoked.

¹⁸ Fourteen states having some type of experience regulation are: Arkansas, Connecticut, Indiana, Kentucky, Maine, Missouri, Maryland, North Dakota, Ohio, South Dakota, Utah, Virginia, West Virginia, and Wisconsin. Alaska also has an experience requirement.

¹⁹ *Public Safety* 8: 16; March, 1934.

²⁰ National Association of Motor Bus Operators. *Report of Committee on Safety to the Sixth Annual Meeting*. Washington, D. C.: the Association, 1932, p. 4-5.

²¹ States which have certain character requirements include: Arkansas, Colorado, Delaware, Florida, Idaho, Indiana, Iowa, Kentucky, Mississippi, Montana, New York, Ohio, Rhode Island, Wisconsin, and the Territory of Alaska.

²² The standards proposed with respect to age and vision are recommendations, not definite rulings.

Contract—He must sign the driver's contract furnished by the schoolboard, which contract covers "Regulations for Driver" furnished by school authorities.

Personal appearance—Drivers should be required to keep clean and neat while operating a school bus.

First aid—Bus drivers should be expected to attain a reasonable degree of efficiency in the use of first aid treatment. They should be regularly instructed concerning the best way to render first aid by someone thoroly qualified to give instruction.²⁰

Rhode Island is a state in which considerable success has been achieved in selecting safe school bus drivers. The State Board of Public Roads requires that every applicant present a certificate from the schoolboard certifying that he is twenty-one years of age, in good health, and of good moral character. He must also have a chauffeur's license dated at least a year previous to application for a position as school bus driver. Meeting these prerequisites, the applicant is interviewed by an official of the Board of Public Roads who discusses with him the responsibilities and obligations of school transportation. Emphasis is laid on the need for unusual care in operating a school bus. The system has never become perfunctory. Drivers on the job frequently bring back to the Board problems and experiences which lead to improvements in regulations and practises.

²⁰ Kentucky State Board of Education. *Manual on Pupil Transportation*. Educational Bulletin, Vol. 4, No. 2. Frankfort, Ky.: the Board, 1936. p. 36-37.

Salary

Competent school bus drivers are not obtained by selecting those who are willing to accept the lowest wages. In this matter, as in most other instances, school districts usually get the kind of service for which they pay. One of the common reasons for the employment of poorly qualified school bus drivers is that no competent drivers can be had for the wages offered. Salary levels which vary widely from one community to another are to be expected, but in every school district, the salary range should be high enough so that competence may be the criterion for selection.

Driving Practises, the Ultimate Test

Careful selection of bus drivers according to standards such as those enumerated above should do much to achieve the goal of "a safe driver on every school bus." More rigid requirements than now exist might well be adopted by many of the responsible state agencies; and in the absence of state regulations, local schoolboards should set up their own local standards. However, a driver might conceivably meet the letter of every requirement listed here and still prove incompetent because of indifference, carelessness, or unsafe driving practises. Hence the driver's safety record and an intimate knowledge of his customary driving practises should be regarded as the ultimate test of his fitness for continuance in service or reemployment.

III. Safe Equipment

The same care used in selecting well-qualified drivers should be taken in providing safe equipment. Accidents are invited when the school buses used are poorly constructed, lacking in essential equipment, or badly in need of repair. About 15 percent of all the motor vehicle accidents that occur are caused, at least in part, by mechanical defects.¹ In the case of school bus accidents, an even larger percent should probably be attributed to this cause. The director of public safety of the National Safety Council describes the situation as follows:

All too frequently the school bus consists of a chassis, which has outworn its usefulness for hauling farm produce, on which has been hammered together a wooden body at the lowest possible cost, and representing, in toto, unsafe and unhygienic and also uneconomical equipment. If children are to be transported safely, this kind of equipment must be relegated to the junk yard, and at once.²

School buses of the type just described are less common now than when school transportation was in its infancy. The general advance made in automotive engineering, the rapid increase in the number of children to be carried, and a public opinion awakened to the problem of pupil safety have led to marked improvements in mechanical standards. Yet there is much room for improvement and many wholly unsuitable buses are still in use. Reports from three comparatively recent state inspection programs suggest the seriousness of the problem:

1. Last winter we had one very serious accident in which three children lost their lives. The body of the bus was wood constructed and was in the neighborhood of 12 to 15 years old. Had it been of steel construction, there is no doubt in my mind but that the lives of these three children could have been saved. The bus body was crushed similar to a match box. After this accident we were prompted to make a survey relative to our school buses. . . . ¶ Of the 168 buses inspected, 46, or approximately 29 percent, were equipped with bodies that were unfit for the transportation of children. Several bodies were found to be complete wrecks, unfit to be driven, let alone used in transporting children. . . . Ninety percent of the chassis were not in good shape.³

2. Of the 500 school buses inspected, the department's representatives approved 75 vehicles. Tentative approval was given for 362 other buses on condition that certain minor repairs would be made immediately. The remaining 63 either were declared totally unfit for service or were required to return for reinspection after extensive rebuilding or repair.⁴

3. Of a little more than 4,000 buses inspected 2,656 had front exits only; 887 had rear exits only. Forty-four vehicles had quite inadequate or defective brakes; 529 had questionable brakes or brakes of only medium quality.⁵

In 1933, antiquated, wooden bus bodies were held largely responsible for the deaths of fifteen Florida children killed in school bus accidents. Aroused to the importance of safe equipment, the state department of education then ruled that after July 1, 1935, all school buses should be equipped with steel bodies.⁶

Until 1934, it was a common practise for school bus owners to purchase from franchised operators in New York City the buses which had been condemned by the New York Transit Commission as unsafe for use on the regular lines! One instance will illustrate the hazards involved. A condemned bus purchased for school purposes was disbarred as a school bus because the emergency door was inoperative. Several times the driver tried to have this bus passed without correcting the defect. Finally he had the door repaired and put the bus into service. Three months later, in December 1934, it caught fire from the back-fire of the engine while carrying a load of forty children. Had it not been for the now usable emergency door, escape would have been impossible, for flames enveloped the front portion of the bus, cutting off access to the service door. A few experiences of this type have led New York to ban such equipment.⁷

An insurance company official reports that:

As a class, school buses are inferior to those used for transporting the public; in fact, we have run across some wretched specimens. One bus was a canopy top truck with canvas side covers, which when let down kept the children in darkness and gave the driver no side vision.

¹ National Safety Council. *Accident Facts*. Chicago: the Council, 1936. p. 26.

² Statement by Sidney J. Williams quoted by Curtis Billings in an article in *Motor Transportation* 8: 11; August, 1933.

³ Letter of June 3, 1936, from the director of motor vehicle inspection in the state highway department of Oklahoma.

⁴ News release of September 2, 1934, from the Department of Motor Vehicles of Connecticut.

⁵ Moffitt, M. E., and Calhoun, J. T. *Transportation Survey, Public Schools of Mississippi*. Bulletin No. 78. Jackson, Miss.: the State Department of Education, 1934.

⁶ *Bus Transportation* 13: 300; August 15, 1934.

⁷ Fullen, William G. "Insuring Safe Transportation to the Public." *Proceedings*, Ninth Annual Meeting, National Association of Motor Bus Operators. Washington, D. C.: the Association, 1935. p. 83-84.

Minimum Standards for School Bus Equipment

Safe equipment, like other important safety measures, can be assured only by the cooperative efforts of various state and local agencies. Certain minimum standards should be established on a statewide basis, either thru state laws or by means of authoritative rulings. Appropriate state agencies should be clothed with certain regulatory powers—with whatever authority over school transportation is consistent with their respective governmental functions. More often than at present, school bus equipment should conform to the general safety standards required of other comparable vehicles. Now school buses usually are exempt from the regulations of highway and public service commissions and from the provisions of state laws regulating "common carriers." For the most part, the passengers of common carriers are adults. They enter the bus recognizing the element of risk; they can insure themselves against accidents if they so desire; in case of accident they should be able, in some measure, to help themselves. School children, on the contrary, are required to ride in the bus provided. They seldom recognize the risks involved and in emergencies are less able to care for themselves. In a great many instances they have little or no protection in the form of liability insurance. This being true, equipment standards for school buses should be higher, if anything, than standards for other motor vehicles. State legislatures, state education departments, state highway commissions, motor vehicle departments, the state highway police, and perhaps other state agencies should join forces in keeping dangerous buses out of school service. Local school authorities too must shoulder large responsibilities, sometimes for the interpretation and enforcement of statewide regulations, more often for the development of their own equipment standards in the absence of adequate state regulation.

State and local agencies interested in this problem can turn to two sources for suggestions with respect to suitable equipment standards: (1) to the actual laws and regulations of the several states, and (2) to the ideal equipment standards proposed by recognized leaders in the field of highway safety. Using these sources, the discussion now turns to a summary of existing practises and proposed standards.

Size of the School Bus

A majority of the school buses now in use, especially those just going into service, are considerably larger than those in use a few years ago. The spread of the school consolidation movement, resulting in more pupils to be transported, has created a demand for larger buses. Engineering improvements by bus manufacturers and improved highways have made the use of larger conveyances feasible. The general trend is apparent from Figure III, which shows the number of large, medium, and small school buses produced and distributed by bus manufacturers from 1928 to 1935. Buses having a capacity of 40 pupils or less constituted 86 percent of all those produced in 1928 and 78 percent in 1929. Beginning in 1930, however, these began to be outnumbered by the larger buses with the result that in 1935 they constituted less than 3 percent of the new buses produced. The medium-sized bus, carrying 40 to 59 pupils, has become the most popular type, taking the lead in 1930 and accounting in 1935 for 86 percent of all school bus construction. Almost no school buses for more than 60 pupils were produced in 1928, but since 1931 a consistent gain has been registered until in 1935 more than a thousand vehicles of this kind were placed on the market. Reports from other sources tell of the use in certain localities of buses intended for 100 or even 125 pupils.

This trend has a definite bearing on the problem of pupil safety. Even under the most ideal circumstances in other particulars, the mere size of a bus may constitute a hazard. A traffic engineer makes the following comment with reference to the matter:

The school authorities should restrict the maximum capacity of the buses to a reasonable amount, consistent with the motor, chassis, brakes, tires, etc., and with the possibilities of proper control in the bus. Some school buses are being constructed with capacities of upward of 100. Any such capacity seems entirely inappropriate for a school bus for such reasons as the following:

(a) In general, there is no one in the bus with authority to maintain discipline except the driver. It is quite impossible for anyone to expect the driver to maintain discipline among such a large number of children and operate the bus properly. Even if the bus patrol members are available, it is not deemed wise to attempt to maintain discipline with their aid over any such numbers.

(b) Buses which are constructed by untrained persons would be likely to be especially dangerous

when the capacity is too large. They often would lack the necessary knowledge to insure proper ventilation, heating, braking capacity, power for hills, etc.

(c) Any one accident could involve a very large number of casualties with buses of excess capacity. Aside from the humanitarian aspect, it is a very practical question as to whether insurance coverage would be adequate for any such number and still be of a price that could be paid by the operator of such a bus.

(d) Buses of excess capacity must be large and especially where not made by competent manufacturers would be generally hard to maneuver.

(e) There would be a distinct problem in loading and unloading in safety any unduly large group of children.⁸

Believing that large school buses are hazardous, Connecticut limits the size of school buses to a capacity of 55 and forbids the carrying of more than a capacity load. Indemnity companies hesitate to write insurance for buses with a capacity over 55, and would favor legal restrictions limiting school buses to 40 or 45 pupils.⁹

⁸ Memorandum on *School Bus Safety* (dated May 29, 1936) from Burton W. Marsh, director, Safety and Traffic Engineering Department of the American Automobile Association.

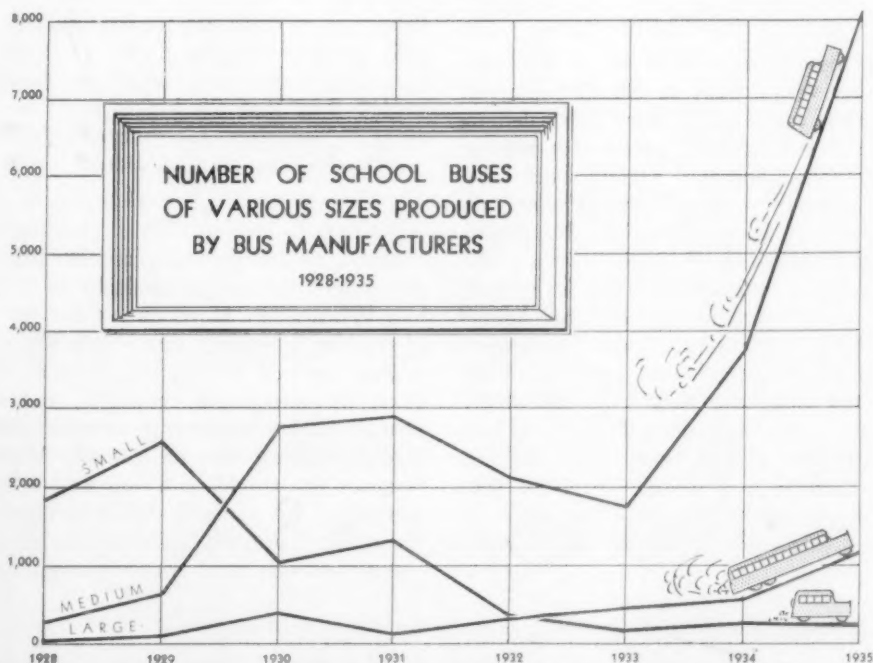
⁹ Statement made in correspondence by an official of the Hartford Accident and Indemnity Company.

Probably no single limit can be established as the proper maximum for all communities. Road conditions, the driver's skill, age of the pupils, and other related factors should be considered. In one instance a bus designed for 60 pupils may be operated more safely than another which can accommodate only 30. Before purchasing any equipment or letting any contract, however, school authorities will do well to raise the question: Is this bus too large to be driven safely on the route for which it is intended?

The National Safety Council offers the following advice:

A school bus should never carry a load exceeding that which is prescribed by the manufacturer. A one ton chassis (designed to carry a "pay load" of one ton in addition to the body) is recommended for buses with a seating capacity up to 25 children; a one and one-half ton chassis for a bus seating from 25 to 35 children; and a two ton chassis for a bus seating 35 to 50 children. *No more than 60 children should be carried in a school bus except in very*

FIGURE III



In this chart a "small" bus is one intended for fewer than 40 pupils; "medium," for 40-60 pupils; "large," for more than 60 pupils.

Source: Annual reports in the February issue of *Bus Transportation*

Research Division, National Education Association

unusual cases.¹⁰ The inside height of bus bodies should be not less than 60 inches. . . . The bus chassis should be especially built for the transportation of people—that is, a motor coach rather than a truck chassis. This will give the chassis sufficient strength; it will provide for a lower center of gravity making it less liable to tip than a truck; it will provide for greater comfort than a truck; and will prove equally or more economical in the long run.¹¹

Type of Construction

Two states, Florida and Utah, now require all school buses to be equipped with steel bodies. The State Highway Commission in Oklahoma reports that an effort to secure legislation requiring steel construction will be made in the 1937 legislature of that state. In several other states the purchase of buses with all steel bodies is strongly urged by state education departments and other authorities. Another common recommendation is that bus bodies be purchased from reliable bus body manufacturers rather than from relatively inexperienced, independent workmen. A few states wisely prohibit the use of welded frame extensions or other improvised modifications of frame or chassis.

