1952

**Some aspects of driver education and its relationship to Montana high schools**

Franklin G. Matsler  
*The University of Montana*

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SOME ASPECTS OF DRIVER EDUCATION
AND ITS RELATIONSHIP TO MONTANA HIGH SCHOOLS

by

FRANKLIN GILES MATER
B.S., Montana State College, 1948

Presented in partial fulfillment
of the requirements for the degree of
Master of Arts

MONTANA STATE UNIVERSITY
1952
This thesis has been approved by the Board of Examiners in partial fulfillment of the requirements for the degree of Master of Arts.

[Signatures]

James E. Short
Chairman of the Board of Examiners

J.B. Castle
Dean of the Graduate School

Date: June 2, 1952
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Chapter I

THE NEED FOR DRIVER EDUCATION

In December, 1951, the United States suffered its millionth fatal traffic accident. This number surpasses three-fold the total number of people killed in the major catastrophes in the United States since 1865.1

The purpose of this thesis is to fit the state of Montana into this national picture, describe an approach for lessening the number of traffic accidents, and determine whether the expense of this approach justifies continuing and expanding the driver training program in the state.

In Montana forty-nine schools have a driver training program.2 The contention that all high schools should have such a program is made by many authorities. President Truman has stated that...."One of the best things we can do to produce safe drivers is the training of our high school boys and girls. One-third of the eligible boys and girls now receive some kind of instruction in safe driving. About half of these are getting training behind the wheel. These

---


youngsters with driver training have only half as many accidents as those who have not had such training. These excellent records promise a great deal over the future. And every boy and girl in high school deserves the opportunity to get that training."³

The First National Conference on High School Driver Education recommended that "Public high schools are responsible for teaching students to operate automobiles skillfully, safely, and with enjoyment. Effective driver education contributes to a number of the basic purposes of education." This conference further recommended that "Driver education programs should be initiated by local school systems, under the authority of local and state boards of education. There should be no legislation requiring schools to offer such programs, only legislation authorizing the inauguration and their expenditure of funds to finance them."⁴

Expert automobile drivers emphasize the importance of good driving attitudes as well as a thorough understanding of traffic regulations. The 1947 reports from 24 states showed that 58 per cent of the drivers involved in fatal accidents were violating a traffic regulation at the time of the accident. Fatal accidents in which this same group of

³Harry S. Truman, from an address at the President's Highway Safety Conference, Washington, D.C., June 13, 1951.

drivers was involved made up 72 per cent of all traffic fatalities.

There is a considerable variation in the reporting of the different states, but the state which reported the fewest violations still showed that 47 per cent of the drivers were violating a traffic regulation at the time of the accident.

Twenty-five out of 100 drivers in fatal accidents were violating a speed regulation. Of these, 14 were exceeding a safe speed where there was no stated limit, and ten were reported as exceeding a safe speed, although not exceeding the maximum speed limit for the area.5

In the United States during 1950 there were 31,500 fatalities due to traffic accidents. In Montana there were 202.6 A summary of the accident reports for the state appears in Table I on page 4.

The average person is likely to be confused by the great variation in results reported by various studies. These differences are probably due more to the nature of the analyses made rather than differences in the quality of instruction given. Ideally, a study of this type should compare two groups of people who are exactly alike, except that one group has taken a driving course and the other has

5"Accident Facts," op. cit.

### TABLE I

**A SUMMARY OF MONTANA TRAFFIC ACCIDENTS BY MONTHS DURING 1950**

<table>
<thead>
<tr>
<th>Month</th>
<th>Accidents Reported</th>
<th>Deaths Resulting</th>
<th>Persons Injured</th>
<th>Drivers Involved</th>
<th>Estimated Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>295</td>
<td>15</td>
<td>106</td>
<td>487</td>
<td>76,962.50</td>
</tr>
<tr>
<td>February</td>
<td>210</td>
<td>9</td>
<td>76</td>
<td>314</td>
<td>63,150.00</td>
</tr>
<tr>
<td>March</td>
<td>285</td>
<td>6</td>
<td>123</td>
<td>427</td>
<td>89,537.50</td>
</tr>
<tr>
<td>April</td>
<td>283</td>
<td>10</td>
<td>133</td>
<td>428</td>
<td>84,962.50</td>
</tr>
<tr>
<td>May</td>
<td>666</td>
<td>17</td>
<td>214</td>
<td>1,089</td>
<td>164,062.50</td>
</tr>
<tr>
<td>June</td>
<td>450</td>
<td>27</td>
<td>240</td>
<td>694</td>
<td>150,600.00</td>
</tr>
<tr>
<td>July</td>
<td>488</td>
<td>30</td>
<td>279</td>
<td>752</td>
<td>154,925.00</td>
</tr>
<tr>
<td>August</td>
<td>468</td>
<td>13</td>
<td>218</td>
<td>730</td>
<td>138,475.00</td>
</tr>
<tr>
<td>September</td>
<td>476</td>
<td>15</td>
<td>222</td>
<td>717</td>
<td>139,737.50</td>
</tr>
<tr>
<td>October</td>
<td>447</td>
<td>23</td>
<td>202</td>
<td>656</td>
<td>135,050.00</td>
</tr>
<tr>
<td>November</td>
<td>588</td>
<td>25</td>
<td>225</td>
<td>941</td>
<td>170,587.50</td>
</tr>
<tr>
<td>December</td>
<td>472</td>
<td>12</td>
<td>192</td>
<td>747</td>
<td>139,400.00</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>5,128</strong></td>
<td><strong>202</strong></td>
<td><strong>2,230</strong></td>
<td><strong>7,982</strong></td>
<td><strong>$1,507,750.00</strong></td>
</tr>
</tbody>
</table>

*NOTE: This table was taken from "Yearly Analysis of Accident Reports," op. cit., p. 6.*
not. Such a study is impractical. The nearest approach to this is usually made by comparing the records of trained and untrained drivers in the same high school class. In reviewing the results of such studies, the following factors should be kept in mind:

**Sex** - Since boys usually have many more accidents than girls, comparisons should be made between groups of the same sex or groups with the same percentage of boys in each. Even if a course were ineffective, a group of trained girls would probably have a better record than untrained boys.

Any study which does not segregate the two sexes is likely to be misleading, as there generally would be a larger percentage of girls in the trained group than in the untrained group.

**Exposure** - It would be desirable to compare two groups with equal miles of driving experience under equal driving conditions. Obviously, this is impossible. As a practical matter, about the best that can be done is to compare the two groups on the basis of months of driving since receiving a license or completing a driver education course. Generally, the records for both trained and untrained groups should be checked, beginning on the date when the trained drivers completed their driving course. Obviously, accidents and violations on record before the course was completed should not be charged against the trained students. By the same token, it is not fair to record accidents and violations for the untrained group
for this same period, as this would be recording a longer exposure period for the trained group than the untrained. Generally, comparisons should be made only between groups of licensed drivers. While admittedly some driving is done without a license, generally unlicensed persons are non-drivers.

**Interest and Attitude** - Unfortunately, from a statistical standpoint, the interest in driving of the trained and untrained groups is not equal, since frequently those enrolled in a course are students who are most interested or have a real reason for learning to drive. While no studies of attitude have been made, it is quite likely that students volunteering for a driving course have a different attitude than those who do not volunteer to take a course.

**Age** - If the groups compared are from the same high school class, the ages are likely to be about equal. Comparisons of a group of trained high school students should not be made with drivers selected at random. It is well known that young drivers have worse records than older drivers.7

**Education** - The groups compared should have about equal education. A high school driving class should not be compared with persons of the same age selected at random from the license files. Persons selected at random would

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7Table II on page 7 shows the occurrence of accidents by age in Montana.
### Table II

A SUMMARY OF MONTANA TRAFFIC ACCIDENTS
ACCORDING TO AGE DURING 1950

<table>
<thead>
<tr>
<th>DRIVERS AGE</th>
<th>U. S. &amp; State &amp; Rural Highway</th>
<th>County &amp; Road Towns</th>
<th>Total</th>
<th>Fatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 years old and under</td>
<td>10</td>
<td>13</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>15 years old</td>
<td>17</td>
<td>17</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>16 years old</td>
<td>60</td>
<td>23</td>
<td>49</td>
<td>132</td>
</tr>
<tr>
<td>17 years old</td>
<td>70</td>
<td>43</td>
<td>64</td>
<td>177</td>
</tr>
<tr>
<td>18 years old</td>
<td>101</td>
<td>51</td>
<td>76</td>
<td>228</td>
</tr>
<tr>
<td>19 years old</td>
<td>144</td>
<td>40</td>
<td>84</td>
<td>268</td>
</tr>
<tr>
<td>20 - 24 years old</td>
<td>750</td>
<td>223</td>
<td>382</td>
<td>1,355</td>
</tr>
<tr>
<td>25 - 34 years old</td>
<td>1,120</td>
<td>294</td>
<td>546</td>
<td>1,960</td>
</tr>
<tr>
<td>35 - 44 years old</td>
<td>684</td>
<td>168</td>
<td>320</td>
<td>1,172</td>
</tr>
<tr>
<td>45 - 64 years old</td>
<td>766</td>
<td>193</td>
<td>403</td>
<td>1,362</td>
</tr>
<tr>
<td>65 and over</td>
<td>167</td>
<td>46</td>
<td>103</td>
<td>316</td>
</tr>
<tr>
<td>Not stated</td>
<td>396</td>
<td>132</td>
<td>406</td>
<td>934</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,243</td>
<td>1,243</td>
<td>2,454</td>
<td>7,982</td>
</tr>
</tbody>
</table>

Note: Taken from "Yearly Analysis of Accident Reports," op. cit., p. 10.
be less likely to have a high school education.

**Driving Conditions** - The accident rate depends partly on driving conditions. Accidents per mile of driving in heavy congested traffic will be more than in open areas where there is little traffic. For this reason, the two groups should be from the same general area.

Even if the two groups studied were equal in every respect, results of different studies would not be the same. Some courses might be more effective than others and would thus show better results.

Approximately 5,000 high schools in the United States are now offering complete courses in driver education, including behind-the-wheel practice driving, to a quarter of a million students annually at a cost of about thirty dollars per student. Is the improved driving record worth this cost? In an effort to find the answer, an analysis was made of all known studies on the results of driver training.

The results, while varying greatly and sometimes negatively, clearly indicate that complete driver education courses reduce traffic accidents at least one-half and in many cases, much more. A summary of this nation-wide report on the results of driver training can be found on pages 9 and 10.

---

Results of Driver Training

In Arizona, the number of high school students involved in fatal accidents dropped from 23 in 1944 to 2 in 1947. High school driver education was started in 1944 and by 1950, 50 of the 70 high schools in the state had both classroom instruction and behind-the-wheel training.

A study made during 1950 in Delaware showed that untrained drivers had nearly 5 times as many accidents and 5 times as many arrests as a comparable group of trained drivers.

Two hundred adults completing a driving course in Washington, D.C., had one accident and eight arrests for moving violations compared to 11 accidents and 48 arrests for an equal number of untrained drivers.

In Bloomington (Illinois) High School, the untrained boys had over twice as many accidents as the trained boys, and the untrained girls had about four times as many accidents as the trained girls.

A limited study in Maryland did not show any difference in the accident records of the trained and untrained boys, but the untrained boys had about 50 per cent more violations. The untrained girls had about 40 per cent more accidents than the trained girls and twice as many violations.

From 1941 to 1947, the Massachusetts high schools offering driver education increased from 48 to 217. During this same period, personal injury accidents involving 16 and 17 year olds decreased from 1203 to 642.

In Michigan, untrained boys had about 11 per cent more accidents and three times as many

violations per thousand months of driving as the trained boys. Trained girls had more accidents and violations than the untrained girls, but the number was too small to be of much significance.

In Camden, New Jersey, the untrained boys had nearly twice as many accidents and violations as the trained boys.

Reports from widely scattered schools in New York indicated that the trained boys had about as many accidents as the untrained boys but about half as many violations since they had received a license. While very few of the trained drivers were involved in accidents or violations before obtaining a license, many of the untrained drivers were so involved.

In Cleveland, Ohio, trained high school boys had half as many accidents and 85 per cent as many violations as the untrained drivers.

High school driver training was started at Stillwater, Oklahoma, in 1946. During that year, 52 high school students were involved in traffic accidents compared to none in 1950. During this period, accidents involving drivers of all ages increased from 402 to 553.

At Pennsylvania State College, a group of trained drivers had five accidents while an equal number of untrained drivers had thirteen accidents.

In Vermont, a group of untrained drivers had seven times as many accidents as an equal number of trained drivers. While the trained drivers had no violations, the drivers had nearly four times as many accidents and ten times as many violations as an equal number of trained drivers.

Untrained boys in Racine, Wisconsin, had four times as many accidents and over twice as many arrests as a comparable trained group. In the case of girls, the ratio for both accidents and arrests was about 2 to 1 in favor of the trained group.
Considering that a comparatively small proportion of the high schools in Montana have introduced a driver training program in their curriculum, and since in many cases the program has been effective in other schools in the United States, it seems desirable to describe the course as it is now being taught and the costs that it entails. These descriptions will be taken up in the ensuing chapters.
CHAPTER II

A COURSE OF STUDY

In Montana there are two general types of course plans used in driver training. The first, and one recommended by the Montana Highway Patrol, consists of both classroom instruction and behind-the-wheel training. The second has merely classroom work and in many cases the driver training aspect is incorporated into a general safety course.

The American Automobile Association has prepared a general outline for a course of study which appears below. A more detailed description of the course appears later in this chapter.

For Classroom Instruction:

1. Time - Five classroom periods per week for a semester. A minimum of 20 hours in the classroom.

2. Teachers - Carefully selected. Interested in traffic

---


safety, with above-average driving skill and teaching ability.

3. Students -
At, or near, legal driving age.

4. Class size -
Small enough to permit maximum pupil activity, and yet so set up as to provide economy in instructional cost.

5. Equipment -

6. Tests -
Written examinations more rigid than required by any state for securing a driver's license.

7. Credit -
Credit, on satisfactory completion of the course.

For Road Instruction:

1. Time -
A minimum of 20 hours in the car for each pupil, of which 8 hours are behind the wheel.

2. Teachers -
Meeting the above standards for classroom work, and, in addition, specially prepared in the techniques of giving behind-the-wheel instruction.

3. Students -
For behind-the-wheel instruction, pupils must be of legal driving age.

4. Practice groups -
Groups of not more than 4 pupils in behind-the-wheel instruction squads.

5. Equipment -
A dual-control training car. Materials needed to set up proper practice streets and correct driving tests.
6. Place -
An away-from-traffic practice course for beginners. Normal traffic environment for the latter stages of the instruction.

7. Protection -
Adequate insurance protection for all concerned.

8. Tests -
Tests of driving ability more rigid than those required by any state for securing a driver's license.

Following are some simple practical suggestions on making instruction most effective. They will prove especially useful to the more inexperienced instructors.

It is necessary that drivers return home feeling that the lesson they have just completed was well presented in clear, understandable terms and that the methods of presentation, demonstration, illustrations and the instructor's regard for the intelligence of the group were commendable. This is especially important as with truck and bus driver classes, where members attend courses many times on their own time, sacrificing valuable leisure time to prepare themselves to become good drivers. They would quickly sense time-wasting and inefficient teaching methods. Resentment born in a few could spread through the entire class to the detriment of both the instructor and the success of the course. The following "Essentials of Effective Teaching" may be considered as suggested checklists to help.

---

They are divided into two groups: (A) **Before Meeting with Classes**, and (B) **While Meeting with Classes**.

(A.) **Before Meeting with Classes**.

1. Be prepared—know your subject—be enthusiastic—believe in what you teach.

2. Have clearly in mind the objective for each presentation. Work out a plan to make sure the objectives are achieved.

3. Develop each unit, using strong motivating forces. This is especially necessary for the classroom sessions.

4. Limit ideas presented each period to a very few. The human mind can grasp but a few things at a time.

5. Plan each presentation with the thought in mind of getting maximum trainee participation.

6. Make arrangements in advance for use of visual aids equipment in order to eliminate lost time and confusion.

7. Work out time schedule for lecture part and trainee participation.

(B.) **While Meeting with Classes**.

1. Be dynamic—show some life. Modulate your voice to avoid monotone.

2. Be sympathetic, have unusual patience and remain calm regardless of what is happening.

3. Never humiliate any trainee before the class. Don't indicate by your actions that a trainee seems dumb.

4. Never talk down to the class, that is, avoid insulting their intelligence.

5. Look at the different members of the class during session.

6. Avoid telling about your past experience—the trainee will know if you are really good—you don't have to tell them.
7. Avoid mannerisms which distract attention of class.

8. Avoid unimportant and non-pertinent discussions or ones that are too long. Don't allow waste of time.

9. Use examples or stories that are within the experience of the members of the class to clinch a point. Avoid telling stories just for the fun of telling them.

10. Sketch the items on the blackboard, if possible, as the story is unfolded, if sketches can be very simple and can be quickly prepared. This procedure gives the trainee an opportunity to see incidents built up rather than seeing the completed picture which is often confusing. The sketches should be large enough so they are seen by everybody.

11. Use working models when available. This technique makes learning and remembering easy.

12. Use lantern slides, sound-slide films, motion pictures and other visual aids, but be sure to follow them with questions and discussions. Just showing a picture or playing records is not enough.

13. Demonstrate each driving incident. When the teacher is not able to do this, the trainee loses respect for him. Students are quick to sense the armchair instructor.

14. Keep out all outside distracting noises as far as possible.

15. Start and stop all classes on time.

16. Consider the comfort of members of the class. This includes heating, lighting, ventilation, rest periods, toilet facilities, etc.
In outlining a course of study for a twenty-hour classroom program the fundamental idea behind all the instruction should be "proper driving attitudes." The paragraphs below contain a summary of what is taught and recommended by the Montana Highway Patrol.

The orientation period lasts an hour and contains a general indoctrination of the importance of good driving habits. The social, historical and economical background of the automobile is discussed, thus setting the scene for the entire classroom phase of the training. Appropriate films which may be used for the classroom are found in the appendix of this thesis.

Early in the course a diagnostic test is given to ascertain the general weak points of the class as a whole. The author of this thesis has arbitrarily placed this phase in the second period. Two sample questions taken from a general test of traffic and driving knowledge of the American Automobile Association are listed below:

2. You are driving and are approaching an intersection where there is no traffic officer or STOP-and-GO signal. At the intersection, a person is walking across the street on which you are traveling. He is in a crosswalk. Who has the right-of-way?

   A. I have
   B. I have, if I blow my horn

---

4John Urloub, Educational Consultant, American Automobile Association, a lecture at Montana State University, July, 1951.

5Capt. Vacura, op. cit.
19. Which one of the following will prove most helpful in avoiding traffic accidents?

A. Developing good driving habits
B. Learning the traffic laws
C. Learning about the various parts of an automobile and what they are for
D. Developing a sense of boldness or fearlessness

About two hours are spent on the driver, his physical characteristics and his attitudes. To explain individual differences in drivers and human capacities as to reaction to certain driving stimuli a number of simple machines are available for classroom testing. These devices are described fully in Chapter III.

The amount of time spent on the construction of the car varies with the interest of the students. Three one hour periods are recommended as adequate to acquaint the motorist with the general mechanics of the car. Another hour is spent on proper maintenance.

Each student studies the Montana Vehicle Code and is tested on it. Two or three hours is usually allotted to this phase and, many times, law enforcement officers are invited to give informal talks to the students.

Before the student begins his behind-the-wheel training, a thorough indoctrination on the fundamentals of driving is given him. At least two hours are spent in learning of the skills in the city as compared with those of the open road and the special skills of driving on icy
roads, at night or under other adverse conditions.

Two hours are spent discussing the problems of the pedestrian, the cyclist, construction of streets and highways, and map reading.

Three periods are allotted to student projects, this time being taken up at various opportunities throughout the entire course.

The last three or four hours are used in studying such social controls as education, engineering, enforcement, courts and consumer education.

Behind-the-wheel instruction, of course, is a very important phase of the driver training course. The American Automobile Association has published a driving guide in ten separate lessons which should aid the instructor in teaching the mechanics of handling the car. This guide appears in the appendix of this thesis.

The purposes of the first lesson are to (1) review the parts of the car, (2) review the positions and uses of the gauges, safety devices, and control devices, (3) review the car systems, (4) review the checks a driver must make before he starts the engine and (5) practice the steps in starting the engine.

For the second lesson, a quiet, straight street, away from traffic is chosen. The lesson consists of (1) practicing the correct stopping signal, (2) learning the gear-shift positions, (3) practicing starting in low gear, (4) practicing steering in a straight line and (5) stopping
the car from low gear.

The third lesson consists of shifting from low to second gear and practicing the correct way to stop from second gear. Before each of these lessons is begun a review of the previous lessons is accomplished.

The student learns to shift smoothly from second to high gear and to stop from high gear during the fourth lesson. These first practice periods do not usually last over thirty minutes.

The fifth lesson consists of practicing shifting from high to lower gears and learning the proper steps in backing the car.

There are four objectives to the sixth lesson and they are to (1) learn to signal for turns, (2) develop skill in making right and left turns, (3) practice hand-over-hand steering technique and (4) develop skill in turning the car around.

During the seventh lesson the student learns to (1) develop skill in parking parallel to the curb between other cars, (2) pull out of a parallel-parked position and (3) park at an angle to the curb and back out.

The eighth lesson consists of developing skill in stopping, starting, and backing on an upgrade.

The student takes the car out on the open highway during the ninth lesson and here the instructor checks his general attitude and points out practices of other drivers.

During the tenth lesson the student gets practice
During the tenth lesson the student gets practice in (1) getting the car into the street, (2) city driving, (3) and driving at night.

When these ten lessons have been completed, highway patrolmen are notified and the students are given driver tests. Upon satisfactory completion of these tests most schools award the student a certificate and driver's licenses may be issued.
CHAPTER III

DRIVER TRAINING EQUIPMENT

In describing the equipment used by driver training classes, this author will attempt to cover all of the better-known types of training aids. Only the larger school systems can afford everything as described here. However, many important devices have been developed to make the program better and these should be made known.

The most important item is the dual control car which allows the instructor, sitting beside the student, to partially control the car by use of auxiliary clutch and brake pedals.

High schools obtain their cars from local automobile dealers who furnish them as a means of advertising. These cars are either given outright to the school or furnished without charge during the school year. It is interesting to note that the high schools in Montana, in spite of the fact that many communities are small, have little difficulty getting cars without cost from the local car dealers.\(^1\)

Procedure for obtaining a dual control car through

\(^1\)Capt. Bodley B. Vacura, Safety Director, Montana Highway Patrol, personal interview, March 3, 1952.
The American Automobile Association will be found in the appendix.

1. **The Automobile** - The training car is usually one with the conventional gear-shift since most students will drive and own this type of car later. In most cases the cars are in the less expensive group but dual control equipment may be secured for the larger cars which have the automatic transmissions also. In a questionnaire sent out by the American Automobile Association of which 358 instructors in schools using dual control cars were asked if they favored lettering the name of the school on the car, of those replying 272 answered "yes" and 66 answered "no." The instructors were asked if they preferred a distinctive and outstanding color for driver training cars. 230 replied "yes" and 124 replied "no." A wide variety of colors was suggested but there was a preference for grey and other light colors.\(^\text{2}\)

2. **The Dual Control** - This device varies with the type of car used. Controls are made especially for the more popular makes of cars and universal controls may be obtained which, with modifications, can be made to fit any car. Basically, they consist of brackets extending from the lower edge of the dash to the fire wall which hold the main part of the dual control—a bar inside a tube. Connections are

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made to the regular pedals by means of special clamps attached to the pedal shanks just below the pedal pads. The car thus has two brake pedals and two clutch pedals.

3. Testing Equipment - Like any other instrument, driver training tests will have little value unless carefully given and properly interpreted. They will impress on the driver the importance of personal characteristics involved in driving. Persons will realize that other drivers have deficiencies for which proper allowances must be made. The tests will show deficiencies which in many cases can be corrected or compensated for. The results are helpful in selecting drivers when considered with attitude, personal habits, driving experience, accident record, intelligence, knowledge of traffic regulations, and mental and physical health.

Illustrations of driver training equipment can be found in the appendix. A fuller explanation of the more important testing devices appears below.

The Ishihara color vision tester consists of a book of plates with numbers formed by dots of one color on a background of dots of another color. This test is given under good indirect daylight and can determine color blindness to any color. A mechanical color vision tester is described adequately in the appendix.

The distance judgment test is used to measure an individual's ability to judge relative distances by lining up miniature cars side by side. This test allows the
instructor to emphasize the danger of passing on the highways when other cars are approaching.