Brakes

With the exception of Wyoming, the general motor vehicle laws or official rulings of all the states contain some more or less definite regulation as to kind of brakes that may be used on vehicles operating therein. Such laws, of course, apply to school buses. Twenty-two states and the District of Columbia specify stopping distances at given speeds; for example, a stopping distance of 30 feet for vehicles moving at the rate of 20 miles per hour.¹² More than half the states require two separate means of applying the brakes. In Alaska, California, Colorado, and New York official rulings require all school buses to be equipped with four-wheel brakes. The brake regulation generally regarded as a proper model for state legislation, or official rulings, is that which appears in Section 124 of the Uniform Vehicle Code:

(a) Brake equipment required.

Every motor vehicle . . . when operated upon a highway shall be equipped with brakes adequate to control the movement of and to stop and hold such vehicle, including two separate means of applying the brakes, each of which means shall be effective to apply the brakes to at least two wheels. If these two separate means of applying the brakes are connected in any way, they shall be so constructed that failure of the operating mechanism shall not leave the motor vehicle without brakes on at least two wheels.

(b) Performance ability of brakes.

1. The service brakes upon any motor vehicle . . . shall be adequate to stop such vehicle . . . when traveling 20 miles per hour within a distance of 30 feet when upon dry asphalt or concrete pavement surface free from loose material where the grade does not exceed 1 percent.

2. Under the above conditions the hand brake shall be adequate to stop such vehicle . . . within a distance of 55 feet and . . . to hold such vehicle . . . stationary on any grade upon which operated.

3. . . .

4. All braking distances specified in this section shall apply . . . whether such vehicles are not loaded or are loaded to maximum capacity.

5. All brakes shall be maintained in good working order and shall be so adjusted as to operate as equally as practicable with respect to the wheels on opposite sides of the vehicle.¹³

Unlike the foregoing regulations, many of those now in effect are too indefinite to serve their intended purpose. Especially in the case of school buses some clearer specification is needed than that the brakes must be "adequate," "sufficient to control," "efficient," "serviceable," or "in good order."

Tires

Worn or inferior tires are hazardous on any motor vehicle, particularly on a school bus. When a tire blows out, it has the effect of applying a brake on that wheel. The vehicle is almost certain to sway before the driver can offset the unexpected resistance, and in the case of a heavy conveyance especially, may be thrown entirely out of control. Moreover, frequent tire trouble is a source of delay and annoyance that can and should be eliminated. Good tires, properly inflated, are absolutely essential to safe pupil transportation.

¹⁰ Italics are ours. A maximum capacity of 60 is recommended also by H. P. Blome, *op. cit.*, p. 7.

¹¹ National Safety Council. *School Buses: Their Safe Design and Operation*, Chicago: the Council, 1935. p. 3-4.

¹² The states in which stopping distances are specified are: California, Colorado, Connecticut, Delaware, Illinois, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Virginia, Washington, and Wisconsin.

¹³ U. S. Department of Agriculture, Bureau of Public Roads. *Uniform Act Regulating Traffic on Highways*. Washington, D. C.: Government Printing Office, 1934. p. 30-31. (Act V of the Uniform Vehicle Code)

Safety Glass

In Alaska, the District of Columbia, and at least twenty-eight of the states, school buses must be equipped with safety glass.¹⁴ In some cases this requirement hinges on a general law applicable to all motor vehicles. In others, special laws or special rulings for school buses have been adopted. No equipment standard for school buses is in more general use. A satisfactory regulation covering this point is as follows:

(a) On and after _____ (date) no person shall sell any new motor vehicle nor shall any new motor vehicle be registered thereafter which is designed or used . . . as a school bus unless such vehicle is equipped with safety glass wherever glass is used in doors, windows, and windshields.

(b) . . .

(c) The term "safety glass" shall mean any product composed of glass, so manufactured, fabricated, and treated as substantially to prevent shattering and flying of the glass when struck or broken or such other or similar product as may be approved by the commissioner [of motor vehicles].

(d) The commissioner shall compile and publish a list of types of glass by name approved by him as meeting the requirements of this section. . . .¹⁵

Identification: Color of School Buses

It is quite generally agreed that a distinctive, uniform color for school buses is a desirable safety precaution. This enables the passing motorist to recognize a school bus at once and to drive with unusual care when near it. Yellow or orange with black trim and black lettering are colors widely used and recommended by the National Safety Council¹⁶ and the American Automobile Association.¹⁷ The following regulation is typical:

The body of the bus should be painted golden orange color. The inside of the bus should be painted gray.¹⁸

Michigan also requires school buses to be painted uniformly but uses a different color scheme:

(311) *School district boards; painting of school owned bus; colors, design; enforcement.* Sec. 27. Every school owned bus hereafter purchased or hereafter repainted shall be painted as follows: The superstructure or top of the bus constituting two-fifths of the body area shall be painted blue, under which shall be a line of white constituting one-fifth of the body area which shall extend over the hood of the engine, and the base of the bus constituting two-fifths of the body area shall be red in color. The name of the school district shall be painted in black on the white line at the back, front and sides of the bus. It shall be the duty of the superintendent of public instruction and the district board of education of each school district in this state to enforce the provisions of this section.

(312) *Private owned school bus; painting, expense.* Sec. 28. In the event that owners of buses now in operation for the transportation of school children wish to repaint their school buses in the above colors and designs, they shall apply to the board of education for paint for that purpose, and said board of education shall be required to furnish the said paint free of expense to the owner. . . .

(314) *Restrictions on non-school buses; penalty.* Sec. 30. Buses, not engaged in the transportation of school children, either part time or full time, shall not be permitted to be painted in these same colors and design. Any person, firm or corporation operating any bus in contravention to the provisions of this act, will be guilty of a misdemeanor. . . .¹⁹

Bills similar to the Michigan law were introduced into several legislatures during their most recent sessions. The idea is said to have originated with a traffic officer in California, who tried it for a time in his district and found it helpful in preventing school bus accidents. Thus introduced, a large national organization is now actively promoting legislation to make red, white, and blue the standard colors for school buses.²⁰ The organization rightly holds that uniform painting of buses thruout the nation would be of distinct advantage, because then persons traveling from one state to another would always know a school bus for what it is. They claim further, however, that yellow or orange buses are not sufficiently distinctive, partly because of dust and mud, and partly because many other vehicles are painted a similar shade. On this point there

¹⁴ California, Colorado, Delaware, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Utah, Vermont, Virginia, West Virginia, and Wisconsin.

¹⁵ U. S. Department of Agriculture, Bureau of Public Roads. *op. cit.*, p. 32.

¹⁶ National Safety Council, *op. cit.*, p. 6.

¹⁷ Memorandum from the American Automobile Association, Safety and Engineering Department, June 2, 1936.

¹⁸ Kentucky State Board of Education, *Manual on Pupil Transportation*. Educational Bulletin, Vol. 4, No. 2. Frankfort: the Board, 1936, p. 9. ¶ Regulations similar to this are in effect in Alaska, California, Florida, Maryland, Minnesota, New Jersey, Oklahoma, Utah, and West Virginia.

¹⁹ Extracts from Ch. V, Part II, Act 319, P. A. 1927.

²⁰ The Order of United Commercial Travelers of America. This report on the policy of the Order is based on a letter dated June 18, 1936, from the Supreme Counselor of the organization.

is considerable difference of opinion. Many of those long concerned with highway safety believe that yellow and black buses are distinctive, and that, on the whole, these colors are more satisfactory than any other combination thus far suggested.

The relative merits of various color combinations should be investigated thoroly, using research technics similar to those employed by the United States Bureau of Public Roads and the United States Bureau of Standards in testing the effectiveness of different road signs. In this way the visibility of different colors could be determined objectively for buses operating in all kinds of weather and against various landscape backgrounds in autumn, winter, and spring. The durability of the colors could also be taken into account—an important factor when buses are not painted at frequent and regular intervals. Until such research has been done, it seems doubtful whether the use of yellow and black school buses should be discouraged. This is the combination selected for road signs because of its high visibility under all weather conditions and against various backgrounds. These are also the colors now used on school buses throughout eight states and in many districts in other states. In California, where the red, white, and blue combination was first employed, medium chrome yellow with black trim and lettering has been the uniform standard for school buses since July 1933.

Identification: Lettering and Other Devices

More than half the states have laws or regulations with respect to the lettering or other identifying signs to be used on school buses.²¹ In the great majority of cases the words SCHOOL BUS must be printed "in large letters" on both front and rear. Often the phrase "large letters" is accurately defined as, for example, "unshaded letters not less than 5 inches in height."²² In several states the name and number of the school district must appear on the sides of the bus. In one state, the sign SCHOOL BUS, on the rear, is followed by the phrase STOPS AT ALL RAILROAD CROSSINGS. In

another, the signs read SCHOOL BUS—CAUTION. Where school buses are privately owned and are exempt from the usual requirement that the body be painted yellow, they are often required to display a prominent school bus sign on front and rear while carrying school pupils. Black lettering on a yellow background is recommended for such detachable signs.

In Mississippi, school buses are identified by means of the unique device described in the following excerpt from the state law:

All persons, firms, or corporations when transporting school children on the public highways of the State with motor drawn or other vehicles, whether said driver be the owner of said vehicle or whether said vehicle is furnished by the county or school district, or some other person, shall equip said vehicle with two red flags to the fore and two to the aft. Said flags shall be not less than eighteen inches wide and twenty-four inches long, with the word "School" on each of said flags in capital letters and said flags shall be continuously displayed while the school children are being transported or taken on or discharged from said motor vehicle. . . .

It shall be unlawful for any other person to so equip a vehicle with flags similar to or like the flags required herein for the school transportation. . . .²³

The value of this device or of any system of lettering depends, of course, on its visibility under different lighting conditions, which in turn depends on factors such as size and amount of contrast between symbol and background.

Mounting

In the purchase of school conveyances, it is highly important that the proper wheel base be selected for each length body and that the bus body be mounted correctly. Improper distribution, particularly too much overhang,²⁴ makes steering more difficult, reduces the effectiveness of the braking system, increases tire and body maintenance costs, and impairs the riding qualities of the bus.²⁵ In New York, Oklahoma, and perhaps in certain other states, at least two-thirds of the bus body must rest ahead of the rear axle. Automobile engineers point out that in addition to the foregoing standard, the overhang should not exceed 45

²¹ Among the states with such regulations are: Arkansas, California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Rhode Island, Texas, Utah, Washington, and West Virginia.

²² The height of letters required varies from one state to another, ranging from 4 inches in California to 6 in New Jersey. The National Safety Council recommends "letters at least 5 inches high."

²³ Section 6640, Code of 1930.

²⁴ "Overhang" refers to that part of the bus body extending backward from the rear axle.

²⁵ Memorandum from the transportation engineer of the Automobile Manufacturers Association, April 20, 1936.

percent of the wheel base, and that less than 45 percent overhang is preferable.²⁶ To illustrate—the maximum body length²⁷ for a 200-inch wheel base would be 22½ feet, or 270 inches, the body mounted with a 90-inch overhang.

Power

The power of a school bus motor should be proportionate to the capacity load of the vehicle and to the road conditions involved. Lack of adequate power may cause unnecessary delays, result in undue engine wear, and create traffic hazards on hills where the bus cannot proceed at a reasonable speed. Act V of the Uniform Motor Vehicle Code suggests that the motive power be sufficient to propel the fully loaded vehicle at not less than 20 miles an hour on any grade upon which it regularly operates.²⁸ In communities of flat terrain, power enough to ascend a 3 percent grade at 20 miles an hour would be sufficient. In hilly regions, satisfactory performance on a 5 or 6 percent grade is often needed. In the state of New York the following regulation applies:

The power plant shall be of a type and capacity approved by the manufacturer for the particular conveyance loaded to capacity. Power shall be ample to provide satisfactory performance in all gears when operating with a governor set at 30 miles an hour. Proper piston displacement of motor and rear axle gear ratio should enable bus loaded to capacity to take a 3 percent grade in high gear on a first-class paved road.²⁹

Service and Emergency Doors

More than a fourth of the states have laws or regulations pertaining to school bus doors which are similar in general outline to the recommendations of the National Safety Council. According to these standards, the service door should be located opposite the driver on the right side of the bus and should be under his control exclusively. Folding units or sliding doors are recommended; the "sedan" type is disapproved. The minimum horizontal clearance should be 24 inches. Lower panels as well as upper should be of glass, in order that the driver can see the roadside and any pupils standing near the bus. Enclosed steps with

risers not exceeding 10 inches should be provided. White steps and step-well lights are desirable. A channel of rubber hose at the door jambs should protect children's fingers from injury. For the same reason the control lever should be free from holes or notches, and should have no parts that come together with a shearing action. There should be no outside handle on the service door nor should it be possible for a pupil to open the service door by leaning against it.

Placing the service door at the center rear was almost the standard practise a few years ago, and even yet is not uncommon. Experience has shown, however, that this is a hazardous arrangement. There is danger of the door coming open and of children falling out while the bus is traveling along the highway. Moreover, such doors are too far from the driver's direct supervision. It is too easy to start the bus before all are properly loaded and the door securely closed. The outside steps and hand rails often placed at rear service doors are another source of danger, tempting the venturesome pupil to "hang on" for a ride outside the bus.

Besides the service door, every safe school bus has an emergency exit. It is recommended that the emergency door be located on the left hand side of the bus, at the rear. It should have a horizontal clearance of at least 22 inches and should be clearly marked, "Emergency Door." It should be fastened in such a way that it can be readily opened by almost any pupil but will not likely be accidentally released. This door should swing outward and it should be possible to open it from the outside of the bus. There should be no steps at this exit.

A school bus should have no doors except the two recommended above. A door at the left of the driver's seat is not only unnecessary but weakens the body of the bus.

Other Safety Standards

The safety of a school bus does not depend solely on the important equipment standards already discussed but to a considerable degree on the quality of many other parts and on the presence or absence of equipment of many

²⁶ *Ibid.* Tables showing correct body length in proportion to wheel base can be obtained from the Automobile Manufacturers Association, Transportation Building, Washington, D. C.

²⁷ "Body length" is the distance from back of cowl to the end of the floor.

²⁸ U. S. Department of Agriculture, Bureau of Public Roads. *op. cit.*, p. 38.

²⁹ New York State Education Department, Rural Education Division. *School Bus Requirements and Recommendations*. Albany: the Department, 1936. p. 5.

other types. Table 2 lists certain other safety standards and the states in which each regulation or a similar one is known to be in effect. Many of the items included in this table are so important that they might well be required in every instance.