The eye dominance test determines the use of one eye more than the other. Most people have one eye which is somewhat stronger than the other. If one eye is extremely dominant, objects on the side of the weaker eye may not always be noticed. Also, if correction is not made, the weaker eye may become weaker from lack of exercise.

An illustration of the field of vision test can be found in the appendix. The eyes cannot see details at the sides but they can detect the presence of large objects. In driving, it is important to detect pedestrians, vehicles and other objects approaching from the right or left while concentrating one's attention straight ahead. The field of vision test measure in degrees how far a person can notice objects to the right or left while looking straight ahead.

The glare acuity test has been developed to measure three phases of vision: (1) visual acuity, (2) ability to see under dim illumination and (3) ability to see under dim illumination while facing a glaring light. The test gives only a rough measure of ability to see under low illumination since it was designed for use under daylight conditions.

The foot reaction timer measures the time required to move the foot from the accelerator to the brake pedal after a light appears. When a pendulum is released, it turns on a red light and moves an indicator over a dial. When the subject reacts by stepping on the brake, the
indicator is stopped so the time can be read. Other, more elaborate timers are made, some of which are illustrated in the appendix.

The hand dynamometer gives some indication of general strength, by measuring the strength of grip in kilograms. In the normal operation of a car in good condition, little strength is required, but in an emergency, such as a blowout, strength may be an important factor.

4. Teaching Aides - Many of the working models available to the instructor are nothing more than "interest getters". Some, however, illustrate the mechanics of the car that could not otherwise be shown to the student. The model of a car cylinder gives the student an idea as to the working of the piston, crankshaft and timing gears. The transmission model is a miniature of a conventional transmission. The steering model and the clutch model are both effective in mechanical and behind-the-wheel instruction. Other teaching aids can be obtained from automobile manufacturers without charge. These consist of charts showing the mechanics of the motor, pamphlets containing safe driving tips and posters that can be used by the school safety committees.

A chart showing one method for marking a street as an aid in testing maneuvering skill is shown in the appendix. By the use of stanchions with brightly colored flags, the instructor gives the student practice in making turns and in parking properly.
CHAPTER IV

TEACHER REQUIREMENTS

After an instructor has been conducting a driver education and training course, he should have a fair idea of the amount of training a teacher needs. Instructors were asked to estimate the amount of training they had actually received and the amount believed desirable. The average results are given in Table III on page 29.

The average instructor reported that about twelve per cent more classroom work in driver education than he received would be desirable. In comparison with this he also reported that classroom instruction pertaining to behind-the-wheel training should be increased forty-five per cent and actual time spent on the street increased eighty-two per cent. In other words the average instructor in the field believes that much greater emphasis should be given to behind-the-wheel practice.

While most intensive teacher training courses are of forty hours duration and the average teacher reporting had received forty-four hours, it is obvious in the opinion of these teachers that the intensive teacher training courses should be substantially increased up to an average
of fifty-seven and a half hours. This could be accomplished by a two-week, 10-day course with six hours of instruction daily.

In a few cases, instructors have taken an intensive teacher training course over five years ago and have had no subsequent training or experience in this field. Instructors were asked if they considered such a person qualified to teach driver education and training. Of the replies received twenty-six per cent answered "yes" and seventy-four per cent answered "no".¹

A copy of one of these short intensive courses in Montana appears in the appendix. This course is similar in content to that given in the college at Bozeman and the university at Missoula during the six-week summer session. However, in the six-week course the prospective driver trainer takes a person who does not know how to drive and teaches that student with supervision from the college instructors. This procedure takes more time and is more beneficial to the prospective teacher than the method described in the five-day intensive course.

TABLE III

STANDARDS FOR TEACHER TRAINING COURSES

<table>
<thead>
<tr>
<th>Clock Hours of Instruction</th>
<th>Actually Received</th>
<th>Believed Desirable</th>
<th>Per cent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hours of classroom instruction pertaining to driver education.</td>
<td>27.2</td>
<td>30.4</td>
<td>12%</td>
</tr>
<tr>
<td>2. Hours of classroom instruction pertaining to behind-the-wheel training methods.</td>
<td>10.7</td>
<td>15.7</td>
<td>45%</td>
</tr>
<tr>
<td>3. Hours spent on the street in the observation of demonstrations of and actual practice of teaching behind-the-wheel lessons.</td>
<td>6.1</td>
<td>11.4</td>
<td>82%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>44.0</td>
<td>57.5</td>
<td>31%</td>
</tr>
</tbody>
</table>

CHAPTER V

COST OF DRIVER EDUCATION COURSES

The relative cost of operating a driver training program is difficult to determine because of the variation of factors from one locality to another. These factors include: (1) the initial costs in setting up the course, (2) the number of pupils trained, (3) the scope of instruction, (4) the cost of car operation and (5) the instructor's salary.

Each of these factors compare favorably with the cost of any high school course except when the teacher-pupil ratio is considered. A more detailed study of this will be made later in this chapter.

All other equipment is incidental to the dual controls for behind-the-wheel instruction and textbooks for the classroom. Assuming that the school is able to obtain a training car, the initial cost of instituting a driver training course would be no more than introducing any other new course to the school. The laboratory equipment at Missoula County High School which is used in the physics class could not be replaced for less than about ten thousand dollars. This equipment has accumulated through a
period of about twelve years. However, if all the equipment listed in this thesis were purchased (assuming that no duplications were made in similar testing devices) the cost would not exceed five hundred dollars.

In order to present a full picture of the overall costs, an analysis is reprinted on pages 32 and 33. This analysis is based on reports submitted by 529 high schools and teacher colleges in 43 states which conducted driver education courses during the period September, 1949, to January, 1950.

To make an estimate of operational costs, an administrator can substitute in various places figures that would be more appropriate to his particular school. For example, the cost of gasoline, the instructor's salary and the miles driven by the students will vary according to the location of the school.

Instructional costs are comparatively high since a teacher cannot accommodate more than four pupils in the training car during the behind-the-wheel practice. When classes average twenty-five students per teacher in other classes the larger school must take this additional cost into consideration. Since a sound school budget begins with

1Paul Wilson, instructor of physics, Missoula County High School, Missoula, Montana, a personal interview, April, 1952.

## TABLE IV

### OPERATIONS REPORT AND COST DATA
BASIC ON AVERAGES OF REPORTS SUBMITTED

#### I. Number of students trained (1 semester)
- High school students: 13,530
- Adults: 1,403

#### II. Scope of instruction

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average per school--High School Students</th>
<th>Average per school--Adult Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Classroom instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Clock hours of instruction</td>
<td>35.0 hours</td>
<td></td>
</tr>
<tr>
<td>B. Practice driving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Clock hours of instruction per student</td>
<td>7.6 hours</td>
<td></td>
</tr>
<tr>
<td>2. Clock hours of observation per student</td>
<td>22.0 hours</td>
<td></td>
</tr>
<tr>
<td>3. Miles driven per student</td>
<td>73.8 miles</td>
<td></td>
</tr>
</tbody>
</table>

#### III. Vehicle operation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average per school</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Average per school</td>
<td></td>
</tr>
<tr>
<td>1. Miles driven</td>
<td>2,117</td>
</tr>
<tr>
<td>2. Gas quantity (gallons)</td>
<td>159</td>
</tr>
<tr>
<td>3. Miles per gallon</td>
<td>13.3 miles</td>
</tr>
</tbody>
</table>

#### IV. Cost of car operation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average total cost per school</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Cost per mile operation based on average mileage of 2,117</td>
<td></td>
</tr>
<tr>
<td>1. Gas per gallon</td>
<td>$ .226</td>
</tr>
<tr>
<td>2. Gas per mile</td>
<td>.0169</td>
</tr>
<tr>
<td>3. Insurance per mile</td>
<td>.02</td>
</tr>
<tr>
<td>4. All other expenses per mile (oil, storage, maintenance)</td>
<td>.0096</td>
</tr>
<tr>
<td>Total Car Operation Per Mile</td>
<td>.0465</td>
</tr>
<tr>
<td>B. Average total cost per school</td>
<td></td>
</tr>
<tr>
<td>1. Gasoline</td>
<td>$ 35.91</td>
</tr>
<tr>
<td>2. Insurance (1 semester)</td>
<td>43.59</td>
</tr>
<tr>
<td>(25/50,000--5,000 Property damage)</td>
<td></td>
</tr>
<tr>
<td>3. Miscellaneous</td>
<td>20.51</td>
</tr>
<tr>
<td></td>
<td>$ 100.01</td>
</tr>
</tbody>
</table>

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**NOTE:** Taken from Research Report No. 36, American Automobile Association, Traffic & Engineering Dept., Washington 8, D.C., August, 1950, p. 3.
V. Instructor's salary  
   A. Percentage of instructor's time devoted to course 47%  
   B. Instructor's salary chargeable to driver education $ 846.19  
   C. Instructor's average salary (9 months) estimated from above $3,174.00  

VI. Cost per student  
   A. Car operation and instructor's salary only  
      1. Car operation $  3.51  
      2. Instructor's salary $ 30.20  
      $ 33.71  
   B. Total averages  
      1. Instructor's salary chargeable to Driver Education (1 semester) $ 846.19  
      2. All operating costs of program (per school--1 semester) 952.63  
      3. Costs per student (all costs) 34.02%  

*This cost is derived from total costs as reported by all schools, divided by total number of students trained by all schools. It contains miscellaneous expenditures reported which cannot be accounted as vehicle operation or instructor's salary.
the objectives of the schools rather than with the money available, it is conceivable that the extra cost in maintaining a driver training program would better fill these objectives than other, more academic courses.

The National Commission on Safety Education, in regard to the costs of driver education stated that....

"The question 'Can we afford to teach high school students how to drive?' is no longer relevant. With high school age drivers continuing to pile up the worst accident record of any age group, the truth is that we can no longer afford to withhold driving instruction."³

CHAPTER VI

THE GROWTH OF DRIVER TRAINING AND SUMMARY

Driver education has made tremendous progress since the war. In the school year 1946-47, about 75 dual control vehicles were being used throughout the United States. In the school year 1949-50, approximately 4500 vehicles were used. An additional 3000 schools offered classroom instruction. This latest survey, then, shows that about 7500 high schools are offering some kind of driver education.¹ During the 1949-50 school year, 118 teachers colleges conducted courses with behind-the-wheel practice driving to prepare teachers for driver education.

There are several reasons why this program has not grown faster. Changes in curriculum are always slow to occur since administrators many times feel that they must discontinue one course in order to add another. Public demand for driver training is increasing because of the awareness to the mounting accident rate, but here again action is slow because of the reliance of communities on the school leaders to make curriculum changes. In Montana

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¹Sidney Shalett and Henry C. McFadyen, "Our Youngsters Don't Have to be Killers," The Saturday Evening Post, December 17, 1949.
where the percentage of high schools having a driver training program is about the same as the national average, the main reason why there are not more schools teaching driver training is the lack of trained instructors.²

In 1941, the Montana Highway Patrol, together with the American Automobile Association, instituted the first driver training instructor's course at Montana State College in Bozeman. At that time there were twenty driver instructors certificated to teach driver training. During World War II the course was discontinued and, since many of these instructors were taken into the service or went into war industry, the growth of the program has been relatively slow.

Many large corporations donate specially made films to supplement safety programs in the country's schools. This practice may be questioned because of the belief that such material should be sponsored only by the education system itself which has no other motive than to educate children. Since corporations use this medium as a means of advertising, however subtle, the problem arises: "How can educational authorities keep from discriminating among outside influences to the schools?" It is not the purpose of this thesis to present the relative merits in each of these two arguments, e.g. (1) education is the responsibility of the schools alone or (2) schools must use all available

material, irrespective of the source, to achieve the ultimate goal of best fitting the child to his environment.

Automobile and insurance companies have taken the lead in promoting safety campaigns because few accidents will result in more financial returns to them. If the schools wish to take the responsibility to educate for safe driving, then each must decide what materials are available and which should be used.

This author has presented the problem in connection with the need for driver education and has drawn a general pattern for a high school course, equipment to be used, and teacher qualifications. The author hopes that the information given here may be of some benefit to those who are dubious as to the merits of such a program and also to those who desire to institute a driving training class in their school. To show a need for driver training in the high schools, five main points were made: (1) There is an increasing number of deaths in the United States due to automobile accidents. (2) Authoritative reports indicate that a driver training program in the high school will reduce the accident rate in that group by one half. (3) Schools have a responsibility to teach youngsters to drive just as they have a responsibility to teach them other subjects which will better adjust them to their social environment. (4) Proper driver attitudes are important in the making of a good driver. These attitudes are acquired best under proper guidance and at an early age. (5) Accident rates
are highest in the younger age groups.