In communities where heavy snowfalls occur, charcoal heaters or heaters not dependent on the bus engine should be carried for emergency use. Blankets, a shovel, an extra storage battery, a small sending and receiving radio, a flash light, matches, food, and water should also be included in the emergency kit.³⁰ Lack of such equipment has been extremely serious in a few cases where buses have been marooned in winter storms.

³⁰ Burnett, Hugh. "Safety Measures for the School Bus." *Nation's Schools* 15: 49-50; May, 1935.

Maintenance of Bus Equipment

There must be frequent inspections of equipment and immediate attention to needed repairs if school buses are to be kept in safe operating condition. In Massachusetts and West Virginia, schoolboards are required to have each bus inspected by a competent mechanic once a week; in Florida and New York, once a month. In California, Colorado, Connecticut, Illinois, Kentucky, and Ohio, school buses are subject at all times to inspection without previous notice by the state highway patrol. In New Jersey, parts of Ohio, and Pennsylvania annual inspections are made before the opening of schools. All buses are taken to county seats, or other designated

TABLE 2.—MISCELLANEOUS STANDARDS FOR SCHOOL BUS EQUIPMENT AND THE STATES HAVING EACH REGULATION OR A SIMILAR ONE

Equipment standards	States *
1	2
Every school bus should be equipped with:	
Speed control governor set at 30 miles per hour	New York
Headlights and a rear light	All the states
Stop light, or lights	Calif., Colo., Conn., Ind., Mass., Minn., Mo., N. J., N. Y., R. I., Utah, and W. Va.
Interior lights	Calif., Conn., Ky., Mass., N. Y., Okla., R. I., and Utah
Reflectors and/or clearance lights	Conn., Ind., Mass., Minn., N. Y., and R. I.
Directional signaling device	Calif., Ind., and Utah ^b
Interior rear view mirror	Ark., Calif., Fla., Ky., Mass., Minn., N. Y., Okla., R. I., and Utah
Power driven windshield wiper	Calif., Colo., Conn., Ind., Ky., Mass., Minn., N. J., N. Y., Okla., R. I., and W. Va.
Adequate heater; not connected with the exhaust	Calif., Conn., Minn., N. J., N. Y., Ohio, and Utah
Approved roof ventilators	Conn., Mass., Minn., N. J., N. Y., R. I., and Utah
Exhaust pipe, without leaks, extending at least to the rear of the bus	Calif., N. J., N. Y., and W. Va.
Window guards (grills or screens)	Conn., N. J., and R. I.
Bumpers; so attached to <i>frame</i> as to discourage or prevent pupils from riding on them	Colo., Mass., Minn., N. Y., Okla., and W. Va.
Traffic guard rails to resist impact in case of sideswipe accidents . .	Ky., Mass., and Okla.
Horn; in good working order	Calif., Colo., Fla., Ky., Minn., Utah, and W. Va.
Speedometer	Calif., Ky., R. I., and Utah
Strong front posts, but narrow enough not to obstruct the driver's vision to the front and sides	Mass. and Okla.
Gasoline tank mounted, filled, drained, and vented outside of the bus body	Calif., Colo., Conn., Ky., Mass., Minn., N. J., Okla., R. I., and W. Va.
Fire extinguisher	Calif., Conn., Ind., La., Mass., Minn., N. J., N. Y., Okla., R. I., Texas, and Utah
Tools for making ordinary minor repairs	Ark., Calif., Fla., Okla., Utah, and W. Va.
Skid chains	Calif., Colo., Mass., Minn., and Utah
Spare tire; fully inflated	Ark., Calif., Colo., Minn., Okla., and Utah
Extra light bulbs and/or fuses	Okla.
First aid kit	Ark., Calif., Colo., Mass., Minn., Okla., and Utah
Flags and flares	Minn.
Hand ax	Ind. and N. Y.

Sources: Motor vehicle laws; bulletins of state departments of education and state highway commissions; and National Highway Users Conference. *Equipment Requirements for Motor Vehicles*. Highway Users Series, No. 13. Washington, D. C.: the Conference, 1936. 127 p.

* Altho care has been taken to list for each regulation all the states in which it applies, the listing may be incomplete because of the limitations of the sources used or recent changes in state regulations.

^b Twenty-two other states require directional signaling devices on all vehicles so loaded or constructed as to make the ordinary hand signal invisible.

points, for inspection by the county superintendent of schools, a representative of the state motor vehicle department, and sometimes other state officials. In Indiana the state highway police department conducts school bus inspections in each township. In a number of states the driver is held responsible for the condition of his bus, is required to make daily inspection of essential safety features, and must file reports certifying that the bus and its equipment are in good condition.

In sixteen states, and in certain classes of cities and towns in four other states, periodic inspection of all motor vehicles is required.⁸¹ Authorized service stations check on such items as steering mechanism, wheel alignment, brakes, lights, horn, and windshield wiper. In some cases an annual inspection is required; in others, two or three inspections per year. In New Jersey the check-up is made "upon proclamation."⁸²

When buses are privately owned and arrangements for their repair and maintenance are the responsibility of the owner, the school authorities must see that certain equipment standards are satisfied. When the buses are district owned, school authorities must carry full responsibility, setting up their own systems for inspection and repair. The best maintenance plan for a given school district will depend entirely on local circumstances. In some cases the best arrangement seems to be to patronize one or more of the local garages. In other cases, the employment of one driver-mechanic seems advisable. Such an individual serves as bus supervisor, inspects and cares for all equipment, and makes all ordinary repairs. Still other districts have had excellent results from entrusting school bus equipment to their high school's own department of auto mechanics. If such departments are in charge of expert mechanics and are well equipped, this plan has much to commend it. Whatever the arrangement, buses should receive frequent attention from well-qualified mechanics. In too many cases the situation is comparable to that found by Jackman in his study of transportation in certain consolidated school districts:

Too few schools have set up a regular program of maintenance. As a result the equipment is being operated in very poor condition and is subject to unusual wear.⁸³

The Cost of Safe Equipment

Few will deny the importance of safe school bus equipment or disagree with, at least the intent of, the standards suggested in this section. Many will assert, however, that the cost of such equipment is prohibitive for their own communities. And so it may be, if the local district is one with limited resources and is carrying all, or nearly all, the financial burden for its school program. Available funds must be used for teachers' salaries, for school buildings, and for other school purposes as well as for transportation facilities. A district may be forced to use unsatisfactory equipment for the same reason that it uses an obsolete school building or engages low salaried teachers. In that case the best that can be done is to make the equipment just as safe as is possible under the circumstances—to take every possible safety precaution.

But the existence of such school districts, even in large numbers, does not argue for lower school bus standards. It merely indicates the need for better distribution of the cost of education; it suggests an important area in which the need for state aid is urgent. When both the state and the local district assume their fair share of the cost of conveyance the public will be justified in demanding, without exception, safe school transportation for every pupil.

Approximately a third of the states pay some part of the cost of transportation or distribute funds which may be used for this as well as other school purposes.⁸⁴ In some cases the distribution is made on a pupil-mile, bus-mile, or pupil-day basis. In others, the district is allowed a fixed sum for each pupil transported, or a certain fraction of the sums actually paid out for transportation purposes. Relatively few states, however, have systems of state aid which assure to every community the means necessary to provide safe equipment.

⁸¹ The sixteen states are Colorado, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New Mexico, New York, Pennsylvania, Utah, Vermont, Virginia, Washington, and Wyoming. Illinois, Iowa, Oregon, and Tennessee require periodic inspection in certain classes of towns and cities.

⁸² In addition, a special "brakes test" is required of all school buses during the first ten days of December and March.

⁸³ Jackman, M. F. *Transportation in Consolidated Schools*. Master's thesis, University of Nebraska, 1934. p. 4.

⁸⁴ Among the states providing financial aid for transportation purposes are: Connecticut, Florida, Indiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Jersey, New York, Pennsylvania, South Carolina, Texas, Vermont, and Wisconsin.

IV. Safe Transit Practises

Given a safe conveyance and an experienced, duly qualified driver, the chances of accidents to pupils are greatly reduced. Yet other risks are involved which require proper regulation and supervision. Among these are the risks associated with incorrect driving practises on the part of school bus drivers, the hazards created by drivers of other motor vehicles, and hazards which the pupils sometimes create by their own indiscreet behavior. To a large degree, these risks are personal in character and can be eliminated only by the constant exercise of vigilance and good judgment by each individual. Certain useful safeguards can be set up, however, in state traffic laws, in the driving regulations for school bus drivers developed by state and local authorities, and thru the proper supervision of pupil conduct. It is with these safeguards that this section is concerned.

Crossing the Highway

One of the most serious transportation hazards, probably the pupil's Enemy Number 1, is that brief walk which he takes across the highway either to get to the bus in the morning or to get home after leaving it in the afternoon.¹ Accidents occurring at this time are common, and a high percentage of them are fatal.

One important safeguard that can be introduced is a state law requiring the passing motorist to stop when approaching a school bus that is receiving or discharging pupils. Eleven states now have such laws.² In these states, the driver is required not only to stop, but to wait until the children are out of the road and the bus has started on, before he may proceed. In other states, passing motorists must come to a full stop, but may then proceed "with caution."³ In Arizona, Colorado, Delaware, Illinois, Oregon, and Virginia the driver of another vehicle need not stop, but must slow

down to 10 or 15 miles an hour. Counting all these regulations, however, less than half the states have set up this minimum safeguard.⁴ States in which a stop is required by law may find the Ohio plan of enforcement helpful:

We receive many license numbers every day, sent in by drivers and school heads. These are checked thru the Bureau of Motor Vehicles and a letter of warning with a copy of the law is sent to the owner of said registration. Also many special patrols are ordered into territories where a great number of violations are occurring and of course the uniformed man will cite the violator in such cases. However, due to our limited number of patrolmen on the roads, we must of necessity use the educational plan. The number of repeat violations have been very few.⁵

The passing motorist is not always at fault. The bus driver must assume considerable responsibility and should exercise whatever supervision is required to guarantee safe crossing of the highway. Pupils, too, must follow safe practises. On certain points there is general agreement:

1. The school bus should load and discharge passengers at the extreme right of the road or highway.⁶
2. Pupils should be loaded and unloaded only at designated stopping places.⁷
3. Buses should not stop on curves or hills to let pupils on or off unless the road is visible at least 500 feet in both directions.⁸
4. The driver should always give the proper signal before stopping.⁹
5. Pupils should not stand in the roadway while waiting for the bus.¹⁰

On other practises, one in particular, agreement is far from complete. *Should pupils cross the road in front of the bus, or behind the bus?* In two states, Arkansas and Utah, they are required to "pass behind rather than in front of the bus." In Alaska, California, Kentucky, Oklahoma, and Wisconsin they must pass "in front of the bus."

¹ This was reported as the leading hazard by the Massachusetts Special Committee on School Buses (authorized by the legislature in 1931). It is so regarded also by the State Highway Patrol in Ohio.

² Alabama, Georgia, Idaho, Indiana, Iowa, Nebraska, Ohio, South Carolina, Texas, and West Virginia. Maryland also has a similar law effective in Montgomery, Frederick, and Talbot Counties only.

³ California, Florida, New Hampshire, New York, and Washington.

⁴ The laws on this subject in California, Delaware, Florida, Illinois, and New York cannot be enforced unless the bus is painted a distinctive color or lettered in the approved manner to identify it as a school bus.

⁵ Memorandum for school bus drivers prepared in the Ohio Department of Highways, State Highway Patrol, 1935.

⁶ This is a state regulation in Arizona, Arkansas, Colorado, Florida, Kentucky, Indiana, Ohio, Oklahoma, and Utah.

⁷ Children able to cross safely at one point on the highway may be taken unawares by traffic hazards at some other point, particularly on hill roads or winding roads. This regulation is in effect in several states, for example in Utah by authority of the state road commission, and in California and Oklahoma by ruling of the state boards of education.

⁸ Kentucky, Oklahoma, and West Virginia are among the states where this regulation applies.

⁹ In the regulations of the Ohio Department of Highways, the Territorial Board of Education of Alaska, and other central agencies.

¹⁰ In the regulations of the West Virginia State Department of Education.

Those who favor crossing behind the bus argue that the pupil has the best possible view of the highway when standing just back of the left rear wheel. He can see any car approaching from the rear and its driver can see him; he can see a vehicle coming from the opposite direction, for it will be on the other side of the road and not obscured by the school bus. It is further argued that if a pupil is standing at the left front wheel, he is likely not to see another car which is following immediately behind the bus, ready to dart round as he starts to cross the road.

Granting the obvious weight of this argument, proponents of the other plan say that the driver must share responsibility in the matter and that he cannot do so if pupils are behind the bus. On the other hand, if pupils go to the front of the bus, he as well as they can watch for traffic hazards. He can require pupils to wait for his signal to cross, thus making sure that they cross in safety. With this plan, too, there is no excuse for loitering in the highway as the bus goes on. Either plan is superior to no plan at all, for there is some advantage merely in uniformity of procedure.

California's experience with these two plans is significant. Until recently the rule was to cross the road behind the bus. In the three-year period 1933 thru 1935 under this regulation, there were four fatalities and nine serious injuries to pupils crossing the highways. The rule was then changed to crossing in front of the bus, and during the past school year no accidents of this type were reported.

If the latter plan is used, pupils coming toward the bus should wait until the driver has made sure that traffic conditions are satisfactory and has given the signal for them to cross, then cross the road promptly in front of the bus and get on. On leaving the bus, pupils should walk around in front of it, wait for the driver's signal, then cross. On occasion, the children should even be escorted to safety. In any case, the bus should not start until all have safely crossed the highway. Especially in states where other vehicles are required to stop for school buses loading or unloading pupils, this plan seems to afford maximum protection.

Railroad Crossings

Of the 235,000 railroad grade crossings in the United States about 207,000 are unprotected by gates, warning signals, or watchmen.¹¹ These crossings, hazardous for all motor vehicles, are unusually so for school buses. Two of the nine school bus accidents reported in the *New York Times* between 1931 and 1935 were crossing accidents resulting in sixteen fatalities. One occurred at a crossing where a bell signal was operating; the other, at an unprotected crossing. In one case the impact of the collision tore the body of the bus from the chassis and tossed both parts to the top of a fifteen foot embankment. Accidents of this type are especially tragic because frequently a large number of children are either killed or seriously injured.

As a means of eliminating such crossing accidents, the adoption of the following law is recommended by the National Conference on Street and Highway Safety:

(a) The driver of . . . any school bus carrying any school child, . . . before crossing at grade any track or tracks of a railroad, shall stop such vehicle within 50 feet but not less than 10 feet from the nearest rail of such railroad and while so stopped shall listen and look in both directions along such track for any approaching train, and for signals indicating the approach of a train, except as hereinafter provided, and shall not proceed until he can do so safely.