A course of study for driver training has been described in full. This course is being used extensively in Montana and in the United States. The instruction is divided into two types, (1) classroom instruction and (2) behind-the-wheel instruction. Suggestions for making a better driver training class were presented and to further describe a complete high school course, a list of driver training equipment was made with descriptions and explanations as to the use of such equipment. The qualifications of driver training teachers were given and a copy of the program used in teaching instructors in Montana inserted in the appendix of this thesis. To illustrate the relative cost of maintaining a driver training course, a detailed study of each phase in the course was made with itemized costs listed.

This author does not wish to convey to the reader that a driver training program in Montana high schools will eliminate all traffic accidents. Obviously there are many other important considerations. Until traffic signs all over the nation are made uniform, people will be confused when traveling from one state or city to another. Law enforcement agencies have the responsibility of obtaining respect from the driving public. Roads must be improved and traffic hazards due to improper signals eliminated. A driver training program should, however, make this driving public aware of these dangers and, through democratic
processes, alleviate them. A driver training program in the high schools is a step in the right direction, if the desired direction is toward fewer traffic accidents in Montana.
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BIBLIOGRAPHY


"Driver Training Courses in High Schools on Rapid Increase," School Management, 18:20, October, 1948.


Shalett, Sidney and McFadyen, Henry C., "Our Youngsters Don't Have to be Killers," The Saturday Evening Post, 238:13-14, December 17, 1949.


APPENDIX "A"

OUTLINE FOR DRIVER TRAINING INSTRUCTORS' COURSE
ANNOUNCING

A Short Intensive Course for High School Teachers
in
DRIVER EDUCATION
Offered by
EASTERN COLLEGE OF EDUCATION
BILLINGS, MONTANA
July 23, through July 27, 1951
Cooperating Agencies:
MONTANA HIGHWAY PATROL
E. H. England, Supervisor
Bodley B. Vacura, Safety Director
DEPARTMENT OF PUBLIC INSTRUCTION
Mary M. Condon, Superintendent
Genevieve Squires, Deputy Superintendent
PARENT TEACHER ASSOCIATION
Montana Automobile Club
American Automobile Association

Course Instructor:
Mr. John Urlaub, Educational Consultant,
American Automobile Association. Mr. Urlaub
has taught both the basic and advanced courses
in this line and has had many years of experience
in this type of work.
PROGRAM
FOR
A SHORT COURSE
IN
DRIVER EDUCATION AND TRAINING
FOR
HIGH SCHOOL TEACHERS

Monday

Morning

8:00 -- Registration.

8:20 -- Driver Education and Training Programs -- History of Development, Present Status, Objectives.

In this period the title of the course is explained, showing that education is here referred to as the classroom, laboratory and research activities, and that training is the basic elementary lesson behind the wheel and advanced driving practices.

The traffic problem, the scope of accident prevention through education, objectives and future outlook are usually presented through a present problem and historical approach.

9:00 -- Available Materials for the Teacher.

Here teachers are introduced to the wealth of traffic safety materials available from numerous sources. A collection of the various materials, including textbooks, teachers' guides and references are displayed for teachers' examination and use during the course.


The group is given an overall picture of present-day activities in traffic safety at the national, state and local level. Special emphasis is placed on educational services from state departments of education and other organizations interested in traffic safety.
11:00 -- Responsibilities for the Improvement of Traffic Conditions and Participation in this Program--School, Teacher, Driver, Colleges, State Departments.

Here is presented the importance of public acceptance of the responsibility for traffic safety. Emphasis is placed on the fact that an effective program must be that in which every individual has a part; and educational institutions and personnel as the logical avenues to orderly traffic conduct are stressed.

11:30 -- Securing Support for the Program.

Teachers are given a general idea of how to approach community groups and the general public concerning the need, values and objectives of traffic officials, thereby popularizing the course, is brought to the teachers' attention.

12:00 -- Luncheon.

Afternoon

1:00 -- Securing Support for the Program (Continued).

See explanation given--11:30 Monday morning.

1:30 -- Psychophysical Tests -- Explanation, Demonstration, Administration and Scoring.

The value of using psychophysical tests as a challenge for the individual to consider his physical limitations in driving is explained. Teachers here see how, through measuring physical emotional characteristics relating to driving, students can be motivated to enthusiastic participation.

They are presented with blueprints for making the testing devices and told that they may build their own, borrow a set, or purchase a set. This is done just to be sure that all understand that testing equipment is well within their means. Teachers seem to appreciate them more after realizing how simply they may be had.

Use of the testing equipment is demonstrated so that everyone understands how the tests are administered.
Then members of the group get practice in administering the tests by checking each other and recording the scores.

Upon completion of the tests, the interpretation and significance of the scores are discussed, summarized and each teacher keeps his record sheet as his future guide.

4:30 -- **Explanation of Teaching Periods and Demonstrations**--
**Assignment of Units to Members of the Class.**

Members of the class are divided into small groups, usually no more than four persons in each, and are asked to develop, through independent study, a special subject and present it to the class at a designated period during the course.

5:00 -- **Dismissal.**

**Tuesday**

**Morning**

8:00 -- **Test on "The Driver"** (Scoring).

8:30 -- **Psychophysical Tests**--**Explanation, Demonstration, Administration and Scoring** (Continued).

See explanation given--1:30 Monday afternoon.

10:00 -- **Survey of Content of Classroom Course**--**Units of Instruction.**

Basic content is introduced.

10:30 -- **Organization of Content of Classroom Course**--**Different Methods Commonly Used.**

Methods of organizing and presenting course content are discussed. Stress is given the fact that methods must vary with teacher's choice which should be governed, to a great extent, by nature and needs of students.

11:00 -- **Practice Teaching Periods and Demonstrations.**

See explanation given--4:30 Monday afternoon.

Members of the class demonstrate certain units to be presented to students in their own schools.
11:30 -- **Unit -- Teaching the Students the Construction and Maintenance of the Motor Vehicle.**

12:00 -- Luncheon.

Afternoon

1:00 -- **Behind-the-Wheel Instruction.**

Usually about one hour is spent in the classroom describing the practical step-by-step units in the basic elementary lessons behind the wheel, presenting the various techniques used and their application to students of varied interests and ability. The need for a good training area, mechanically fit training car and unusual patience and skill on the part of the teacher are impressed upon the class.

Then teachers are taken in groups of four, as originally divided, (see explanation given--4:30 Monday afternoon) out into the car and to an area free of traffic where, after seeing the first behind-the-wheel lesson demonstrated, each takes a turn at practicing it exactly the way it should be taught to the beginning student. The instructor and members in turn offer constructive criticism after which the second driving lesson is demonstrated and practiced until all lessons have been done by each teacher.

5:00 -- **Dismissal.**

**Wednesday**

**Morning**

8:00 -- **Test -- "Driver & Pedestrian Responsibilities."**

8:30 -- **Unit -- Presenting Rules of the Road and Advanced Driving Practices.**

See explanation given--11:00 Tuesday morning.

9:30 -- **Unit -- The Driver -- Mental, Physical and Emotional Characteristics.**

See explanation given--11:00 Tuesday morning.

10:30 -- **Unit -- Pedestrian Protection and Education.**

See explanation given--11:00 Tuesday morning.

Qualifications of the teacher, standards to be established for students, methods of organization and procedures developed and in use in presenting courses are discussed.

12:00 -- Luncheon.

Afternoon

1:00 -- Behind-the-Wheel Instruction (Continued).

See explanation given--1:00 Tuesday afternoon.

5:00 -- Dismissal.

Thursday

Morning

8:00 -- Test--"Sound Driving Practices."

8:30 -- Administrative Practices and Standards for Driver Education and Training (Continued).

See explanation given--11:30 Wednesday morning.

9:00 -- Unit--Society's Responsibilities.

10:00 -- Fitting the Course into the Daily Program of the High School.

A plan for scheduling the desired standard course, consisting of five periods per week of classroom activity supplemented with an average of eight hours of behind-the-wheel training, is developed for the class.

Then, realizing that all programs must vary according to the school's overall organization, course schedules, etc., several alternative plans are suggested. The dangers of inadequate instruction, especially in the road training phase, are pointed out; while on the other hand it is recognized that some schools have to start a program slightly below the desired standards and improve it as rapidly as possible.
11:00 -- Equipment, Liability, Insurance and Costs.

Quantity, quality and sources of these facilities necessary for a satisfactory program are summarized to enable teachers to plan on a sound basis.

12:00 -- Luncheon.

Afternoon

1:00 -- Skill Developing Exercises--Explanation, Demonstration, Administration and Scoring.

A series of driving skill exercises on a marked street area are given each teacher, and each is rated by a check-list.

Here teachers get an idea of how their own skills compare with others and how the same exercises may be used to (1) diagnose weaknesses of students after they are able to "solo" but yet away from traffic; (2) practice to overcome such weaknesses and develop greater skill; and (3) rate student's skills near end of the course.

Road Test in Traffic--Explanation, Demonstration, Administration and Scoring.

A check-list is used by teachers in rating each other while driving under varied traffic situations. They see how this test may be used to determine the advanced skills, attitude and knowledge of changing traffic conditions before completing the course.

5:00 -- Dismissal.

Friday

Morning

8:00 -- Tests--"How to Drive" and "Society's Responsibilities."

9:00 -- Unit--Traffic Law Enforcement: Driver Licensing in Your State.

See explanation given--11:00 Tuesday morning.

10:00 -- Unit--Traffic Engineering--Signs, Signals and Markings in Your State.
See explanation given--11:00 Tuesday morning.

11:00 -- Unit--"How to Drive."

See explanation given--11:00 Tuesday morning.

12:00 -- Luncheon.

Afternoon

1:00 -- Visual Aids and Their Effective Use.

Methods of using films and other visual aids in the units of instruction are discussed, as well as sources of such material.

2:00 -- Records and Reports.

The class is given copies of simple but effective forms for assuring adequate information for planning future budgets, to justify the program to anyone who might question it, to know that the training car is being used properly and that students' practice time is shared properly.

3:00 -- Successful Driver Education and Training Programs Now in Operation.

Effective programs in operation are described, the location and name of the person in charge is given. Teachers are urged to contact these people for more comprehensive first-hand information.

4:00 -- Panel Discussion--Examination.

5:00 -- Dismissal.
APPENDIX "B"

DRIVER TRAINING EQUIPMENT
DRIVER TRAINING EQUIPMENT

1. Psychophysical Tests
2. Working Models
3. Teaching Aids
4. Dual Controls

WRITE FOR PRICE LIST

EXPERIENCE BUILDS QUALITY TESTS

Carefully chosen words and a professional photograph do not tell the whole story. Original A.A.A. driver test designs were based on experience gained in testing 35,000 persons. Current designs are the result of experience in building over 12,000 devices since 1939 and in using these tests in one-week courses in which over 9,000 high school teachers participated. In addition, many helpful suggestions from other users of these tests have been incorporated in current designs.

AMERICAN AUTOMOBILE ASSOCIATION
Pennsylvania Ave. at 17th St.
WASHINGTON 6, D. C.

Copyright 1951

STOCK NO. 3614 JUNE 1951
Most reactions in driving are not simple. The driver must first choose the right course of action and then act as quickly as possible. The complex reaction time test has clutch, brake and accelerator pedals as well as a steering wheel operated by the person being tested. A green light remains on when the steering wheel is held in a neutral position and the accelerator pedal depressed. This insures that everyone will be tested under the same conditions.

A synchronous motor automatically turns on a red light or a turn signal at random intervals of 3, 4 and 5 seconds. Each signal remains on until the driver makes the proper reaction. For the red light he must step on the brake, for the right-turn arrow he must turn the steering wheel to the right, and for the left-turn arrow he must turn the wheel to the left. The test is started by pressing a button. Fifteen of the signals then come on in random order after which the test automatically cuts off. About one minute is required for the series of fifteen trials. A timer reading to 1/100 of a second records the average time required to make the fifteen reactions.

This test has a red light, reaction key and timer. When the examiner presses a button the red light flashes and a timer measures the time in hundredths of a second required for the subject to press a key.

The operation of this is similar to No. 3593, except that the cabinet is 30" high, placing the timer and signal lights at a more convenient height. Time is measured to the nearest 1/100 second by a synchronous motor making 1 revolution per second.

This test is recommended for general usage. It measures 15" wide, 18" deep and 14" high. The brake, clutch, accelerator, red light, green light and timer motor are contained in one compact substantial unit. In normal operation the test is plugged into 110-volt alternating current.

Each time a trial is to be taken the examiner presses a button on the end of a cord. When the driver reacts by stepping on the brake, the timer is stopped and read to the nearest 1/100 second. The test is simple to give since no resetting of the timer is necessary. Successive trials are taken by merely pressing on the push button and reading the dial.

This is a simple test for measuring hand steadiness. A stylus 1/8" in diameter is moved down between two brass strips which are 3/8" apart at the top and 1/8" apart at the bottom. When either plate is touched a light flashes. The score can be read from a scale on one of the plates. The test is plugged into 110-volt alternating current. A 10-volt transformer provides current for the red light.
3546—VISUAL ACUITY

Eye piece with a shutter controls the location of the eyes and the eye being tested. The letter charts are in a mirror to give an apparent distance of 20 feet but requiring only 13 feet of room space.

The four aluminum letter charts consist of black letters lacquered on a white finish. The charts are housed in a cabinet and changed by a knob on the outside of the case, decreasing their likelihood of becoming soiled. They can be cleaned should they become dirty. Constant illumination is provided by four 25-watt lamps.

Four different charts, only one of which can be seen at a time, reduce the possibility of cheating.

3557—COLOR VISION

The steel cabinet houses a light, synchronous motor and a wheel in sections of red, amber and green traffic signal lens. These colors are exposed through an aperture in a case, in random order, for periods of 2 seconds each. Since actual traffic signal glass is used, the test is quite comparable to observing the different colors in a traffic signal.

3530—DISTANCE JUDGMENT

The driver observes three toy cars in a mirror placed 10 feet from the test and attempts to line up the two outside cars with the fixed center car. Uniform illumination is provided by four 25-watt lamps.

3531—DISTANCE JUDGMENT & VISION

This test is a combination of the visual acuity test and the distance judgment test with the three miniature cars for measuring distance judgment in the top of the test and the letter charts for measuring visual acuity in the lower part of the test. A mirror gives an apparent distance of 20 feet.

3536—GLARE ACUITY

The fact that the accident rate at night is nearly 3 times as great as during the day indicates that many drivers cannot see well enough at night. The glare acuity test measures three visual characteristics:

a. Seeing with little illumination. The subject reads as many letters as he can. As he reads from left to right the illumination is reduced until the letters cannot be read. Three rows of ten letters each make three trials possible.

b. Seeing in the face of glare. This test is the same as "a" except that the letters must be read in the face of a glaring light.

c. Seeing details. This is a visual acuity test consisting of three rows of 15 letters each graduated in size to measure visual acuity from 20/200 up to 20/13.3.

3535—FIELD OF VISION

While looking straight ahead it is not possible to distinguish small details at the sides. However, it is necessary to notice such objects as cars and pedestrians approaching from the sides. In this test, small white targets are moved forward on either side while the subject looks straight ahead. The angle at which these objects are first noticed is then read from a scale on the test. Built-in lamps illuminate the targets to reduce the effects of room illumination.
This working model of the chassis of a car is 17" long and scaled so that 1" is equal to 1 foot. The wheels, location of axles, turning radius, steering gear ratio, etc., are properly proportioned so that the operation is similar to that of a regular, full-sized automobile. By laying out parallel parking stalls, curves, and other features on a large table, it is possible for a student to learn many of the principles involved in steering a car while parking, turning, backing, etc.

This is a very simple model about 12" long. A crank operates the driving disk of the clutch. This disk can be separated from the driven disk by means of a simple lever. The driven disk is connected, by means of a short shaft, to a miniature universal joint which can be used to demonstrate the vertical movement of the rear axle with reference to the body of an automobile. The clutch can be used to demonstrate the importance of the friction point in the operation of the clutch.

This is a miniature of a conventional transmission, and measures about 6" long, 4" wide and 3" high. A crank is attached to one end to simulate the crankshaft of the engine. A shaft leads out of the opposite end to represent the drive-shaft going to the rear wheels. On one side of the transmission is a small shifting lever to shift gears into the four positions. The gear-shift lever operates through a small "H" with each of the four gear positions distinctly labeled.

This is a steel box 3" x 4" x 5" with a black crackle finish. An "H" is cut in one side of the box to indicate the path of the shifting lever for the various gear positions. A shifting lever is attached to the inside of the box so that it may be shifted to any of the five positions.
This device consists of a wood cabinet about 12" square and 6" high. Space is provided on the top side for a standard size sheet of paper, $8\frac{1}{2}'' \times 11''$, with ten questions, each having four possible answers — A, B, C, and D. After each question is a row of four holes, representing the four possible answers. The test also has a green light on the upper right-hand corner. Inside of the test is a buzzer.

A person testing himself on this device drops a $\frac{1}{8}''$ steel ball in one of the holes after the particular question being answered and then presses a lever to return the ball. If the answer is correct, a green light will flash but if the answer is wrong, the buzzer will sound.

The magnetic traffic board measures 3 ft. x 4 ft. and folds up to half that size. The front side is scaled $\frac{1}{4}''$ to the foot and includes such features as a curve, railroad, one-way street, 4-lane street, 6-lane street, 2-lane road, intersections, and cross-walks.

The reverse side has a blackboard surface with ruled squares so that any particular traffic situation may be illustrated.

Since the board is made of steel, magnetized accessories may be placed on the board in an upright position, thus making them visible to all members of an average class.

All accessories are magnetized so they may be placed in any position on the traffic board when in any upright position. Accessories will be modified from time to time as a result of experience. The following are currently included in each kit:

- 6 vehicles
- 19 highway signs
- 1 fire hydrant
- 1 parking meter
- 1 loading zone
- 1 removable street car tracks
- 3 "P" for pedestrians

This easel holds the traffic board at a convenient height for demonstrations with the top of the board over 5 feet above the floor.
The driver evaluator was developed to meet the needs of persons wishing to use several of the more important driver tests but not wishing to have a large quantity of equipment to transport. The driver evaluator incorporates essential features of the following A.A.A. tests:

A. Field of Vision
B. Color Vision
C. Distance Judgment
D. Visual Acuity
E. Reaction Time

A mirror is used to give an apparent distance of 20 feet for all vision tests.

Tests on this equipment are easy to give since the driver and examiner are seated at the same location throughout the testing. All 5 of the incorporated tests can easily be given in a period of 10 minutes.

The evaluator is especially useful to the safety man who must test drivers in widely-scattered locations. Special fiber cases for the main part of the test and the reaction time test are available at an extra cost.

A—Field of Vision

The subject focuses on a point at an apparent distance of 20 feet while the examiner moves white illuminated targets by means of levers hidden underneath the test. The scales which give readings to the nearest degree are directly in front of the examiner. This test drops down out of the way while other tests on the driver evaluator are given.

B—Color Vision

A knob near the top of the evaluator is used to rotate sections of illuminated traffic signal glass inside the test. One color is exposed at a time through a \( \frac{1}{2} \)" opening so there is no chance of the subject identifying the colors by position. The colors as seen in the mirror give an apparent distance of 20 ft.

C—Distance Judgment

This test incorporates an unusual feature which materially speeds up testing. Three miniature cars are set by the examiner in random positions and the subject asked to indicate the car which appears nearest, and that which appears farthest. Eight different settings are possible. This eliminates all unnecessary time lost by the subject “playing” with the cars. Four lamps give constant illumination and the eyepiece keeps the eyes of the subject at a fixed position. Scoring is simple. The examiner merely indicates “right” or “wrong” for each of 16 possible replies.

D—Visual Acuity

Any one of four aluminum charts (with black letters lacquered on a white background) may be exposed to either or both eyes. The mirror fixes the apparent distance at 20 feet. Each chart has 14 letters representing visual acuity from 20/200 up to 20/13.3.

E—Reaction Time

The reaction time unit houses brake, clutch and accelerator pedals, the timer, and red and green lights. It may be placed under the table and plugged into the driver evaluator for giving all tests in one location or plugged into another outlet and used at another location. To give the test the examiner presses a button on the end of a cord to turn on the red light. When the subject responds, by stepping on the brake, the timer is stopped and can be read to the nearest 1/100 second. No resetting of the timer is necessary.
ROAD TRAINING DEVICES

3527—DETONATOR—MODEL A

This device hangs on the front bumper of a car. It has two barrels for holding .22 blanks and No. 3 capsules filled with yellow powder. To give a stopping distance test the detonator is loaded and the person being tested drives at a given speed. As a signal for an emergency stop the examiner pulls a string attached to the detonator. This fires the first blank which shoots the capsule out to mark the pavement. When the driver steps on the brake the deceleration swings the detonator forward and automatically fires the second shell to make a second mark on the roadway. The distance between the two marks gives the reaction time distance and the distance from the second mark to the front bumper where the car comes to rest gives the braking distance.

3528—DETONATOR—MODEL B

This makes the same measurements as model A but is operated electrically. The second shell is fired by a switch connected to the brake pedal.

3538—JERK RECORDER

The ability to "drive ahead" which eliminates the need for sudden starts and stops is one of the marks of a good driver. The Jerk Recorder consists of pendulums, battery, buzzer and counter. When placed on the floor of the car the buzzer sounds whenever a sudden start or stop is made. At the same time the pendulums add 1 to 4 units on an electrical counter depending on the severity of the jerk. This then gives an objective measure of smoothness of driving. The 5 digit counter cannot be reset.

The buzzer or counter can be turned off by independent switches.

3529—DETONATOR—MODEL C

This is a single-barrel electrical model which measures braking distance only. It is operated by a switch connected to the brake pedal.

3526—FILLED CAPSULES

These are No. 3 gelatin capsules filled with yellow powder. They are placed in the lower ends of the detonator barrels. Minimum order, 200.

3545—TUMBLING CYLINDER DECELEROMETER

The tumbling cylinder decelerometer consists of a wood cabinet with cylinders of different heights measuring braking efficiencies from 30% to 90%. In testing brakes the decelerometer is placed on the floor of the car and the brakes applied. The condition of the brakes is measured by the number of cylinders overturned.

3543—STANCHIONS

Each stanchion has a folding steel base and an upright flexible steel shaft, rubber covered, with a spring on the bottom and a flag on top. Total height is 52 inches.

3525—BLANKS

These are standard .22 blanks used for operating the detonator. Minimum order, 200.

PRICES

Because of advancing prices and future uncertainty, tests will be billed at prices in effect at the time order is received. Every effort will be made to provide first class equipment at reasonable prices, but price increases will be necessary from time to time. Write for current price list.

- 7 -
TYPES AVAILABLE

From the point of view of the user it would be desirable to have dual controls designed for each year and make of car. From the point of view of the manufacturer this is practical only where there is a sufficient demand for a particular make and model of car.

In most cases this is not practical because of the small number of controls needed for a given make of car for a given year. Dual controls developed at considerable cost for one make of car may become obsolete and worthless with a model change.

Because of the foregoing factors dual controls have been developed especially for only 2 or 3 popular cars, and more or less "universal types" of dual controls for other cars. Because of many variations in firewall construction, heaters, defrosters, radios, etc., these do not fit equally well on all cars and in many cases are somewhat difficult to install, thus taxing the ingenuity of the mechanic who is to make the installation.

Half of the year's orders for dual controls are received during August and September. This unknown demand coupled with unknown model changes makes the stocking of an adequate inventory impossible. As a result, many orders cannot be shipped from stock. During the rush season there is sometimes a delay of a month in filling orders. Whenever possible dual controls should be ordered at least one month in advance of the date they will be needed.

DUAL CONTROLS

3598—PONTIAC
CONTROLS—1949–51

Brackets extending from the lower edge of the dash to the fire wall are used to hold the main part of the dual controls consisting of a bar inside of a tube. Connections are made to the regular pedals by means of special clamps attached to the pedal shanks just below the pedal pads.

3599—BAR DUAL
CONTROLS—32"

As shown in the illustration these consist of two cross bars attached to the fire wall by two brackets. With minor changes in design these have been manufactured since 1938 and work quite well where there is a relatively clear firewall. Unfortunately, heaters, defrosters, radios, etc., on late model cars make many installations difficult.