(b) No stop need be made at any such crossing where a police officer or a traffic control signal directs traffic to proceed . . . or at street railway grade crossings within a business or residence district.¹²

At least twenty-nine of the states already require school buses to stop at railroad crossings—some thru state laws similar to the above, others thru the regulations of state school or road officials.¹³ In Arkansas, Connecticut, Mississippi, North Dakota, Oklahoma, and West Virginia the bus must not proceed until a responsible pupil assigned to this duty has gone from the bus to the tracks and signaled to the driver. There are states, however, where school buses are not required to stop at railroad crossings unless by regulations of the local school authorities.

¹¹ National Automobile Chamber of Commerce. *Facts and Figures of the Automobile Industry*. New York: National Automobile Chamber of Commerce, 1929. p. 84.

¹² U. S. Department of Agriculture, Bureau of Public Roads, *Uniform Act Regulating Traffic on Highways*. Washington, D. C.: Government Printing Office, 1934. p. 19. (Act V of the Uniform Vehicle Code)

¹³ These states are: Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, Washington, and West Virginia.

Overcrowding

The overloading of school buses represents a hazard in school transportation which cannot be minimized. Overcrowding results in unnecessary shoving, jostling, and pushing while the bus is in motion and often is the source of physical injury as well as annoyance to pupils. The scuffling which overcrowding encourages may distract the driver's attention, causing him to lose control of the wheel. Crowding at the front of the bus or even in the aisles impedes the driver's view. Many would agree with the state department of education in Georgia that this should head the list of transportation risks.

One case is reported where 62 children were carried regularly in a 25-passenger bus and on some days as high as 76 pupils were packed into it.¹⁴ This was the result of combining 5 routes into 3 in the interest of "economy." Another case is reported where overloading created a real hazard. An overcrowded school bus began to sway because of the heavy load. The children picked up the rhythm of the swaying and, by applying their weight in unison, caused the bus to sway more. The bus was thrown out of steering control and a serious accident was narrowly averted as the driver brought it to a stop.

Eight states mention in their regulations that overcrowding is forbidden, but seldom is overcrowding defined, except perhaps to say that "pupils shall not be permitted to sit or stand where they obstruct the driver's view to side or rear."¹⁵ Massachusetts and Rhode Island are exceptions, restricting the total load to not more than 25 percent beyond the rated seating capacity of the vehicle. Regulations of this type might well be established by other state and local authorities. Kentucky disapproves of any load "exceeding that prescribed by the board of education. The board of education should be advised by the manufacturer."

Safe Driving Speed

About 23 percent of all the motor vehicle accidents that occurred during 1935 are attributed to fast driving. Nearly 31 percent of all those killed in motor vehicle accidents were in accidents caused by excessive speed.

Relatively few of the states have established maximum speed limits for school buses other than those for all highway traffic. Some maintain that this is not a matter for special legislation. Be that as it may, some means should always be found to prevent speeding and the reckless practises associated with it. Oklahoma restricts the speed of school buses to 25 miles per hour; Colorado, Connecticut, Massachusetts, Mississippi, Rhode Island, and Virginia to 30 miles per hour; and Ohio and the Territory of Alaska to 35 miles per hour. Arkansas, Utah, and West Virginia have general regulations to the effect that drivers shall proceed at a "careful and reasonable" rate or shall not attain "excessive" speeds.

In the absence of adequate state regulations, local school authorities can exercise control in the matter in either of three ways: (1) by local regulations supplemented by proper administrative supervision, (2) by making the maximum speed limit part of the driver's contract, or (3) by installing speed control governors on the motors of all school buses.

Further Suggestions on Safe Driving

A few of the fundamentals of safe driving have been listed by the National Association of Motor Bus Operators in their "Ten Commandments for Safe Driving."¹⁶ These suggestions are listed in Figure IV. A self-rating scale for drivers, used by the Oklahoma State Highway Commission, is given in Figure V. School bus drivers as well as others should find it helpful to check their own practises against these general driving standards.

Table 3 is a rather comprehensive list of the operating rules adopted specifically for school bus drivers in one or more states—in a few cases as suggested rules; generally as compulsory regulations. Of course, they vary in detail from one state to another. The wording of each rule listed is based on that of some state law or official ruling—one believed to be typical. Column 2 lists the states in which each regulation or a similar one is known to be in effect. For the sake of completeness, the regulations discussed in earlier paragraphs of this section are also included in this table.

¹⁴ Reported by G. B. Butterfield in a letter of July 13, 1936.

¹⁵ This regulation is in effect in California and Oklahoma.

¹⁶ Other useful lists of driving rules are available from: (1) The Public Utilities Commission of Ohio—a handbook for truck drivers; (2) The Fifth Avenue Coach Corporation of New York City; and (3) The Greyhound Bus Company.

FIGURE IV

TEN COMMANDMENTS FOR SAFE DRIVING

I

Keep to right of center line of highway.

II

Pass overtaken vehicles on left, but only after sounding horn and only when road ahead is so clear as to permit getting back to the right with a safe clearance and with a wide margin for safety.

III

Under no circumstances attempt to pass an overtaken vehicle at an intersection, on a curve, or approaching the crown of a hill.

IV

At intersections, be prepared to stop if vehicle on intersecting road is moving onto intersection and do not try to take the right of way.

V

Keep far enough back of the vehicle ahead to allow a safe braking distance in the event that other vehicle makes a sudden stop. Except in emergency, do not stop so suddenly as to cause collision by following vehicle.

VI

Signal before making a turn, and further insure safety by looking to see whether a vehicle is approaching from the rear. Wait before pulling out from the curb until making such observation.

VII

Always keep both hands on steering wheel and eyes on the road ahead while driving. Look behind before backing.

VIII

Stop before crossing all railroads and after carefully looking in both directions and listening, proceed only if it is safe beyond any possible doubt and then proceed in low gear, gears not being shifted until all tracks have been cleared.

IX

When stopping on highway, pull as far off hard surface as road conditions permit and, where the stop is prolonged, see that the rear of vehicle is adequately protected.

X

Do not operate at excessive speed at any time. At curves, blind crossings, crests of hills, in fog, or wherever the view is curtailed, reduce speed so as to be able to stop within the distance of clear vision.

Research Division, National Education Association

Source: Adapted from a poster prepared and distributed by the National Association of Motor Bus Operators.

FIGURE V

SAFE DRIVING EXAMINATION

The maximum score for each point is indicated in the column at the right. Give yourself whatever proportion of this perfect score you **honestly** believe you deserve. A total score of 90 or more rates you as an excellent driver; 80 to 90, good; 70 to 80, fair; under 70, poor.

	Your score	Perfect score
1. Do you always drive at a reasonable speed, giving due consideration to traffic, road conditions, weather, etc?.....	_____	10
2. Do you make sure that your car is at all times in good order, particularly as regards brakes, steering gear, lights, windshield wiper, and tires?.....	_____	10
3. Do you refrain from passing other vehicles on the brow of hills, or on curves?.....	_____	8
4. Do you make it the rule never to cut in and out of traffic?.....	_____	8
5. Do you drive only when you are in full possession of your faculties?.....	_____	7
6. Do you give the right of way to pedestrians, particularly children and the aged or infirm?.....	_____	7
7. Do you at no time let your attention wander, either thru conversation or sightseeing?.....	_____	6
8. Do you slow down when handicapped by approaching headlights?.....	_____	5
9. Do you always give proper and adequate hand signals before turning, slowing down, or stopping?.....	_____	5
10. Do you strictly observe all traffic lights, stop signs, and warning signals?.....	_____	5
11. Do you approach intersections, particularly blind intersections, with your car under complete control?.....	_____	4
12. Do you get into the left lane before turning left and into the right lane before turning right?.....	_____	4
13. Do you pull into traffic only after looking and signaling?... ..	_____	3
14. Do you make way when a car wishes to pass, instead of speeding up?.....	_____	3
15. Do you cross grade crossings cautiously?.....	_____	3
16. Do you keep at an adequate stopping distance from the car ahead?.....	_____	3
17. Do you sometimes let the other fellow have your "right of way" in the interest of safety?.....	_____	3
18. Is your rear vision mirror O. K.?.....	_____	2
19. Do you park your car so as not to interfere with traffic?.....	_____	2
20. Do you lock your car when parked?.....	_____	2
Total.....	_____	100

Research Division, National Education Association

Source: Adapted from one of the safety leaflets of the Oklahoma State Highway Commission.

TABLE 3.—REGULATIONS PERTAINING TO THE OPERATION OF SCHOOL BUSES AND THE STATES IN WHICH THESE REGULATIONS APPLY

Operating rule	States *
1	2
At signal from driver, pupils shall cross the road <i>in front of the bus</i> , and not behind it. The bus must not be started again until all have safely crossed. On occasion, the driver shall stop the engine and escort pupils across the road.....	Calif., Ky., Okla., Wis.
Drivers of other vehicles shall stop (or slow down) when approaching a school bus that has stopped for pupils.....	Calif., Del., Fla., Ga., Idaho, Ill., Iowa, La., Md., Nebr., N. H., N. Y., N. C., Ohio, Ore., S. C., Texas, Va., and Wash.
Bus shall be brought to a full stop not less than 10 or more than 50 feet before crossing any railroad, and shall proceed only when the driver has made sure that no train is approaching.....	Ariz., Ark., Calif., Colo., Conn., Del., Fla., Idaho, Ill., Ky., La., Mass., Mich., Miss., Minn., Nebr., N. Y., N. Dak., Ohio, Okla., Ore., Pa., R. I., S. C., S. Dak., Utah, Va., Wash., and W. Va.
Bus shall not carry an overload exceeding 25 percent of the rated seating capacity (or in excess of the number approved by the manufacturer or by state authorities).....	Calif., Mass., and R. I.
No pupil shall be allowed to stand where he interferes with the vision of the driver to the front, sides, or rear.....	Ark., Calif., Colo., Conn., Ky., Maine, Mass., Miss., Okla., Utah, and W. Va.
Bus shall not be driven faster than 30 miles per hour, and more slowly when crowded traffic, bad weather, poor roads, or other hazards are encountered (rate varies from state to state).....	Alaska, Ark., Colo., Conn., Mass., Miss., N. J., Ohio, Okla., R. I., Utah, and W. Va.
The driver should carefully check the condition of the bus (brakes, steering gear, tires, lights, fuel supply, etc.) before starting on the route.....	Alaska, Calif., Colo., Conn., Ky., Mass., Nebr., N.Y., Ohio, Okla., Utah, W. Va., and Wis.
No start shall be made if the brakes are known or thought to be loose or otherwise faulty.....	Alaska, Calif., Ky., Okla., and Utah
Drivers shall observe all traffic laws and the general rules of the road (practices such as those listed in Figures IV and V).....	Alaska, Ark., Calif., Conn., Ky., Mass., Nebr., N.Y., Ohio, Okla., Utah, W. Va., and Wis.
Pupils must not be permitted to ride outside of bus.....	Ark., Mass., and R. I.
Pupils must not be permitted to get on or off the bus while it is moving; doors shall be closed while the bus is in motion.....	Alaska, Ark., Conn., Ky., Mass., N.Y., Okla., R. I., Utah, W. Va., and Wis.
Pupils should be received and discharged only at designated places, at the extreme right of the road, where the highway may be clearly seen for 500 feet in both directions.....	Ariz., Ark., Calif., Colo., Fla., Ind., Ky., Ohio, Okla., Utah, and W. Va.
Bus shall be brought to a full stop before entering any thru highway... Bus should not be stopped near the crest of hills or on curves.....	Ky., N. Y., and Okla.
Driver should give proper signals before stopping and shall stop as far off the pavement as conditions will permit.....	Ky., Okla., and W. Va.
Driver should give proper signals and use proper traffic lanes when making turns.....	Alaska, Conn., Ky., Mass., Ohio, Okla., Utah, and Wis.
Driver should avoid jerky starts, sudden turns or swerves, and abrupt stops.....	Alaska, Ky., Mass., N. Y., Ohio, Okla., and Wis.
School bus should not pass another vehicle on hills or curves or unless the road is visible and clear of other vehicles or obstructions for at least 500 feet ahead.....	Alaska, Conn., Ky., Mass., Okla., W. Va., and Wis.
Buses should run at least 75 yards apart.....	Alaska, Ky., Ohio, and Okla.
Buses must not be driven backwards on school grounds.....	Alaska, Ark., Ky., and Okla.
Skid chains must be used when roads are slippery.....	Conn., Ky., Mass., Okla., W. Va., and Wis.
Driver must not leave the bus without stopping the engine and setting the brakes.....	Alaska, Ky., and Okla.
The bus should not be <i>l</i> in gear when it is standing.....	Alaska, Ark., Calif., Colo., Conn., Ky., Mass., N. Y., Okla., Utah, W. Va., and Wis.
Gas tank must not be filled while children are in the bus.....	Alaska, Ark., Ky., N. Y., and Okla.
Bus shall not be operated with clutch disengaged except when coming to a stop.....	Ark., Calif., Colo., Conn., Ky., Mass., N. Y., Okla., R. I., Utah, W. Va., and Wis.
Driver should adhere closely to the established schedule.....	Alaska, Calif., Colo., Conn., Ky., Mass., Okla., Utah, and W. Va.
Driver need not wait longer than 2 minutes for any pupil unless he is observed as making an effort to meet the bus.....	Alaska, Ark., Ky., Miss., Nebr., N. Dak., Okla., W. Va., and Wis.
A regular space in the bus should be assigned to each pupil.....	Alaska, Ky., Miss., and W. Va.
No person other than a pupil, teacher, or school official shall be permitted to ride in the bus without written consent from the superintendent of schools.....	Ark., Del., Ky., Miss., Okla., and W. Va.
	Alaska, Ark., Colo., Conn., Fla., Ky., Mass., Okla., W. Va., and Wis.

(Continued on page 224)

TABLE 3.—REGULATIONS PERTAINING TO THE OPERATION OF SCHOOL BUSES AND THE STATES IN WHICH THESE REGULATIONS APPLY (Cont.)

Operating rule	States ^a
1	2
No one other than the driver shall be allowed to occupy the driver's seat.....	Alaska, Ark., Ky., Utah, and W. Va.
Driver shall keep the bus clean, well ventilated, properly heated, and lighted when driven after dark.....	Alaska, Ark., Calif., Colo., Ky., N. Y., Okla., R. I., and W. Va.
A trailer must not be attached to a school bus.....	Alaska, Calif., Colo., Conn., Ky., Mass., Okla., and Utah
Driver must maintain discipline on the bus, reporting cases of disobedience or flagrant misconduct to the school principal.....	Alaska, Ark., Calif., Conn., Del., Ky., Mass., Miss., N. Y., N. Dak., Okla., W. Va., and Wis.
Driver should indulge in no unnecessary conversation while bus is in motion.....	Calif., Colo., R. I., and Utah
The use of tobacco, alcoholic liquors, and profane language in a school bus is forbidden.....	Alaska, Ark., Calif., Colo., Conn., Del., Ky., Mass., Miss., Nebr., N. Dak., Ohio, Okla., R. I., and W. Va.
Driver shall maintain the same standards of personal conduct that are expected of teachers.....	Alaska, Conn., Ky., Mass., and W. Va.
Without permission from the superintendent, no pupil shall be permitted to leave the bus except at his regular stop.....	Alaska, Ark., Ky., and N. Y.
No loaded weapon should ever be permitted in the bus.....	Alaska, Calif., Colo., Conn., Ky., Mass., Utah, and W. Va.
Driver must not permit dogs or other animals in the bus.....	Alaska, Calif., Colo., Conn., Ky., Mass., Okla., and W. Va.
Driver shall attain reasonable efficiency in first aid treatment.....	Alaska, Ky., and Okla.
The bus schedule should be posted in the bus and subject to change only after parents have received advance notice of the change....	Alaska, Ark., Ky., and W. Va.
"Safety drills" should be conducted, using the emergency door.....	W. Va.
"In case of doubt, STOP".....	Ky., Ohio, and Okla.
No bus shall operate with a broken window, except to finish the route and in case of emergency when repairs cannot be made at once	Colo.