3596—CABLE
DUAL CONTROLS

The controls were designed especially to avoid the heater and other encumbrances on the firewall. They are bolted to the sloping part of the floor of the car by means of two brackets.

The left-hand bracket requires about 4" of floor space between the pedals and the steering column. The other bracket is bolted to the right half of the sloping floor. The auxiliary right-hand pedals are connected to the regular pedals by means of 3/32" cables and pulleys.

The cables must be lined up exactly with the pulleys when installed, otherwise they will wear unnecessarily or be cut by the pulleys. Also with continued use, it may be necessary to replace these cables periodically, at a cost of about $2.00 per pair.

These dual controls consist of two bars bolted to the fire wall with the right ends of the bars bent to avoid the heater. Airflow Type Heater No. 986231 must be used for this installation.

The arms from the left ends of the crossbars rest on cross pins welded to the pedal shanks. An extra set of pedals is furnished with the pin welded on to replace the regular Chevrolet pedals.
APPENDIX "C"

BEHIND-THE-WHEEL DRIVING GUIDES
You are accepting the responsibility of helping supervise the behind-the-wheel practice of a beginning driver. We believe you will welcome the following general suggestions.

These Ten Driving Guides are based on the long experience of driver-training specialists. They are prepared especially to aid you in this important endeavor.

You are helping the new driver by being in the car to guide him while he practices and acquires correct skills and habits.

**GENERAL SUGGESTIONS**

1. **Have Your Car in Good Condition**
   A car used for behind-the-wheel practice must be in first-class condition. A clutch that grabs, a steering wheel with too much play, brakes unequal in action, or gears that can be shifted only by a trick method handicap a new driver.

   It is not fair to ask anyone to learn to drive a car that is not in good mechanical condition. Put your car in good shape before beginning the first lesson.

2. **Keep Practice Periods Short**
   In first practice periods, allow only from 15 to 30 minutes behind the wheel. As the driver makes progress, allow longer periods, but in no case for more than one hour a day.

3. **Be in the Car for Every Lesson**
   Be responsible for every practice. Personally see the driver through all 10 lessons. Another person might not strictly follow the outlines in the 10 Guides.

4. **Be Prepared for Each Lesson**
   Study the Driving Guide carefully before each practice period. Read it often enough to be sure you know each step so well that you can give guidance when it is needed. Have the Guides with you at all times for ready reference.

5. **Follow Each Lesson Plan Strictly**
   During each period, let the driver practice only the steps of that particular lesson or of preceding lessons.
Take each lesson step by step. See that the driver learns it well before going on to the next lesson.

6. Be Sympathetic, Patient, and Calm
You can help a beginner best by being patient and calm at all times. Nervous, irritable, or impatient supervision is a bad example. Remember that many actions of an experienced driver are automatic. A beginner has not reached that stage. Until his actions become habits, he will have to think some of them through. Give him all the time he needs to practice step by step.

7. Eliminate All Outside Distractions
Help the driver concentrate on the lesson. Help him understand that learning to drive is a very important undertaking that requires his best efforts and his undivided attention.

8. Enter the Car on the Curb Side
Both you and the driver must always enter the car on the curb side. Always change places behind the wheel from the curb side.

**FIVE STEPS IN PRACTICING EACH LESSON**

1. Review
Briefly review the driving acts of the previous lesson, and be certain the new driver has learned each one well.

2. Preview Each New Step
Have the driver explain each step in its proper place before he practices it. In the Driving Guides, every driving act has been broken up into logical steps—one, two, three, etc. Follow the Guides closely and practice them step by step.

3. Have the Driver Explain the New Step
Make sure that he knows what he is about to do and why.

4. Have Him Demonstrate the New Step
Prevent any error you can. When an error is made, help correct it promptly and patiently. Have the driver repeat the step correctly.

5. Have Him Practice
See that the driver practices each new step until he does it smoothly and correctly and you are confident that he has formed the right habits.
DRIVING GUIDE

PURPOSES:
I. To review the parts of the car.
II. To review the positions and uses of the gauges, safety devices, and control devices.
III. To review the car systems.
IV. To review the checks a driver must make before he starts the engine.
V. To practice the steps in starting the engine.

These lessons are to guide the review and practice of a new driver. So follow them exactly. Go no further than one lesson at a time.

Begin by having the driver review the parts of the car, the gauges, the safety devices, and the control devices. Have him point out the following and explain their uses.

![Diagram of car parts]

These chassis parts would show if the body were made of transparent plastic.

I. Parts of the Car:

1. Chassis Parts—
   - Frame
   - Wheels
   - Axles
   - Brakes
   - Springs
   - Gasoline tank
   - Drive shaft
   - Differential gears
   - Transmission gears
   - Universal joint
   - Steering column

2. Engine Parts—
   - Engine block
   - Crankcase
   - Oil filter
   - Oil vent
   - Fuel pump
   - Carburetor
   - Thermostat
   - Air Cleaner
   - Battery
   - Generator
   - Starter
   - Distributor
   - Spark plugs
   - Fan
   - Radiator
   - Voltage regulator
   - Manifold
   - Water pump
   - Oil measuring stick

II. Gauges and Devices:
Be sure the driver understands the gauge readings. Gauge readings may vary on different makes of cars.

Point out:
- Gasoline gauge
- Water temperature
- Oil pressure
- Speedometer
- Ammeter
- Odometer
  (miles driven)
See that the driver can locate the following and knows how to use them:

1. Six Safety Aids—
   - Light switches
   - Mirrors
   - Windshield wipers
   - Sun visor
   - Windshield defrosters
   - Horn button or ring

2. Four Starting Devices—
   - Ignition switch
   - Starter switch
   - Choke
   - Hand throttle

3. Six Control Devices—
   - Steering wheel
   - Clutch pedal
   - Gear-shift lever
   - Accelerator
   - Foot brake pedal
   - Hand, or parking brake

III. Car Systems:

   - Lubricating
   - Ignition
   - Fuel
   - Steering
   - Cooling
   - Lighting
   - Braking
   - Exhaust

Have the driver trace the fuel system as far as possible. Trace the fuel from tank, through fuel line, to fuel pump, carburetor, and intake manifold. Trace the exhaust system from exhaust manifold, through exhaust pipe, muffler, and tail pipe. Trace the circulation of water in the cooling system.

IV. Checks Before Starting Engine:

   - Fluid in radiator
   - Oil in crankcase
   - Water in battery
   - Gasoline in tank
   - Air pressure in tires
   - Lights, including stop lights
   - Brakes, ready to work
   - Windshield wipers
   - Doors, latched
   - Ventilation
   - Seat—adjusted
   - Mirror—adjusted
   - Horn

The driver should be able to see the road over the steering wheel, not through the spokes, and to see the road through the rear-view and side mirrors. He should be able to reach clutch and brake pedals without stretching.

V. Starting the Engine:

1. Disengage the clutch by pushing clutch pedal to the floor.
2. Place gear-shift lever in neutral position.
3. Turn on ignition switch.
4. Push starter pedal or button.
5. Release pressure on starter pedal or button as soon as engine is running on its own power.

Follow these steps in the correct order. Practice will make them a habit.

NOTE: Practice choke and throttle operation if the car is not equipped with automatic choke.
Repeat starting the engine until the driver can follow the five steps quickly, smoothly, and in correct order. See that he always warms up the engine by letting it run slowly for a few minutes before starting the car.
DRIVING GUIDE

PURPOSES:

I. To practice the correct stopping signal.
II. To learn the gear-shift positions.
III. To practice starting in low gear.
IV. To practice steering in a straight line.
V. To practice stopping the car from low gear.

FOR THIS LESSON, CHOOSE A QUIET, STRAIGHT STREET, AWAY FROM TRAFFIC

The beginner must drive only in low gear during this lesson. At the end of the lesson, he should be able to start his car in low gear and to stop smoothly at a chosen spot. Have him repeat the steps over and over again until he can do them accurately and smoothly.

Practice straight-ahead driving first, not making turns.

At this stage, if it is necessary to turn the car around, you, not the new driver, must be at the wheel.

THE SUCCESS OF THE ENTIRE COURSE WILL DEPEND UPON THE THOROUGHNESS WITH WHICH EACH STEP IS DONE.

I. Correct Stopping Signal:

Always give this hand signal before stopping.

Before starting and stopping the car, have the driver demonstrate this correct signal several times.

II. The Gear-Shift Positions:

A new driver must learn to shift gears without looking at the lever. Point out that the gear positions form an “H.” Demonstrate the shifts slowly several times. Have him practice them until perfectly learned, before he starts the car.

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When shifting from neutral to low gear, with a steering-column gear-shift lever, the palm of the hand should be **up**.

**Steps to practice—**
1. Press clutch pedal down.
2. Check in rear-view mirror.
3. Shift to low gear—palm up.
4. Release hand brake.
5. Check "blind spot," and signal.
6. Let clutch pedal come up slowly. When the clutch reaches the "friction point"—point at which it begins to take hold—hesitate an instant, and then—
7. Slowly let the clutch pedal come up fully and, at the same time—
8. Increase pressure slightly on the accelerator.

Practice until the driver learns not to race the engine and not to stall it, and until he starts the car smoothly.

**IV. Steering:**

**Caution**—Keep hands and arms inside the car except when signalling.

1. Demonstrate correct position for hands on the wheel. Right and left hands should be on opposite sides. The wheel should be held by the rim—not by the spokes.
2. Hands should have a firm but comfortable grip on the wheel.
3. Hands should not be removed from the wheel except to perform necessary driving acts.
4. Emphasize *keeping eyes on the road.* Attend to steering while shifting gears by feel.
5. Drive on the right-hand side of the road.
6. Demonstrate that the car, whether going forward or backward, moves in the same direction (right or left) in which you turn the top of the steering wheel.

**V. Stopping the Car From Low Gear:**

1. Check through rear-view mirror.
2. Signal for a stop. *Constantly observe traffic conditions until the car is stopped.*
3. Press clutch pedal down, and, at the same time—
4. Take foot off accelerator pedal.
5. Gradually push down brake pedal. Make a smooth stop by releasing pressure slightly on brake pedal just before the car stops.
6. Shift to neutral.
7. Pull on hand brake.

Have the driver start and stop his car, going just a short distance each time, until he can both stop and start easily and smoothly. Have him judge his stopping distances by trying to stop with his bumper even with some spot—such as a tree or pole.
DRIVING GUIDE

PURPOSES:

I. To practice shifting from low to second gear.
II. To practice stopping from second gear.

FOR THIS LESSON, CHOOSE A QUIET, STRAIGHT STREET, AWAY FROM TRAFFIC

First, be sure that the driver performs all the steps of lessons 1 and 2 accurately and smoothly before you permit him to go into second gear. Then go on with the steps in this lesson.

When shifting from low to second gear, the palm of the hand should be down.

I. Shifting From Low to Second Gear:

1. Press the accelerator until the car is running approximately eight miles an hour, or fast enough for it to run on momentum during the change of gears. This speed will vary under different conditions.

2. Press the clutch pedal down, and, at the same time—

3. Take pressure off the accelerator.

4. Shift to neutral—palm down. Then tilt the gear-shift lever away from the steering wheel and forward into second gear. Use slight pressure to avoid shifting accidentally into reverse. Hesitate slightly when passing through the neutral position. The lever should be held gently but firmly.

5. Slowly let the clutch pedal come up—hesitating an instant at the "friction point."

6. At the "friction point" of the clutch, gradually press the accelerator.

NOTE: Stress importance of "easing" through the "friction point" to avoid jerking the car. See that the driver steers on the right side of the road and keeps his eyes up.

Pressed together tightly Not pressed together tightly

Avoid "riding the clutch." A fully engaged clutch grips well; a slipping clutch wastes power and wears rapidly.

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II. Stopping From Second Gear:

Be sure the driver keeps his eyes on traffic conditions until the car is completely stopped.

1. Check traffic conditions through car mirrors.
2. Signal for stop.
3. Push clutch pedal down, and, at the same time—
4. Release pressure from the accelerator.
5. Brake gradually—increasing the force as the car stops. Make a smooth stop by slightly releasing pressure on the brake pedal just as the car stops.
6. Shift to neutral.
7. Set the hand brake.

Practice until the driver can operate smoothly.

Practice stopping at exact spots from second gear, using trees, telephone poles, etc., as markers, as was done in Lesson 2.

Be sure the driver shifts gears by a "touch system." Note the eyes up position. Note also that the ball of the foot, not the instep or the heel, should be used on the pedals.
DRIVING GUIDE

PURPOSES:

1. To practice smooth shifting from second to high gear.
2. To practice stopping from high gear.

The well-trained driver shows skill in the shifting of gears and the use of clutch and brake. When you see a car jerk as it starts, or "stand on its nose" as it stops, you know that the driver lacks skill. He drives only "after a fashion." To be able to start a car and pass from one gear to another, smoothly, evenly, and without jerking, requires well-guided practice.

BE SURE ALL PREVIOUS LESSONS ARE COMPLETELY LEARNED BEFORE YOU PERMIT PRACTICE IN HIGH GEAR. THEN GO ON WITH THE STEPS IN THIS LESSON.

1. Shifting From Second to High Gear:

   When the car is running in second gear, have the driver follow these steps:
   1. Press gradually on the accelerator until the car is going approximately 15 miles an hour, or fast enough to carry it along during the shift.
   2. Press the clutch pedal down, and, at the same time—
   3. Take pressure off the accelerator.
   4. Shift to third, or high gear—palm down.
      Notice the "hesitation point" in neutral, and practice observing it.
   5. As soon as the car is in high gear, do the following, almost at the same time:
      a. Let the clutch pedal come up through the "friction point."
      b. Gradually press the accelerator pedal—to continue in motion and gain momentum.
      c. Slide the foot from the clutch pedal to the floor.
         See that the student does not "ride the clutch."
      d. Keep the car on the right side of the road.

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II. Stopping From High Gear:

1. Check traffic conditions in the mirrors.
2. Give hand signal for a stop.

Then proceed as when stopping from low and second gears—with the following exceptions:

1. Use the foot brake before pressing on the clutch pedal.
2. When the car has been slowed down to approximately 10 miles an hour, press the clutch pedal down and—
3. Press the brake pedal down as in previous lessons.
4. Shift to neutral.
5. Set the hand-brake.

Practice stopping from high gear until the driver can bring the car to a smooth stop at any exact spot he wishes. Be sure that he observes conditions in the rear, by using his rear-view mirror, and that he signals with his hand before stopping.

A signal, to be effective, must be given soon enough and held long enough for following motorists to have plenty of time to adjust their driving to whatever you intend to do.

Signaling intentions far enough ahead is a driver's social obligation.

Keep the driver practicing what he has learned up to this point until he can start, steer, stop, and shift very smoothly. Be sure that, at all times, he observes traffic conditions around him and warns other drivers with the proper signal.

Before stopping, check traffic conditions through your rear-view mirror.

We can't expect other persons on the highway to be crystal gazers.
DRIVING GUIDE

PURPOSES:

I. To practice shifting from high to lower gears.
II. To learn the proper steps in backing the car.

1. Shifting to Lower Gears:
Shifting from a higher to a lower gear is sometimes necessary when:
1. In heavy traffic.
2. Going up steep hills—before the engine starts to labor.
3. The pavement is slippery.
4. Descending or ascending steep or winding hills.
5. Entering busy or blind intersections.
7. Crossing railroad tracks.

2. From Third to Second Gear:
Emphasize that this shift should be made only when the car is moving slowly, never over 10-15 miles per hour. Slow the car to this speed or less, by using the brake if necessary. Then—
1. Release accelerator pedal.
2. Push clutch pedal down.
3. Shift from third to second gear—palm down.
4. Depress accelerator pedal to increase speed. Practice until you can feel the proper engine speed.
5. Release the clutch pedal gradually through the friction point.

2. Shifting From Second to First Gear:
The driver should first practice this shift with the car standing still. Then have him practice it with the car speed no more than 5 miles per hour.
1. Depress clutch pedal.
2. Release accelerator pedal.
3. Shift to first gear—palm up.
4. Depress accelerator to increase engine speed.
5. Release clutch pedal smoothly.

II. Backing the Car:
For this lesson, choose: (1) a long, straight, wide, off-the-street driveway; (2) a dead-end street; or (3) a street with practically no traffic.

Learning to Make the Car Creep:
First have the driver practice “inching,” or “creeping” the car forward smoothly, at a snail’s pace.

When maneuvering backwards, as in parallel parking between other cars, it will be necessary to move a very short distance at a time. Only after the driver gets the feeling of this “ inching” or “creeping” forward, will he be ready to practice backing.
Steering Backwards:

Call attention again to the fact that the car will move in the same direction in which the top of the steering wheel is turned—whether the car is to move forward or backward.

The rear-view mirror cannot be depended on for complete vision when backing. Nor should a driver open the door in an attempt to see when backing.

Have the driver look through the rear window over his right shoulder. Have him lift himself up by pressing down with his right arm on the back of the front seat. This makes vision through the rear window possible. Have him turn frequently to observe conditions right and left.

Steps in Backing:

Warn the driver never to shift into reverse except from a complete stop.

1. Observe traffic conditions front and rear.
2. Push clutch pedal down.
3. Shift to reverse gear—palm up, if using a steering column shift; toward the driver, if a floor shift is used.
4. Release hand brake.
5. Slowly let clutch pedal come up to the “friction point.”
6. Gradually increase pressure on the accelerator.

NOTE: The new driver tends to feed gas quickly and then let up on the accelerator suddenly, in an effort to correct his error. This results in very jerky backing.

Have him practice controlling the speed of the car by engaging and disengaging the clutch, and by using the brakes to avoid letting the drift of the car become too rapid.

Have the driver use the clutch and accelerator together in such a way that there is never more acceleration than is needed to provide power to keep the car just moving.

Have him practice until he can back on a straight line at a very slow, smooth speed and stop the car at any moment.

Warnings About Backing:

1. Take plenty of time when backing.
2. Avoid backing toward an approaching vehicle or pedestrian.
3. Keep your attention on the direction of travel until your car is completely stopped.
4. Avoid backing into main streets and highways.
5. Where possible, back up hill rather than down.

Whew! Step out on the curb side!
DRIVING GUIDE

PURPOSES:

I. To learn to signal for turns.
II. To develop skill in making right and left turns.
III. To practice hand-over-hand steering technique.
IV. To develop skill in turning the car around.

FOR THIS LESSON, CHOOSE A QUIET RESIDENTIAL NEIGHBORHOOD WITHOUT MUCH TRAFFIC AND WITH WIDE STREETS

I. Correct Signals at Turns:

Be sure the driver knows the correct hand signals for left and right turns. Signals must be given far enough ahead to warn the driver behind in plenty of time for him to act accordingly. Signal must be held long enough to give others plenty of time to see them.

II. Making Turns:

Begin preparations for turning two or three hundred feet before reaching the actual turning point.

Make All Turns at Low Speeds
Beginners should take all turns in a lower gear, shifting back to high after the turn is completed.

Right Turns—
Have the driver go around the block making only right turns.
1. Give the right-turn signal before reducing speed.  
2. Steer the car into the right-hand lane as you reduce speed.

Left Turns—
Have the driver go around the block making only left turns.
1. Give the left-turn signal before reducing speed.  
2. Steer the car into the inner lane near the center line of the street.
3. Check for a clear path. Observe:  
   (a) traffic signals  
   (b) stop signs  
   (c) pedestrian and vehicle traffic  
   (d) special signs, lights, or road markings regulating left turns
4. If your way is not clear, use the proper signal and stop.
5. Change to a lower gear before beginning the turn.
6. Make the left turn so as to arrive in the same lane in the second street.
7. Only when well past the intersection, complete the turn into the right-hand lane.

III. Hand-Over-Hand Technique:
Have the driver practice the hand-over-hand steering technique, as shown in the figure below, until it is easy for him to steer smoothly around corners.

Hand-over-hand steering.

IV. Turning the Car Around:
When turning the car around, always consider whether:
1. The type of turn you will use is legal at that place.
2. Pedestrians and other traffic will be kept safe.
3. The turn can be made without delaying other traffic.

1. Turning in Width of Street:
1. Give the proper signal and stop the car close to the right curb.
2. Check for clearance of traffic in all directions.
3. Give hand signal for a left turn.
4. Proceed in first gear, turning left as sharply as possible.
5. As the car approaches the curb, turn front wheels to the right. Stop before touching the curb.
6. Shift into reverse.
7. Check traffic.
8. Back slowly, turning the wheel completely to the right, until there is enough front clearance to permit completing the turn.
9. Just before stopping the car, turn the front wheels so you will be ready to proceed forward in the desired direction.

- Make this turn only when there is no approaching traffic.

2. Making a U Turn:
1. Traffic conditions should be favorable for making the turn.
2. Steps are the same as the first four steps in turning in the width of street.
3. Take care to finish the turn in the proper lane, on the right side of street.
Always choose a spot far enough from hill crests or curves to avoid danger from oncoming traffic.

3. Turning by Using a Side Street or Alley:
1. Give the proper signal and stop close to the right curb with the rear bumper just past the intersection.
2. Check for clearance of traffic in all directions.
3. Back slowly into the side street.
4. Observe the usual traffic regulations upon re-entering a busy street.

- With this method of turning around, back into alleyways, farm lanes, or side streets.
DRIVING GUIDE

PURPOSES:

I. To develop skill in parking parallel to the curb between other cars.

II. To pull out of a parallel-parked position.

III. To learn to park at an angle to the curb and back out.

When learning to park, new drivers tend to move into the parking space too fast and turn the steering wheel too slowly. Emphasize moving the car slowly, with complete control of the motion.

STEPS IN PARKING PARALLEL TO THE CURB

<table>
<thead>
<tr>
<th>Steps a &amp; b</th>
<th>Step c</th>
<th>Step d</th>
<th>Step e</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="Image1" alt="Steps a &amp; b" /></td>
<td><img src="Image2" alt="Step c" /></td>
<td><img src="Image3" alt="Step d" /></td>
<td><img src="Image4" alt="Step e" /></td>
</tr>
</tbody>
</table>

Line up with car “2” and 1 to 2 feet away.

Back slowly, turning steering wheel sharply to right.

Turn steering wheel sharply to left when about halfway in and continue to back.

Turn steering wheel to right and go forward slowly.

These are the proper steps in parallel parking—the “Waterloo” of many drivers.

I. Parking Parallel to the Curb Between Other Cars:

In this lesson, several steps need repeated practice.

1. Make sure the road is clear both ahead and behind and signal your intention to stop.

2. Stop the car parallel to the vehicle behind which it is to be parked, and about two feet away from it. Have the rear bumper even with that of the parked vehicle.

   This beginning position is very important.

3. Back slowly—easing the car back with clutch control. As the car backs, turn the steering wheel sharply to the right until the car is at a 45-degree angle with the curb. This position brings your eyes about in line with the rear bumper of the car behind which you are parking.

4. Straighten the front wheels, continuing to back until your front bumper is about opposite the rear bumper of the car in front.

   In this position, the left rear wheel of your car is about a foot farther from the curb than the left wheels of the car behind.

5. Hesitate an instant, and then turn the steering wheel rapidly to the left, as far as it will go, while backing slowly into the parking space.

   The rear wheel should now be close to the curb.

6. Go forward slowly, turning the wheel to the right to bring the car parallel to the curb. Stop the car an equal distance from the cars in front and behind.

7. Pull on the hand brake; turn off the ignition; roll up the windows; lock the car, being certain to take the ignition key with you.

   Some parking regulations require you to park cars not more than six inches from the curb. Some regulations require you to turn the wheels of a parked car to the curb.
II. Pulling Out of the Parallel-Parked Position:

1. Back the car until it is about three or four inches from the car to the rear.
   Teach the driver to stop before the bumpers touch and to turn the front wheels sharply away from the curb just before stopping.

2. Give a left turn signal to indicate intention to enter the traffic lane.

3. Drive forward slowly, turning the steering wheel sharply to the left until your front side door is opposite the rear wheel of the car in front. From this position, you can safely clear the car in front.

4. Turn right and slowly enter the correct traffic lane.

For a beginning driver, the space chosen in which to park should be long enough so that he can get out without backing more than once.

Emphasize, in this lesson, the importance of checking traffic conditions before pulling out from the curb. It is not sufficient to look in the rear-vision mirror. Have the driver put his head out the window so he can check traffic from the rear. Check blind spots, as in all previous lessons on starting.

III. Angle Parking:

1. Observe traffic conditions ahead and behind.

2. Signal intention to slow down.

3. Have the car at least five feet away from the row of parked cars. This gives you a position to clear nearby parked cars when entering the parking space.