^a The Territory of Alaska is included in this table. Altho care has been taken to list for each regulation all the states in which it applies, the listing may be incomplete because of the limitations of the sources used or recent changes in state regulations.

Safe Practises for Pupils

There are a number of transportation hazards over which the driver of the school bus can exercise little or no control. In these situations pupils must carry the responsibility for their own safety. Again, it is impossible for the driver to do what is expected of him without the cooperation of the pupils. Because of these facts, several state departments of education have developed regulations for pupils who ride in school buses as well as for school bus drivers. Some of these are listed in Table 4 alongside the states having each regulation or a similar one.

Law Observance

In view of their responsibility for the safety of others, school bus drivers should be exemplary in obeying highway laws. That this is not always the case is shown by the following

incident. In Ohio the law requires any vehicle carrying school pupils to come to a full stop before crossing a railroad track. The state board of education recommends further that a pupil get out of the vehicle and flag the crossing. In a recent safety campaign, the Chesapeake and Ohio Railroad Company had a careful check-up made on all crossings in Ohio for one day.¹⁷ Three hundred and forty vehicles carrying school pupils crossed the C. & O. tracks that day. Sixty-six drivers, or nearly 20 percent, disobeyed the law requiring a stop at railroad crossings. In only 40 of the 340 cases, did a pupil act as flagman. It is such violations that often end in disaster. Not only the laws requiring a full stop at dangerous points along the highway, but speed limits and all other safety regulations should be observed without exception by all drivers of school conveyances.

¹⁷ Bentley, L. G. "Making Crossings Safe for School Buses." *The Rail* 19: 18; July, 1934.

V. The Selection of Safe Routes

Altho the careful, skilful driver rarely has an accident even on a defective highway, bad roads are sometimes the cause of unavoidable accidents. Many school buses must travel roads that are too narrow, roads that are improperly graded and surfaced, or roads having sharp turns, steep inclines, "blind corners," unprotected crossings, or other hazards which make safe driving extremely difficult if not impossible. Something of the extent to which road hazards exist is suggested by the fact that of the 3,250,000 miles of roadway over which automobiles may travel in the United States not more than 1,000,000 miles are surfaced, using that term to include all such materials as sand-clay, gravel, chert, and crushed limestone as well as concrete, macadam, and other hard surfaces.¹ Driving hazards abound on

the treacherous and sometimes impassable stretches of the remaining two and a fourth million miles, and are not unknown even on the surfaced highways.

A survey of school bus routes in Mississippi in 1934 showed that the following types of roads were being used:

	Miles
Poor dirt roads.....	7,382
Poor gravel roads.....	3,793
Medium dirt.....	5,313
Medium gravel.....	11,150
Good dirt.....	1,619
Good gravel.....	9,148
Paved roads.....	1,280

A similar survey of the 70,576 miles of bus route in Georgia last year, showed 30,690 miles of unimproved road—43.5 percent of

¹ Automobile Manufacturers Association. *Automobile Facts and Figures*. New York: the Association, 1936. 96 p.

TABLE 4.—RULES FOR PUPIL CONDUCT AND THE STATES IN WHICH EACH RULE APPLIES

Regulation pertaining to pupil conduct	States ^a
1	2
In approaching the bus-stop along the highway, always walk on the left-hand side of the road toward the traffic.....	Alaska, Ky., Ohio, and Wis.
Do not stand in the road or play in the road while waiting for the bus..	Alaska, Mass., Ohio, Okla., W. Va., and Wis.
Be on time; the bus must keep on schedule.....	Alaska, Ky., Mass., Okla., W. Va., and Wis.
Enter the bus without crowding or disturbing others.....	Alaska, Ky., and Wis.
Do not try to get on or off the bus when it is moving; wait till the bus stops.....	Alaska, Mass., Ohio, Okla., W. Va., and Wis.
Do not extend head or arms out of windows.....	Alaska, Ky., Mass., Ohio, Okla., W. Va., and Wis.
Be courteous to the driver and to fellow pupils.....	Del. and Wis.
Respect and cooperate with the school boy patrol.....	Alaska, Ky., Mass., Ohio, and W. Va.
Obey the driver as you would a teacher.....	Alaska, Ky., Mass., Ohio, Okla., W. Va., and Wis.
Remain in the space to which you are assigned.....	Alaska, Del., Ky., Mass., Okla., and W. Va.
See that your conversation is clean and never loud or boisterous; classroom conduct is expected, except for conversation in normal tones.....	Alaska, Del., Ky., Mass., Okla., W. Va., and Wis.
Do not call out to passers-by.....	Alaska, Del., and Ky.
Help keep the bus clean, sanitary, and orderly. Do not damage or abuse bus equipment.....	Alaska, Ky., Mass., Okla., and Wis.
Make sure that the road is clear and get the driver's signal when you must cross the road to or from the bus.....	Alaska, Ky., Mass., Ohio, Okla., and Wis.
Cross streets only at intersections.....	Ohio
When crossing the street or highway look both to right and left, then WALK—do not run.....	Alaska, Ohio, and Okla.
Do not ride on the running board, fenders, or bumpers, nor try to hang onto the outside of the vehicle.....	Alaska, Ky., Ohio, and Okla.
Carry on no unnecessary conversation with the driver when the bus is in motion.....	Alaska, Ky., Mass., Okla., and W. Va.
Do not open bus windows without permission from the driver.....	Alaska and Ky.
Do not leave the bus without the driver's consent, except on arrival at home and at school.....	Alaska and Ky.
Do not loiter in or around the bus while on the school grounds.....	Alaska and Ky.
Keep out of the driver's seat.....	Okla.

^a The Territory of Alaska is included in this table. Altho care has been taken to list for each regulation all the states in which it applies, the listing may be incomplete because of the limitations of the sources used or recent changes in state regulations.

the total mileage. Of the remainder, 32,972 miles had been graded and to some extent improved, but only 6,914 miles, or 9.8 percent, were hard surfaced.

Defective bridges constitute a serious hazard in many communities. Roads have frequently been rebuilt, leaving the old bridges to serve until more time and money become available. According to the bridge engineer of Allegany County, New York:

Thousands of children are crossing unsafe bridges in heavy buses every day of the school year. . . . I was under a bridge last spring, making an inspection, when a bus load of laughing school kids was hurtled over my head by a thoughtless driver. The bridge was posted for three tons with a speed limit of 15 miles an hour. The load was far in excess of three tons and the speed of the bus must have been at least 40 miles an hour. . . . The old structure creaked and sagged, but mercifully it held. . . . It is an appalling thought that a bus load of school children might at any moment be sacrificed because of our indifference to the problem of antiquated bridges.²

The problem of bad roads is especially serious in the case of school transportation because of certain factors inherent in the job. The need for consolidated schools and pupil transportation is greatest in sparsely settled rural communities where roads tend to be least satisfactory. Sometimes the best road from a pupil's home to the school can hardly be used because it does not fit in with the remainder of a necessary route. Frequently, there is no suitable road which can be used.

Route Surveys

The safe routing of school buses is a complex problem, involving such specific questions as: When is a road bad enough that it should not be traveled by school buses? How can the relative merits of one route over another be determined objectively? What does the quality of a road and the existence of certain specific road hazards suggest with reference to the type of equipment that should be used? What safeguards can be set up against unavoidable road hazards?

In answering these and similar questions school authorities need definite information about any proposed bus route, facts which usually can be obtained only by making a care-

ful route survey to determine: (1) the length and general character of the route; (2) the kinds of road traversed; (3) the condition of each road; (4) a complete list of specific road hazards; and (5) an evaluation of the route for the purposes of the proposed pupil transportation.

Surveys of this type can be made by the principal or superintendent of schools, in cooperation with a well-qualified bus driver, or highway or transportation official. The needed facts should be collected systematically using a survey form similar in purpose to the one reproduced in Figure VI. The surveyors should determine distances, driving time, and specific road hazards by actually driving the bus over the route. Even the established school bus routes should be resurveyed from time to time, particularly before the opening of school each year and at any time during the year when a new driver is about to begin his work.

When adequate information has been compiled about all the roads that might possibly be used as part of a proposed bus route, school authorities face the problem of selecting that which is safest and best. They must consider directness of route both as a matter of economy and in order that pupils need not spend unnecessary time on the road. But first of all they should consider pupil safety, for dangerous short cuts are never justifiable. They must take into account stretches of road that may be satisfactory under ordinary conditions but are extremely hazardous or impassable at times. They may need to work out certain alternate routes. Frequently they must seek the cooperation of highway officials in eliminating certain hazards; sometimes, of the children's parents in caring for roads adjacent to their own farms. They may find it necessary to purchase equipment built especially for certain road conditions—perhaps a lighter vehicle, a shorter, more flexible one, or one with a more powerful motor. In every case, it is their duty to warn bus drivers of the road hazards involved, and to make clear to them the operating instructions that shall be followed. Finally, they must work out a time schedule which permits the kind of safe, careful driving that will be expected.

² Colburn, H. E. "Forgotten Bridges." *Reader's Digest* 29: 53-54; September, 1936.

FIGURE VI

THE SCHOOL BUS ROUTE

County _____ Checked by _____ Date _____

I. The Route

- A. From _____ (School) To _____ (Terminus)
- B. Check which
 1. Actual route { }
 2. Potential route { }
- C. Length of trip to nearest one-tenth mile (1 plus 2, below)
 1. Distance from school to home of last pupil
 2. Additional distance traveled by bus on trip
- D. Number of bus or route
- E. Name of driver
- F. Check here if route is run in reverse order ()

II. Class or Kind of Road

	From	To	Number of miles
A. Hard surfaced { }	_____	_____	_____
B. Gravel or chert { }	_____	_____	_____
C. Sand, clay, or top soil { }	_____	_____	_____
D. Graded { }	_____	_____	_____
E. Unimproved { }	_____	_____	_____

^a If state highway, check in this column.

III. Condition of Road

A. Satisfactory (broad and well surfaced) { }	_____	_____	_____
B. Narrow (less than 16 ft.) { }	_____	_____	_____
C. Rough and bumpy { }	_____	_____	_____
D. Needs surfacing { }	_____	_____	_____

IV. Consecutive Summary of Hazards

	Kind or nature of hazard ^b	Distance from beginning	Recommendations and comments ^c
A.	_____	_____	_____
B.	_____	_____	_____
C.	_____	_____	_____
D.	_____	_____	_____

^b The following key may be used in describing kind or nature of hazard:

Blind curves A	Needs gravel G
Narrow bridge B-1	Dangerous hill H
Unguarded bridge B-2	Bog or mud hole M
Unsafe approach B-3	Dangerous ravine R
Needs repairs B-4	Unbridged stream US
Bad culvert C	Right-angle turn T
Deep ditch or wash D	Railroad crossing X
Unguarded fill F	Highway crossing Y

^c Key for recommendations:

1. Urgent—should be remedied at once.
2. Should be remedied as soon as practical.
3. Driver should be instructed to use extra care and caution.

V. Summary: Status with Regard to Transportation

- A. Well adapted in present condition { }
- B. Fair: passable at all times { }
- C. Impassable after prolonged rains { }
- D. Treacherous after any rain { }
- E. Could be well adapted by changes indicated under IV { }
- F. Hazardous at all times { }
- G. Totally unsuited for transportation { }

Research Division, National Education Association

Source: Morphet, Edgar L. "The Influence of Roads on School Transportation and Consolidation." *American School Board Journal* 85 : 64, August, 1932.

Transportation Maps

The transportation map is a useful device to portray the essential facts about the school transportation system. The transportation manual in Kentucky suggests that the map contain the following items for information:³

1. The location of the schoolhouse.
2. The points of the compass.
3. The various bus routes, shown in different colors.
4. The type of road surface on each portion of the bus route, and code symbols to show the condition of the road.⁴
5. Arrows indicating the direction in which each bus travels.
6. Every driving hazard on the route, with attached suggestions for taking care of it.⁵
7. The home of each driver, indicated by a square with a capital "D" beside it.
8. The point where the first child is picked up, indicated by the letters "FP."
9. Each house from which children are transported, indicated by a circle at its exact location.
10. Each bus-stop, indicated by a triangle, and the number of children getting on at the stop indicated on the inside of the triangle.
11. The time the bus arrives at each designated stop.
12. All alternate roads over which buses can be run.

Maps of this kind are almost indispensable to the proper administration of pupil transportation. They are recommended by the state departments of education in Oklahoma and several other states. Specific transportation questions often arise. Was the driver of Bus Number 3 justified in running off schedule today? How did the rain last night affect Section 7 of Route Number 2? About when will this bus have to change to the longer, alternate route and go on the new time schedule? Should the Bronson children meet the bus at Stop 4, or at Stop 9 on the lower road after it has made the loop thru Beaver Falls? A set of

good transportation maps is the principal's or superintendent's best and most convenient source of information on questions such as these.

Waiting Stations

Unfortunately the school bus cannot stop at the door for every pupil transported but must meet at some distance from their homes those living off the route. One common practise that has much to recommend it is to have such pupils, whenever possible, meet the bus at the home of someone living on the route. This makes it unnecessary for pupils to wait along the highway where they so often form the habit of playing in the road. It has the additional advantages of adult supervision while waiting and of protection from inclement weather. Where such arrangements cannot be made, shelters ought to be provided unless weather conditions are unusually favorable. The laws of most states permit, and in some cases require, school authorities to build shelters wherever they are needed.

Time Schedules

The time schedule should be definite and consistent with safe driving practises. Moreover, it should not require pupils to start from home or arrive there at night at an unreasonable hour. In some districts, no child is permitted to ride longer than thirty minutes going to or from school. In many cases, routes must be so arranged that no pupil is on the bus longer than an hour. Regulations usually state the time when the first pupils on the route may be received, and sometimes the hour by which the last pupils shall be returned to their homes. Whenever possible the pupils loaded earliest in the morning should arrive at their homes first on the return trip, rather than subjecting them to a long ride both morning and afternoon.

³ Kentucky State Board of Education. *Manual on Pupil Transportation*. Educational Bulletin, Vol. 4, No. 2. Frankfort, Ky.: the Board, 1936. p. 30.

⁴ Possible code symbols for this item are:

OK—Satisfactory. Road in good condition for its type.

F—Fair. Always passable, but needs repairs.

IR—Impassable after prolonged rains.

SR—Slippery and treacherous after any rain.

H—Passable but always dangerous. Numerous road hazards.

NG—Totally unsuited for transportation.

In this item, however, and items 5 to 12, a system of code symbols other than that given can readily be devised. Any clearly defined symbols will be satisfactory.

⁵ See Figure VI for the code symbols used by Morphett to indicate road hazards.

VI. Safety Promotion

Safety in pupil transportation requires a continuous and varied program of safety promotion. The general public, and most school bus drivers and pupils, need to be aroused to the importance of safety and to acquire certain additional safety habits. Even the best drivers and the most careful pupils need to be reminded of the hazards involved and of the safe practices which they know, but sometimes fail, to observe. This section describes briefly some of the devices used in highway safety promotion by local school systems and by state departments of education and other state agencies.

Teaching Highway Safety in the Elementary School

The chances of serious injury to children who ride school buses are reduced materially when pupils learn in school how to assume proper responsibility for their own safety. School bus experiences can be used as the basis for a large number of safety lessons both in the early grades and in the later ones. In the beginning, emphasis can be laid on such basic safety practices as those given in Table 4. In the later grades further emphasis can be laid on these basic habits and attitudes as needed, and the program can be broadened to correspond with the maturity and interests of the pupils.

Instruction of this type should occupy an important place in the larger program of safety education. Numerous opportunities for it will be found in connection with regular classroom activities. It rightfully enters into many units of instruction and lessons in civics, health work,

reading, and other subjects. It can often be taught effectively thru extracurriculum activities. Games, posters, stories, songs, slogans, dramatizations, essays, excursions, demonstrations, safety films and slides, and assembly programs of various types are among the instructional devices that can be employed. Altho the instruction is usually more or less incidental to some other school activity, the work should be carefully planned in such a way that it will be continuous, systematic, and effective.

The broad objectives of safety education in the elementary grades as outlined by the subcommittee on safety education of the White House Conference on Child Health and Protection are applicable to safety instruction which centers on school bus experiences:

1. Habits of personal safety.
2. Consciousness of responsibility for the safety of others.
3. A spirit of cooperation in solving problems of social significance.
4. A respect for community regulations.
5. An understanding of the causes of accidents and a knowledge of how to meet them.¹

Helpful teaching materials are now available from such agencies as the National Safety Council,² the American Automobile Association,³ the Highway Education Board,⁴ the National Highway Users Conference,⁵ the National Bureau of Casualty and Surety Underwriters,⁶ and from a few of the state departments of education and motor vehicle departments.⁷ Handbooks, manuals, supplementary readers, and other materials are also available from standard publishers.⁸

¹ White House Conference on Child Health and Protection. *Safety Education in Schools*. Report of the Subcommittee on Safety Education in Schools. Monograph IIIC. New York: the Century Co., 1932. p. 25. This report also suggests appropriate specific objectives for each grade and refers to suitable materials and methods of instruction.

² Headquarters at 20 N. Wacker Drive, Chicago. Of special interest is the magazine, *Safety Education*, and a booklet entitled *Safety Education in the Rural Schools*. (1929, 38 p.)

³ Headquarters in the Mills Building, Washington, D. C.

⁴ Headquarters in the Pan-American Building, Washington, D. C.

⁵ Headquarters in the National Press Building, Washington, D. C. See especially the bulletin entitled *Highway Transportation* prepared by the Conference in cooperation with the Association for Childhood Education. (1935, 52 p.)

⁶ Headquarters at One Park Avenue, New York City. See especially the book by Ruth Streitz entitled *Safety Education in the Elementary School* (1926, 142 p.)

⁷ The teaching aids developed by the Oklahoma State Department of Education in cooperation with the State Highway Commission may be cited as one outstanding illustration. See also, *Education for Safety*, Bulletin No. 303, Michigan State Department of Public Instruction, 1936. 84 p.

⁸ For example: Bailey, R. R. *Sure Pop and the Safety Scouts*. Yonkers-on-Hudson, N. Y.: World Book Co., 1918. 129 p. ¶ Brinkerhoff, G. I., and Rowe, C. *Safety First Stories*. New York: Longmans, Green and Co., 1928. 186 p. ¶ Fox, Edith. *Roller Bears and the Safeway Tribe*. New York: Macmillan Co., 1929. 259 p. ¶ Hyde, F. S., and Slown, R. C. *Safety Programs and Activities for Elementary and Junior High Schools*. Chicago: the Beckley-Cardy Co., 1931. 265 p. ¶ Roberts, Mildred M. *Safety Town Stories*. New York: Lyons and Carnahan, 1930. 96 p. ¶ Shea, Patrick F. *Accident Prevention Through Education in the Elementary School*. Boston: D. C. Heath and Co., 1928. 86 p. ¶ Waldo, Lillian. *Safety First for Little Folks*. New York: Charles Scribner's Sons, 1933. 165 p. ¶ Nelson, Florence, and Cottrell, H. Louise. *Safety Through the Year*. (Workbook for elementary schools) New York: McGraw-Hill Book Co., 1936. 96 p. ¶ Wood, Thomas D., and others. *Adventures in Living*. (Five volumes on health, including safety) New York: Thomas Nelson and Sons, 1936.

Instruction in Highway Safety at the High-School Level

Lessons in safety based on school bus experiences and correlated with regular classroom activities should not cease when pupils enter high school. On the contrary, in the study of civic and social problems, in health courses, science classes, and in other fields, the many opportunities for effective safety education should be capitalized. The broadened program of extracurriculum activities, too, affords new opportunities for safety promotion. At this level greater attention can be paid to the underlying causes of accidents, to the reasonableness of various rules for safety, and to the responsibility of an individual not only for his own safety but also for that of others.

Still another type of high-school instruction is having its effect on safety in pupil transportation, namely, special courses on the proper care and safe operation of an automobile. The pupils riding in school buses who study safe driving are said to be better able than the rest to protect themselves from injury and to look out for the safety of others. They are more fully conscious of traffic danger; they have "the safety habit." They distinguish more quickly between safe and unsafe practices on the part of school bus drivers and passing motorists and thus when the occasion demands are better able to take unusual precautions. They appreciate a driver's problems and are less likely to distract his attention or otherwise interfere with safe driving. They quickly recognize specific road hazards and shun dangerous situations. Moreover, a school bus driver tends to observe more carefully the traffic regulations and common

rules of the road if some of his passengers are alert to any irregularities.

One of the early classes in automobile driving and highway safety, including actual practice in driving, was given in the state college high school at State College, Pennsylvania, in 1933 by Amos E. Neyhart. The work was eminently successful. In the summer of 1935, Neyhart reported that not one of the students in his classes had been involved in an accident—a splendid showing in view of the fact that 31.9 percent of all motor vehicle accidents occur to drivers who are in their first year of driving experience. So rapidly has the movement spread that by 1936 more than a thousand high schools were conducting special classes in driving, and thousands of others were including highway safety in more general safety courses.⁹ The work has been endorsed and actively promoted by governors, highway commissioners, and state superintendents of public instruction.¹⁰ It is being offered in every high school in Indiana¹¹ and New York, and in several schools in New Jersey, New Hampshire, Pennsylvania, Delaware, Minnesota, Iowa, Colorado, and Michigan.

Many of the classes on driving and highway safety are limited to ordinary classroom activities such as textbook study, discussion, explanations, and demonstrations.¹² In a growing number of cases, however, the classroom instruction is being supplemented with actual practice in operating an automobile on the highway.

Special Materials for Safety Promotion

State departments of education and other agencies make liberal use of bulletins, leaflets, posters, road signs, windshield stickers, and

⁹ Stack, Herbert J. "Schools Are Teaching Safe Driving." *Parents and the Automobile*. New York: Bureau of Publications, Teachers College, Columbia University, 1936. p. 57-62.

¹⁰ Among the vigorous champions of driving instruction in high-school classes have been Governors Herbert H. Lehman of New York, Harold G. Hoffman of New Jersey, Wilbur A. Cross of Connecticut, and E. W. Marland of Oklahoma; Commissioners Charles Harnett of New York, Michael A. Connor of Connecticut, and J. M. Gentry of Oklahoma; and State Superintendents Floyd I. McMurray of Indiana, Charles H. Elliott of New Jersey, and Agnes Samuelson of Iowa.

¹¹ A regulation recently announced by the state department of education.

¹² Suggestions on effective demonstration work are given by E. F. Willis in "The Use of Lantern Slides in Teaching Traffic Safety," *The Educational Screen* 15: 5; January, 1936.

The following state departments have issued manuals or courses of study on safety education: Alabama, California, Connecticut, Georgia, Indiana, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, and Wyoming. See, for example, Connecticut's *Intelligent Driving*. Hartford: the State Department of Education, 1936. 32 p. Other helpful sources are: American Automobile Association. *Sportsmanlike Driving*. Washington, D. C.: the Association, 1936. (A teaching manual and five bulletins suitable for classroom use.) § Automobile Manufacturers Association. *Automobile Facts and Figures*. New York: the Association, 1936. 96 p. (Revised annually) § Detroit Board of Education. *Lessons in Traffic Safety for Secondary Schools*. Detroit: the Board, 1936. § General Motors Corporation. *We Drivers*. Detroit: the Corporation, 1935. 36 p. § International Harvester Company. *I Drive Safely*. Chicago: the Company. 61 p. § National Safety Council. *Accident Facts*. Chicago: the Council. (Issued annually) § National Safety Council. *Good Driving: A Manual for High Schools*. Chicago: the Council. § National Safety Council. *Safety Education* (A monthly magazine issued by the Council.) § Neyhart, Amos E. *Driver Training Manual*. Washington, D. C.: the American Automobile Association, 1936. § Travelers Insurance Company. *Highway Hazards*. Hartford, Conn.: the Company. (Monthly safety lessons forwarded on request.) § Travelers Insurance Company. *Live and Let Live*. Hartford, Conn.: the Company, 1936. 40 p. § Travelers Insurance Company. *What's Wrong With These Drivers and Pedestrians?* Hartford, Conn.: the Company. (A picture test involving the prompt recognition of road hazards.) § Whitney, Albert W., editor. *Man and the Motor Car*. New York: National Bureau of Casualty and Surety Underwriters, 1936. 256 p.

other printed materials in carrying their messages on safety to school bus drivers, school pupils, and the general public. Official rules and regulations for drivers and rules for pupil conduct are often distributed in a form suitable for permanent display in the school bus.

Arkansas, Kentucky, Massachusetts, New Jersey, and New York are among the states in which departments of education have recently issued manuals or other bulletins on safe pupil transportation.¹³ The *Safety Bulletin*, a four-page monthly publication issued by the Illinois Division of Highways, is a unique device for promoting highway safety, including the safe operation of school buses.

Newspaper and magazine articles can also be used to advantage in safety promotion, not only by state authorities but also by local school officials and others interested in the safety of school children.¹⁴

The motor vehicle department of Maryland in 1935 developed a film in the interest of greater safety in the transportation of school pupils. This film, entitled "Safety for Schools of Maryland," depicts the careful selection of bus drivers, instructions to bus drivers, school boy patrols assigned to each bus and to the intersections near each school, motor vehicles stopping in rear of buses that are loading or discharging pupils, standard color and lettering to make buses more prominent, instructions to school pupils, and other safety suggestions.

Contests and Special Recognition for Safety Work

Various agencies seek to promote safety by conducting contests. Pupils, or perhaps the general public, are invited to submit plays, essays, posters, slogans,¹⁵ or other ideas or materials which can be used in safety promotion. In at least two states, certificates of recognition are issued by state authorities to school bus drivers without known violations of driving regulations and having perfect "no accident" records. (See Figure VII.)

Safety Conferences

According to reports from state departments of education, one or more safety conferences

for school bus drivers and school officials have been held in twelve of the thirty-six states reporting.¹⁶ Sometimes these conferences are planned and carried out by the state department of education, the department of motor vehicles, or the highway commission, each working independently; sometimes they are the result of cooperative planning. They may draw from an entire state or a large region within a state, or they may serve a small area such as a single county. Attendance may be voluntary or required. The effectiveness of such conferences depends, of course, on the proportion of bus drivers reached and on the quality of the programs. County conferences, similar to those introduced in Ohio,¹⁷ should prove helpful. To line up all the school buses for inspection, and to bring together bus drivers, school administrators, schoolboard members, and state officials for a consideration of transportation problems should lay the foundation for effective safety work thruout the year. Training classes for school bus drivers, similar in general purpose and character to those which the Greyhound Bus Company has arranged for its drivers, might well be conducted by state highway departments and other state agencies.

School Bus Patrols

The recommendations of the National Safety Council with respect to school bus patrols have been incorporated into the safety bulletins of several state departments of education and are being followed in many communities. This plan provides that the principal shall appoint two patrols for each bus—two boys, or a boy and a girl. In an ideal situation, pupils will be chosen who because of their size and personality have the respect of their classmates and who, in addition, live near the end of the route. Even if the natural leaders do not live near the end of the route, it may be advisable to appoint them to serve while on the bus, with assistant patrols to take charge for the remainder of the period. The Council points out that a bus patrol is a monitor in the dictionary sense of that word—"one who advises or cautions." He only helps the driver to

¹³ *Public Transportation of School Pupils*. Little Rock: Arkansas State Department of Education, 1930. 43 p. *Manual on Pupil Transportation*. Frankfort: Kentucky State Department of Public Instruction, 1936. 64 p. *Transportation of Public School Pupils in Massachusetts*. Boston: Massachusetts State Department of Education, 1934. 18 p. *Pupil Transportation in Rural New York*. Albany: New York State Department of Education, 1930. 26 p. Supplemented by *School Bus Requirements and Recommendations*, April 15, 1936. *Pupil Transportation*. Trenton: New Jersey State Department of Public Instruction, 1935. 11 p.

¹⁴ As an illustration see the article referred to in footnote 2, section V of this bulletin.

¹⁵ See: Shea, Patrick F. *Accident Prevention*. Boston: D. C. Heath and Co., 1928. p. 53-62.

¹⁶ Arizona, Delaware, Florida, Indiana, Iowa, Louisiana, Michigan, Minnesota, New Jersey, New York, Pennsylvania, and West Virginia.

¹⁷ See "Improving School Transportation." *American School Board Journal* 82: 45; May, 1931.

protect pupils from danger and at all times must cooperate fully with him. He must not act independently or try to assume the driver's authority, for it is the latter who is responsible for pupil safety. If two patrols are appointed, one usually is assigned to a seat at the rear of the bus, the other near the front. Their duties include the following:

1. At the school building assist the driver in seeing that pupils enter and leave the bus in an orderly manner.
2. See that all pupils are on board and seated before the bus leaves the school building.
3. Warn children not to get on or off buses in motion.
4. Caution children not to move about within the bus while it is in motion.
5. Keep aisles free from books, lunch baskets, and other objects.
6. Report to the driver any serious violations of rules such as tampering with the release on the emergency door.
7. Caution children not to extend hands or heads from the bus windows.
8. Report to the driver any attempts at "hitching" on the part of bicycle riders, roller skaters, or others.
9. Leave the bus and serve as flagman at any railroad crossing where the driver does not have a clear view of the tracks in both directions—or at all crossings, if the state law requires this of some pupil.

10. Descend first at each pupil station to help small children on and off the bus and to assist in other ways as needed. Children coming toward the bus will not cross the highway until the patrol, *taking his signal from the driver*, beckons them to come. In the evening when children must cross the highway to reach their homes, the patrol should accompany them around the front of the bus to a point just ahead of the left front wheel. Then when a safe interval in traffic occurs, and *at a signal from the driver*, he will direct them to cross. If traffic is heavy, he may need to accompany small children.

Attendants

In some cases an adult attendant regularly accompanies the driver, assisting him in much the same way that bus patrols would do. Sometimes on unusually large buses, and often in the case of buses carrying physically handicapped pupils, the attendants are paid employees. In other cases parents serve as attendants on a voluntary basis, perhaps taking turns to lighten the burden.

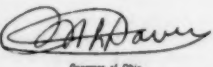
Even under the best conditions, a school bus driver's responsibilities are heavy. His best efforts need the support of safety education in the schools, of numerous safety reminders—bulletins, posters, contests, and conferences—and of competent bus patrols or adult attendants.

FIGURE VII

State of Ohio
Governor's School Safety Program
Diploma

To Whom These Presents May Come
Be It Known That:

Has this day been awarded this Certificate for Meritorious Service
in the interest of Safety for the school children of _____

Governor of Ohio

Superintendent

Principal

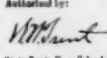
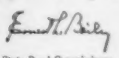
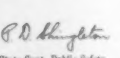
**CERTIFICATES
AWARDED FOR
SAFE DRIVING**

STATE OF WEST VIRGINIA
1934-35
SCHOOL BUS OPERATIONS SAFETY CLUB

THIS CERTIFICATE, That _____
operated a school bus as a regularly employed driver for the Board of Education of _____
County during the school year 1934-35,
under Rules and Regulations approved by the State Board of Education, State Road
Commissioner, and State Department of Public Safety, without accident involving personal
injury or property damage during said period of employment; and in recognition there-
of, hereby awarded this Certificate for

Safety in Transportation

Authorized by:

State Dept. of Public Schools
State Road Commissioner
State Dept. of Public Safety

Research Division, National Education Association

VII. Business Practises Affecting Pupil Safety

Prudent business management has an important bearing on safe pupil transportation. Without sound business practises, a school-board is unlikely to obtain the most competent drivers and the best equipment available, or to have from its employees the most faithful performance of duty of which they are capable. Some of the business problems affecting pupil safety are considered in this section.

Bus Ownership

Whether a school district should purchase and operate its own buses or contract with private owners for the necessary transportation of its pupils is a problem with several important angles. Before action is taken in any school district careful consideration should be given to any legal restrictions and to questions of unit cost and administrative management. To this discussion, however, only one question is pertinent: Which type of ownership, generally speaking, results in the use of safer equipment?

Altho no final answer can yet be given to this question, the evidence now available strongly favors the use of district owned vehicles. One school district changed from the contract plan to district ownership and reported that safer and more comfortable vehicles were provided at lower cost than before.¹ More conclusive evidence is found in a survey of school bus equipment in 69 consolidated school districts in Minnesota in 1934. District owned vehicles were used in 13 districts, privately owned buses in 39 districts, and jointly owned² in 17 districts. The vehicles were checked on 30 important construction features with the following result:

	District owned	Jointly owned	Privately owned
Number of buses inspected.	42	55	148
Maximum defects possible, checking on 30 construction features	1260	1650	4440
Actual number of defects discovered	144	381	1351
Percent of deficiencies.....	11.4	23.1	30.4

Table 5 shows the frequency with which certain kinds of specific defects were found in the district owned and privately owned buses.

Vehicles jointly owned were less satisfactory than the former but more satisfactory than the latter. The survey report points out that whereas

Among the district owned vehicles only two could be reported as not being substantial, . . . one-third of the privately owned buses were of inferior construction. Many of these were built of soft woods, wall boards, and other fragile material. . . . In twenty-five cases the bus compartment was built in back of the driver's cab. When the buses are constructed in this manner the drivers have no opportunity either to observe or control the discipline of the pupils. In fifty-three cases the buses were too narrow. Obstructions were on the floors in many. . . . The district conveyances were carrying capacity loads but did not overcrowd to the extent that the others did. Twenty-one percent of the private motor buses were overcrowded; 9 percent of the district owned. . . . In most of the districts employing private motor buses to convey pupils, the drivers are usually engaged by the bid method. The contractor accepts the job at a low figure in competition with his neighbors in the community. It then becomes impossible for him to furnish the type of equipment essential to the safe and comfortable transportation of pupils. Thus, an inferior conveyance is furnished. The district saves money in cost of operation at the hazard of the health, life, and limb of the pupils.³

TABLE 5.—DEFICIENCIES IN SCHOOL BUS CONSTRUCTION IN THE CASE OF CERTAIN DISTRICT OWNED AND PRIVATELY OWNED VEHICLES

Type of defect	District owned buses	Privately owned buses
	Percent defective	Percent defective
1	2	3
Vehicle unsafe because of, or with respect to:		
Fragile construction.....	5	35
Width (usually too narrow)...	19	35
Ventilation.....	26	73
Windshield wiper.....	19	55
Seating arrangements.....	7	32
Emergency door.....	2	19
Steps.....	0	16
Handrails.....	29	48
Door controls.....	7	37
SCHOOL BUS sign.....	26	54
Overloading.....	9	21
Service brakes.....	2	10
Emergency brakes.....	9	28

Adapted from: Engum, T. C. *Survey of School Bus Construction in Sixty-nine Consolidated School Districts in Minnesota*. St. Paul: State Department of Education, 1934. Table II, p. 3.

¹ Finch, H. A. "School Bus Ownership Gives Better Service at Lower Cost." *Nation's Schools* 14: 59-61; August, 1934.

² In such cases the usual plan is for the school district to own the bus body, and the driver or contractor, the chassis.

³ Engum, T. C. *Survey of School Bus Construction in Sixty-nine Consolidated School Districts in Minnesota*. St. Paul: State Department of Education, 1934. 8 p. (mimeo.)

Except where school buses are district owned, safe equipment should be guaranteed by covering all the important safety standards in the specifications on which the bids are let. A description of acceptable equipment can also be written into drivers' contracts.

Bids and Applications for Employment as School Bus Driver

The state law in some instances will not allow a schoolboard to enter into any contract for pupil transportation except on the basis of open competition in which bids or applications are received from any responsible person or firm.⁴ Wherever specific legal provisions exist they should be followed *in every detail*, for any irregularity in the form of procedure may jeopardize a contract. Even in the absence of a law requiring the board to advertise for bids, or to give public notice of vacancies for school bus drivers, it is good policy to hear the claims of all interested parties and award the contracts, without favoritism, to the most satisfactory applicants.

In New Jersey and Ohio, each bid for a transportation contract is accompanied by a questionnaire filled out by the applicant. The New Jersey questionnaire contains evidence of the driver's financial responsibility and his qualifications and experience as a driver; it indicates something as to his personal habits, and describes the equipment offered and the route to be followed. The Ohio inquiry also covers health status, including a certified statement from a physician that the applicant is in good health and free from certain specified handicaps. A cash deposit must sometimes accompany each bid as a pledge that it is made in good faith by one who is in a position to enter into the proposed contract.

Drivers' Contracts

Some form of contract is necessary wherever transportation is provided. Nearly always contracts are in writing and in many states they are uniform in character, following a standard outline developed by state authorities.⁵

The nature of the contract will vary somewhat according to the type of service involved. If the district provides and maintains the equipment, the contract will relate only to such matters as the duration of the agreement, compensation, and whatever is thought necessary with respect to working conditions, schedule, and the duties and responsibilities of the driver. If this is not the case, the contract will need to specify the kind and amount of equipment to be provided and the condition in which it must be maintained, as well as the more simple outline of driving practises. The important matter, from the standpoint of pupil safety, is the existence of a definite written contract which permits no neglect or carelessness with respect to any essential safety precaution. If no uniform contract is provided for statewide use, the local district should develop a satisfactory one in terms of local needs. Where a standard form is employed it may be advisable in some instances to insert certain provisions which supplement those laid down by state authorities.

Bonds

The requirement of a surety bond for the faithful performance of the terms of a contract is a practise widely followed.⁶ From the standpoint of pupil safety, it is an important administrative control, giving the schoolboard an effective means of enforcing whatever safety standards the contract provides—safe equipment, proper maintenance, safe driving practises, regular schedule, etc. In some cases the law requires a minimum bond of \$250 as in Minnesota, or perhaps \$1000 as in Montana. In others the amount of the bond is a certain percent of the sum named in the contract, e. g., in Arkansas, 10 to 25 percent. In at least one state (New Jersey), the contract must be accompanied by "a suitable bond for the full amount of the contract." Again, the size of the bond may be left to the discretion of the schoolboard, the legal requirement being only a general one to the effect that a "satisfactory and sufficient bond shall be posted."⁷ In the absence

⁴ For an example of this type of legislation see New Jersey P.L. 1933, Ch. 383. (Quoted in *Pupil Transportation*. Trenton: New Jersey State Department of Public Instruction, 1935. p. 3-4.)

⁵ In at least the following states, uniform contracts either are definitely required or are available for use and have been recommended by state departments of education: Arkansas, California, Delaware, Florida, Iowa, Mississippi, New Jersey, New York, North Dakota, Washington, and West Virginia. In a number of other states the law requires written contracts, and names some of the provisions which must be inserted. For an example of a brief contract see that of California; for a detailed form, see that of Delaware.

⁶ In the following states, and perhaps certain others, surety bonds are regularly required: Arkansas, Minnesota, Montana, Nebraska, Nevada, New Jersey, Ohio, and Tennessee.

⁷ *Ohio Public Laws*, Section 7731-33, as amended June 6, 1935.

of a bond, certain school districts seek to accomplish the purpose which such a bond might serve by providing in the contract that the first month's salary will be held back until the end of the year.

Because schoolboards sometimes confuse the purposes of surety bonds with those of insurance, the distinction between the two should be clearly drawn. A bond is not a form of insurance. Regardless of its size, it affords virtually no protection to pupils or to the general public for any injury or damage sustained in a school bus accident. A bond is only a financial pledge that the driver, or contractor, will fulfil the terms of his contract. For this reason, a moderate-sized bond should prove entirely satisfactory.

Liability of Schoolboards

In certain states schoolboards are liable for injuries and losses sustained in school bus accidents; in others, they are not. In California the law specifically imposes liability on the several school districts of the state, authorizing them to insure their school buses and declaring that the premiums for such insurance are a proper charge from public funds.⁸ In New York and Washington there is no specific law comparable to that of California, but court decisions have granted the possibility of district liability. Decisions have hinged on such questions as whether or not the injury was due to any negligence, and whether or not the injured person was guilty of contributory negligence.⁹ There are probably other states, too, in which the courts would impose liability on any district which failed to carry the insurance authorized or required by the state laws. In several states, however, the courts probably would be slow in admitting school district liability, holding that the schoolboard is an agent of the state immune from any suit for damage or injury. Decisions of this type, involving school bus accidents, have been rendered in at least two states, South Carolina and Oklahoma.¹⁰

The Personal Liability of Bus Drivers

Just as the courts are divided on the question of district liability, they are divided on the question of personal liability for employees of the district such as bus drivers. In Florida, judgment was rendered against a school bus driver when an accident occurred traceable to a defective grill covering one of the windows.¹¹ In Iowa a driver was relieved of liability, although the accident in question resulted from a defective door latch which he neglected to put in proper repair.¹² At present no general rule, or trend of opinion, clearly prevails.

Insurance

In at least four states public liability insurance must be carried—either by the driver or the school district—on every motor vehicle used in pupil transportation. In Rhode Island the ordinary \$5,000-\$10,000 public liability policy is required in the case of vehicles transporting fewer than ten pupils, and for larger buses, a \$10,000-\$25,000 policy.¹³ Massachusetts, New York, and New Jersey also specify different amounts of liability insurance for vehicles of various sizes.¹⁴ The upper limit is \$50,000 in Massachusetts and New York; \$40,000 in New Jersey. New York also requires insurance against property damage by policies ranging from \$1000 in the case of small buses to \$5000 for the largest vehicles. Florida and West Virginia require all private contractors to carry insurance and permit school districts to purchase insurance if they wish to do so. Colorado, Minnesota,¹⁵ Nebraska, Vermont, Washington, and Wyoming are among the states authorizing schoolboards to carry suitable insurance. The California law, already cited, makes liability insurance virtually mandatory throughout that state.

In Wisconsin, Missouri, Arkansas, Kentucky, and probably in other states as well, insurance covering property damage or public

⁸ *California School Code*, 1931. See p. 360, Civil Code, Section 1714½.

⁹ See M. M. Chambers, editor, *Second Yearbook of School Law*, 1934, p. 49. Also, *Morris v. Union High School District A., King County*, 160 Wash. 121, 294 Pac. 998.

¹⁰ *Sherbert v. School District No. 85*, 169 S. C. 191, 168 S. E. 391; *Wright v. Consolidated School District No. 1*, 19 Pac. (2d) 369.

¹¹ *Burnett v. Allen*, 154 So. 515.

¹² *Hibbs v. Independent School District of Green Mountain et al.*, 255 N.W. 463.

¹³ Transportation regulations adopted by the Rhode Island State Board of Public Roads, August 1, 1934.

¹⁴ Massachusetts Public Law, Acts of 1932, Ch. 271, Sec. 6. § New York Vehicle and Traffic Law, Sec. 17, as amended in 1934. § Regulations of the New Jersey State Board of Education, June 8, 1935, Sec. 16.

¹⁵ Only school districts having an assessed valuation of \$2,000,000 or more may legally purchase insurance in Minnesota.

liability is not legally necessary but is recognized as a proper safeguard. In Missouri and Arkansas the state departments of education strongly urge at least the minimum protection afforded by a \$5,000-\$10,000 policy. In Kentucky, schoolboards have been exempted from "legal liability" but the courts have recognized a "moral responsibility," with the result that \$5,000-\$30,000 policies are strongly urged in the transportation manual issued by the state department of education.

In a few instances school districts have been forbidden to use public funds for the payment of premiums on liability insurance.¹⁶ The argument advanced has been that in the absence of liability an insurance premium is an expenditure for a service which the board is not authorized to provide. Few interpretations of this kind have been rendered; and even in such cases, the board probably could have required its drivers to carry adequate insurance, so long as it was done *at the drivers' expense*.

Proper insurance should serve in some measure as an incentive to drivers to operate their buses as safely as possible. They know that any insurance claim will be carefully investigated and that any negligence on their part is likely to be exposed. Further than that, the assurance of some financial compensation in the event of unavoidable accidents seems but a reasonable type of pupil safeguard. A schoolboard, in every case, should determine what the law is with respect to insurance and should conform to the law in every particular. If the law is silent on the matter and no interpretation limits the board in using its discretion, adequate insurance seems indeed a "moral obligation."¹⁷ Because schoolboards are often declared to be exempt from liability, however, every insurance policy should carry a clause waiving the right of the company to refuse payment on any claim on the basis of original non-liability of the schoolboard.

Administrative Reports on Pupil Transportation

Adequate supervision of pupil transportation is possible only when the responsible authorities keep themselves informed on what is being done. In well-managed systems the following reports are required: (1) a report from each driver at frequent intervals to the principal, superintendent, or transportation manager to whom he is directly responsible; (2) a report from the driver to local school authorities and to the proper state highway officials of any accident involving property damage or personal injury; (3) weekly reports from principals and transportation managers to the superintendent of schools; (4) frequent reports from the maintenance department, or head mechanic, to the superintendent of schools; (5) monthly reports from the superintendent of schools to the board of education and perhaps to the state department of education; and (6) an annual report from the superintendent of schools to the local schoolboard and to the state board of education.

Forms now in use for such administrative reports are available in the transportation manuals of state departments of education in Arkansas, Kentucky, and New York and in unpublished form from the departments of education in certain other states.

In adopting or developing report forms, and in using those already at hand, care needs to be taken that information on the *cost* of transportation is not emphasized to the exclusion of information about pupil safety. Adherence to schedule, condition of roads and equipment, the nature of minor accidents, and many other facts relating to pupil safety should be recorded as systematically as cost and mileage figures. Such reports not only have a wholesome influence in preventing accidents, but they also serve as the surest foundation for necessary administrative changes.

¹⁶ For example, an opinion rendered by the attorney-general, School District No. 2, Lake County, Two Harbors, Minnesota, 1927.

¹⁷ Kentucky State Board of Education. *Manual on Pupil Transportation*. Educational Bulletin, Vol. 4, No. 2. Frankfort, Ky.: the Board, 1936. p. 20.

VIII. Implications of This Study

Analysis of the regulations and practises of the various states with reference to safety in pupil transportation has indicated certain areas where further work is urgently needed.

Effective Cooperation

Since state and local authorities must share the responsibility for safe pupil transportation, considerable attention should be given to the machinery and procedures which make for effective cooperation. The state is responsible for adequate minimum standards and for general regulation and supervision. It is the duty of local school authorities to carry out state regulations and to adopt other pupil safeguards as needed. This calls for the closest possible cooperation between local school authorities and state agencies. Less directly, perhaps, it implies the need for close cooperation among various state agencies, especially, state departments of education, motor vehicle departments, highway departments and commissions, state highway police, and state councils or commissions on highway safety. With the possible exception of a few states, closer cooperation among these agencies could readily be developed. A plan now in use in one state seems to merit wider use. There a coordinating committee, with representatives from each state agency concerned, has been created expressly to promote safety in pupil transportation.

Another improvement urgently needed in many states is a clearer definition of authority and function for all the agencies concerned with pupil transportation. Effective cooperation is difficult, to say the least, when the various departments and commissions are uncertain as to their jurisdiction, or when two or more agencies seem to have the same duties.

Appropriate State Laws

At present, legislation relating to the operation of school buses is quite meager in a number of states. In the interest of safety, laws of this type ought to be examined from time to time with a view to enacting needed amendments and supplements. A definite policy should be developed, too, with respect to the scope of safety legislation. Some states enact laws that prescribe safety standards and practises in considerable detail; other legislatures confine themselves to general laws, delegating to one or more state agencies the authority to develop and enforce the more detailed regulations. The

latter plan is usually favored, if the general laws not only confer sufficient authority, but make it mandatory for each agency to exercise the control with which it is entrusted.

Adequate Supervision

Safety in pupil transportation can be assured only by careful and continuous supervision by state and local authorities. Even the more detailed safety laws need to be supplemented by appropriate rules and regulations. State agencies and local school authorities should adopt whatever standards and regulations properly come within their jurisdiction. Laws and standards with reference to drivers' qualifications, equipment, routes, and operating practises must be enforced.

Altho effective supervision is impossible without adequate information about the transportation program, the situation in many states is similar to that described in the following quotation from correspondence with one state department of education:

Transportation of school children is a local district's responsibility in this state. Much of the information requested is not reported to this office. I might state further that in attempting to secure further information I have consulted with the State Director of the Department of Motor Vehicles and with the Attorney General.

Safe Transportation as a Factor in School Consolidation

Safe transportation is basic to the success of the consolidation program. Granting the obvious educational advantages of consolidated schools over those of the one-room type, the question of whether a consolidated school should be established in a given community often hinges very properly on the financial ability of the community to provide safe transportation. The consolidation of schools in districts that are forced to use ramshackle equipment, employ drivers at less than a living wage, and establish routes over dangerous highways tends to discredit the consolidation movement.

Frequent Evaluation

School authorities ought frequently to take stock of their own efforts on behalf of pupil safety and consider other safeguards that might be introduced. Figure VIII is a checklist which can be used in such appraisals.

FIGURE VIII

A CHECKLIST OF IMPORTANT SAFETY STANDARDS AND PRACTISES

Check each standard
or practise used

In selecting a school bus driver, the successful applicant is required to:

1. Enter a bid, or application, in competition with all others who care to apply [See page 234] ()
2. Hold a regular driver's license issued by state authorities [See page 205] ()
3. Hold a special license (e.g. chauffeur's license or bus driver's license) [p. 206] ()
4. Present evidence that his driver's license has never been revoked [p. 207] ()
5. Pass special driving tests [p. 206] ()
6. Cite reliable references who will vouch for his driving skill [p. 207] ()
7. Have a satisfactory experience record in driving a vehicle of comparable size [p. 207] ()
8. Be between the ages of twenty-one and fifty-five years [p. 205-06] ()
9. Pass a thoro physical examination (including tests of vision and hearing) [p. 207] ()
10. Present satisfactory evidence of good character and wholesome personal habits [p. 207] ()
11. Enter into a written contract covering essential features of the service [p. 234] ()
12. Post a satisfactory surety bond for faithful performance of the contract [p. 234] ()

Vehicles used as school buses must be satisfactory with respect to:

1. Size—Large enough to prevent overcrowding; small enough that size is not a hazard [p. 210] ()
2. Type of construction—Bus bodies strong enough to withstand turnover (no improvised frame extensions and frail, home-made bus bodies permitted) [p. 212] ()
3. Brakes—Four-wheel brakes, in good condition, sufficient to stop the bus within 30 feet when traveling on a dry pavement at 20 miles an hour [p. 212] ()
4. Tires—All in good condition and properly inflated, including a spare tire [p. 212] ()
5. Safety glass in windshield, doors, and windows [p. 213] ()
6. Distinctive coloring (preferably uniform thruout the state) and a prominent SCHOOL BUS sign displayed on front and rear [p. 213-14] ()
7. Mounting—At least two-thirds of the bus body resting in front of the rear axle and the overhang, in no case, exceeding 45 percent of the wheel base [p. 214] ()
8. Power—Sufficient to propel loaded bus at 20 m. p. h. on any grade regularly used [p. 215] ()
9. Service door—Folding or sliding type located at the right front corner [p. 215] ()
10. Emergency door, preferably on the left side at the rear [p. 215] ()
11. Suitable devices for heating and ventilating the bus [p. 216] ()
12. Proper lights, signaling devices (including horn), windshield wiper, and mirrors [p. 216] ()
13. Window guards (grills or heavy screens) [p. 216] ()
14. Traffic guard rails (to protect in case of side swipes) and bumpers [p. 216] ()
15. Fire extinguisher, first aid kit, and other emergency accessories [p. 216] ()

Equipment is maintained in good condition by requiring:

1. Daily inspection of brakes, tires, lights, etc., by bus drivers [p. 217] ()
2. Thoro inspection at frequent intervals by a competent mechanic [p. 216] ()
3. Periodic inspection of brakes, etc., at authorized inspection stations [p. 217] ()
4. Inspection at any time by members of the state highway patrol [p. 216] ()
5. Frequent and specific reports to proper authorities on the condition of each bus [p. 236] ()

Laws or regulations with respect to school bus operation:

1. Require a full stop at railroad crossings [p. 219] ()
2. Prohibit a load in excess of rated capacity [p. 220] ()
3. Restrict speed to a safe maximum (probably about 30 miles an hour) [p. 220] ()
4. Provide that pupils be received and discharged only at regular stops [p. 218] ()
5. Direct pupils who cross the highway to pass in front of the bus [p. 218-19] ()
6. Require drivers to report all accidents to the proper local and state authorities [p. 236] ()
7. Specify, in considerable detail, other safety regulations for drivers and pupils [p. 221-24] ()
8. Are written into the driver's contract, if considered essential to pupil safety [p. 234] ()

Each bus has at least one (usually two) boy patrol to assist the driver [p. 231-32] ()

School bus routes are carefully selected after a survey of all available roads [p. 226] ()

Waiting stations are designated and, when needed, shelters are provided [p. 228] ()

Bus schedules require a minimum of time on the road, but allow for safe driving [p. 228] ()

School bus experiences are used by teachers as the basis for safety education [p. 229-30] ()

Drivers are made safety conscious thru posters, bulletins, conferences, contests, etc. [p. 231] ()

Adequate liability and property damage insurance is carried on all buses [p. 235-36] ()

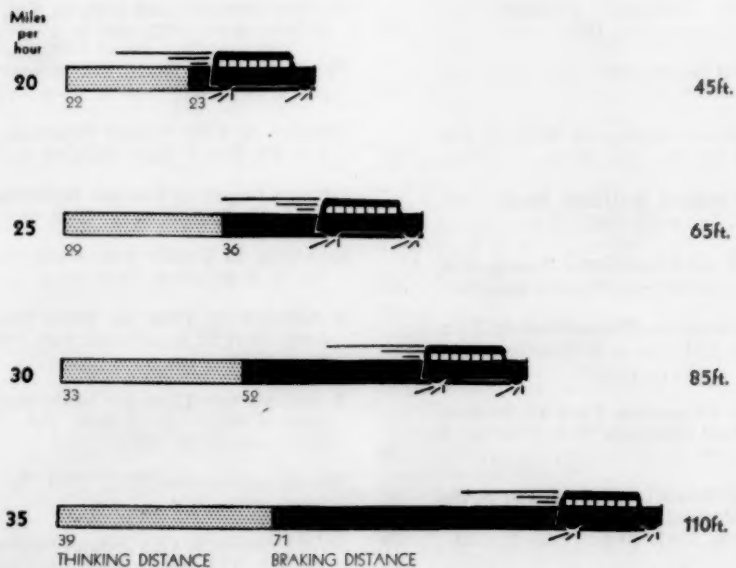
Research Division, National Education Association

AVAILABLE RESEARCH BULLETINS

A Handbook on Teacher Tenure. Vol. XIV, No. 4, September, 1936. 32 p.....	\$.25	Facts on School Costs. Vol. X, No. 5, November, 1932. 24 p.....	\$.25
The Efforts of the States To Support Education As Related To Adequacy and Ability. Vol. XIV, No. 3, May, 1936. 64 p.....	.50	Crime Prevention Through Education. Vol. X, No. 4, September, 1932. 68 p.....	.25
The Preparation of Teachers' Salary Schedules. Part II. Drafting the Schedule. Vol. XIV, No. 2, March, 1936. 52 p...	.25	Estimating State School Efficiency. Vol. X, No. 3, May, 1932. 58 p.....	.25
The Preparation of Teachers' Salary Schedules. Part I. Administrative and Fact-Finding Procedures. Vol. XIV, No. 1, January, 1936. 48 p.....	.25	Administrative Practices Affecting Classroom Teachers. Part II. The Retention, Promotion and Improvement of Teachers. Vol. X, No. 2, March, 1932. 44 p.....	.25
Better Reading Instruction. Vol. XIII, No. 5, November, 1935. 51 p.....	.25	Administrative Practices Affecting Classroom Teachers. Part I. The Selection and Appointment of Teachers. Vol. X, No. 1, January, 1932. 32 p.....	.25
The Teacher's Economic Position. Vol. XIII, No. 4, September, 1935. 104 p.....	.50	Teacher Demand and Supply. Vol. IX, No. 5, November, 1931. 102 p.....	.25
Creating Social Intelligence. Vol. XIII, No. 3, May, 1935. 96 p.....	.50	The Outlook for Rural Education. Vol. IX, No. 4, September, 1931. 72 p.....	.25
Salaries of School Employees, 1934-35. Vol. XIII, No. 2, March, 1935. 32 p.....	.25	Salaries in City School Systems, 1930-31. Vol. IX, No. 3, May, 1931. 64 p.....	.25
The Nation's School Building Needs. Vol. XIII, No. 1, January, 1935. 36 p.....	.25	Current Issues in Teacher Retirement. Vol. VIII, No. 5, November, 1930. 68 p.....	.25
Modern Social and Educational Trends. Vol. XII, No. 5, November, 1934. 48 p.....	.25	Investing in Public Education. Vol. VIII, No. 4, September, 1930. 56 p.....	.25
National Deliberative Committees in Education. Vol. XII, No. 4, September, 1934. 92 p.....	.25	A Self-Survey Plan for State School Systems. Part II. Handbook. Vol. VIII, No. 3, May, 1930. 76 p.....	.25
Education for Character, Part II. Improving the School Program. Vol. XII, No. 3, May, 1934. 64 p.....	.25	A Self-Survey Plan for State School Systems. Part I. Check-lists. Vol. VIII, No. 2, March, 1930. 36 p.....	.25
Education for Character, Part I. The Social and Psychological Background. Vol. XII, No. 2, March, 1934. 40 p.....	.25	The Questionnaire. Vol. VIII, No. 1, January, 1930. 52 p.....	.25
Five Years of State School Revenue Legislation, 1929-1933. Vol. XII, No. 1, January, 1934. 40 p.....	.25	Salary Scales in City School Systems, 1928-29. Vol. VII, No. 3, May, 1929. 68 p.....	.25
Current Conditions in the Nation's Schools. Vol. XI, No. 4, November, 1933. 20 p.....	.25	The Principal and Progressive Movements in Education. Vol. VII, No. 2, March, 1929. 60 p.....	.25
Constructive Economy in Education. Vol. XI, No. 3, September, 1933. 36 p.....	.25	Can the States Afford To Educate Their Children? Vol. VII, No. 1, January, 1929. 44 p.....	.25
Salaries in City School Systems. Vol. XI, No. 2, March, 1933. 16 p.....	.25	Can the Nation Afford To Educate Its Children? Vol. VI, No. 5, November, 1928. 48 p.....	.25

All orders for publications should be accompanied by funds in payment for same and **must be so accompanied when orders for material amount to \$1.00 or less.** Orders not accompanied by funds in payment are subject to transportation charges. Make checks or money orders payable to the National Education Association, 1201 Sixteenth Street, N. W., Washington, D. C.

STOPPING DISTANCES AT VARIOUS SPEEDS



Research Division, National Education Association