4. Steer sharply to the right and slowly enter the parking space.

5. Continue slowly forward until the front wheel lightly touches the curb.

6. Pull on the hand brake; turn off the ignition switch; roll up the windows; lock the car, being certain to take the ignition key with you.

NOTE: Caution the driver that there are several fenders which must be watched—those on his own car and those on others. Otherwise, he may concentrate only on the front of his car and damage the back fenders.

Backing Out of an Angle Parking Space:

1. Observe traffic conditions carefully.

2. Back out a few feet very cautiously.

3. Stop the car to observe traffic conditions again. This position affords a better view of traffic and serves as a signal to other drivers.

4. Continue to back out slowly, observing traffic conditions all the time.

5. Turn into the flow of traffic only when you are sure the car is far enough out so you will not strike a parked car.

This is a very important lesson. Spend much time and care on it. Practice until it is completely learned.

The skillful driver signals clearly when pulling out from parking.
DRIVING GUIDE

PURPOSES:

I. To develop skill in stopping and starting on an upgrade.

II. To practice backing up a grade.

III. To learn to park on an upgrade or downgrade.

For this lesson, choose a quiet street with a medium grade.

Practice each maneuver in this lesson until the driver can perform it smoothly and correctly.

A driver skilled in the steps of this lesson is not panicky if his car stalls on a hill.

I. Stopping and Starting on an Upgrade:

Stopping—
1. Check traffic conditions.
2. Signal for a stop.
3. Bring the car to a smooth stop, applying the clutch and brake almost at the same time.
4. Pull on the hand brake sufficiently to keep the car from rolling.

Steps in Starting on a Hill

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Depress clutch and shift in to low gear</td>
</tr>
<tr>
<td>b.</td>
<td>Press on accelerator</td>
</tr>
<tr>
<td>c.</td>
<td>Slowly release clutch and hand brake</td>
</tr>
</tbody>
</table>

Starting—
1. Shift to low gear.
2. Release the clutch pedal until it can be felt that the clutch is taking hold.
3. Then, at the same time—
   a. Feed gas sufficiently to hold the car.
   b. Release the hand brake.
   c. Check the blind spots.
   d. Feed more gas to get the car smoothly into motion.

Practice starting on a slight upgrade until the technique is developed. Then move to steeper and steeper grades, until the driver can start smoothly on very steep grades, without having the car roll back even slightly. If the engine stalls, have him apply the brake quickly, depress the clutch, shift to neutral, and set the hand brake. Then proceed with starting the engine.

II. Backing the Car Upgrade:

Give the driver practice in this backing maneuver, using the preceding steps for starting on an upgrade.

Review all the precautions about backing a car, as given in Guide 5. Be sure all the precautions are observed.

Downhill
Uphill

Note the positions of the front wheels. The curb prevents the car from moving if the brakes slip.
III. Parking the Car on Upgrades and Downgrades:

Upgrades—
1. Bring the car parallel to the curb and about six inches from it.
2. Move slowly forward in low gear, turning the front wheels hard to the left until the right front wheel is about two feet from the curb.
3. Press the clutch pedal down and apply the foot brake.
4. Release the brake and let the car drop back slowly until the right front wheel touches the curb.
5. Shift to reverse gear position and set the hand brake.
6. Turn off the ignition before removing feet from clutch pedal and brake.

Downgrades—
1. Bring the car parallel to the curb and about six inches from it.
2. Control the forward movement of the car with the foot on the brake, turning the front wheels hard to the left, until the right front wheel is about two feet from the curb.
3. Then turn the front wheels hard to the right, until the right one touches the curb lightly.
4. Shift to reverse gear position, and set the hand brake.
5. Turn off the ignition and remove feet from clutch and brake.

NOTE: Point out to the driver that, by doing the above things, he takes three safeguards against his car rolling down hill:
   1. His wheels are banked against the curb.
   2. His car is in gear.
   3. His hand brake is set.

In Lesson 5, you helped the driver practice slowing down and shifting from high to second gear on the level. At this time let him practice going up and down a hill, shifting from high to the lower gears smoothly—with no clashing of gears or jerking of the car.

Point out that, in the lower gears, the engine compression helps to hold the car on a downgrade. Caution the driver never to put the car in neutral or depress the clutch and coast on hills.

Stopping "on a dime"? It just can't be done.
DRIVING GUIDE

PURPOSES:

I. To develop skill in handling the car on the open highway.

II. To check sportsmanship—that is, attitude toward other drivers and pedestrians.

For practicing this lesson, select an open highway that includes curves, hills, intersections, traffic signs, and signals, at a time when there is not much traffic.

I. Driving on the Highway:

Let the new driver practice on the highway no more than one-half hour for his first practice period. See that he has guidance in each of the following:

1. Observing Traffic Signs—
   Note that shapes of signs give distance clues to meanings. The driver must know signs by their characteristic shapes and colors before he is ready for highway driving.

2. Choosing and Keeping Correct Lanes—
   See that lane habits are established by practice. The driver must learn to:
   - Drive in the right-hand lane.
   - Pass vehicles on the left.
   - Avoid straddling traffic lanes.
   - Maneuver to correct lanes for turns.
   - Keep proper lanes during turns.
   - Turn into correct lanes.
   - Keep in right-hand lane:
     - At hillcrests; on turns.
   - Avoid weaving from lane to lane.

3. Driving at Correct Speeds—
   The driver must practice:
   - Speeds right for conditions.
   - Normal traffic speeds.
   - Speed control on curves.
   - Restricted zone speeds.

4. Surveying the Whole Traffic Picture—
   From the beginning of practice in traffic, a driver must watch the total traffic picture. He must be alert to all signs of what other drivers and pedestrians will do. Help him build the habit of looking ahead. Teach him to notice symptoms of trouble-in-the-making:
   - Children playing ball
   - Confused or handicapped pedestrians
   - Cars nosing into traffic
   - Erratic drivers
   - Cars backing into traffic
   - Bad pavement conditions ahead
   - Car doors opening on street side
   - Drivers weaving across lanes
   - Unprotected intersections, etc.
5. Following Other Cars—
Help the driver form the habit of carrying out the simple rule:
Stay at least 20 feet, or slightly over one car length, behind another car for each 10 miles per hour of your speed.

<table>
<thead>
<tr>
<th>Speed in m.p.h.</th>
<th>Safe Following Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>20 ft.</td>
</tr>
<tr>
<td>20</td>
<td>40 ft.</td>
</tr>
<tr>
<td>30</td>
<td>60 ft.</td>
</tr>
<tr>
<td>40</td>
<td>80 ft.</td>
</tr>
<tr>
<td>50</td>
<td>100 ft.</td>
</tr>
</tbody>
</table>

Maintain these safe following distances for the given speeds.

6. Passing Other Cars—
New drivers easily underestimate the distance needed to pass and get back into lane. Pass only when there is distance to spare. Return to lane only when the passed car shows in your mirror.

Warning signals are important in overtaking and passing.

7. Stopping Distances—
If the new driver has had a demonstration on stopping distances with a Detonator, have him describe it.

Review the table below—

**STOPPING DISTANCES**

<table>
<thead>
<tr>
<th>Avg. reaction time 0.75 second</th>
<th>Braking efficiency 44.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles Per Hour</td>
<td>Equivalent Feet Per Second</td>
</tr>
<tr>
<td>10</td>
<td>14.7</td>
</tr>
<tr>
<td>15</td>
<td>22.0</td>
</tr>
<tr>
<td>20</td>
<td>29.3</td>
</tr>
<tr>
<td>25</td>
<td>36.7</td>
</tr>
<tr>
<td>30</td>
<td>44.0</td>
</tr>
<tr>
<td>35</td>
<td>51.3</td>
</tr>
<tr>
<td>40</td>
<td>58.7</td>
</tr>
<tr>
<td>45</td>
<td>66.0</td>
</tr>
<tr>
<td>50</td>
<td>73.3</td>
</tr>
<tr>
<td>55</td>
<td>80.7</td>
</tr>
<tr>
<td>60</td>
<td>88.0</td>
</tr>
</tbody>
</table>

Measure off some of these distances to see just how far a car will travel at different speeds before it can possibly be stopped.

8. Adverse Driving Conditions—
After thorough driving practice on the open road under normal conditions, give careful practice under such adverse conditions as:
- Rough roads with ruts
- Slippery roads
- In rainy weather
- Over mountain roads
- Roads with curves and hills
- In snow

Getting back on the pavement without trouble. The distance "A" should be much longer than is shown—sufficiently long to permit slowing down to low speed.

II. Sportmanship:
Throughout this advanced practice, help the new driver build habits of courtesy and fair play toward street and highway users. See that he:
- Uses his own lane.
- Signals his intentions.
- Yields right of way.
- Stops back of crosswalks.
- Maintains fair speeds.
- Obey signs and signals.
- Follows and passes fairly.
- Helps protect pedestrians.
- Shares the highway courteously.
- Avoids creating emergencies.
DRIVING GUIDE

PURPOSES:

I. To practice getting the car into the street.

II. To give experience in city driving.

III. To give experience in driving at night.

The new driver should have his practice in traffic after he has acquired skill in all the driving operations in the preceding lessons. Only advanced practice should be permitted on city streets where traffic is crowded and constantly changing.

I. Getting the Car Into the Street:

![Image](image)

Backining the car into the street must be done with the greatest care. Watch especially for playing children.

Check the habits and skills already learned in getting the car under way. Pay special attention to the habits of checking conditions in the path of the car and of using hand signals.

If the car must be backed into the street, a horn signal may also be needed.

See that the driver:

1. Watches for playing children.
2. Signals intention.
3. Stops and checks for pedestrians before crossing the walk.
4. Stops and checks for cars at the curb before entering the street.
5. Moves the car slowly.
6. Enters the traffic at the nearest lane, even though he may have to turn around or go around the block to get the direction he wants.
7. Does not back across the street.

II. City Driving:

Have first practice done on quiet, residential streets. Then give practice in downtown traffic—at first, if possible, at times in the day when the traffic is not very heavy.

See that the driver practices:

1. Correct city speeds.
2. Proper use of traffic light signals.
3. Yielding the right of way.
4. Parking as required in the locality.
5. Full stops at STOP signs.
7. Crossing trolley tracks correctly.

© American Automobile Association
Traffic Engineering & Safety Department
Washington, D. C.
This
slippery
Not this
speed / Car rails
Car rails
Trying to cross slippery rails when the wheels are nearly parallel to the rails may cause a serious skid.

In regard to turns, he must:
1. Signal for turns.
2. Shift gears as needed.
3. Use correct turning lanes.

In regard to pedestrians, see that he:
1. Stops back of pedestrian crosswalks.
2. Stays away from pedestrian safety zones.
3. Shows pedestrians courtesy and helps protect them.

Be a driver who signals by position. The position of your car on the road shows your intentions.

In regard to turns, he must:
1. Signal for turns.
2. Shift gears as needed.
3. Use correct turning lanes.

III. Driving at Night:
Practice in night driving is desirable, after the driver demonstrates skill in all the operations in daytime driving.

Be on the alert to see that the new driver:
1. Drives well within the range of his headlights.
2. Judges his car position on streets or roads correctly.
3. Uses low beam lights for meeting cars.
4. Keeps his speed down to match night conditions.
5. Watches the right road edge when meeting cars.
6. Knows the positions of other vehicles by road reflection, not by looking directly at the lights.
7. Feels at ease in night-time driving conditions.

Be on the alert to see that the new driver:
1. Drives well within the range of his headlights.
2. Judges his car position on streets or roads correctly.
3. Uses low beam lights for meeting cars.
4. Keeps his speed down to match night conditions.
5. Watches the right road edge when meeting cars.
6. Knows the positions of other vehicles by road reflection, not by looking directly at the lights.
7. Feels at ease in night-time driving conditions.

Is he deaf? Almost blind? Crippled? Confused?

Fatigue and darkness greatly increase accident risks. Note the rapid rise in fatalities in the late afternoon and at about dusk.
APPENDIX "D"

SELECTED BIBLIOGRAPHY OF FILMS
SELECTED BIBLIOGRAPHY OF FILMS
FOR DRIVER EDUCATION

Sources of Films

1. Aetna Life Insurance Company, Safety Education Department, Hartford 15, Conn.


5. General Motors Corporation, Film Distribution Section, General Motors Bldg., Detroit 2, Michigan.


Bibliography

Accident Behavior—20 min., Loan—2, Purchase—10. Step by step procedure to follow when involved in an automobile accident.


Champions at the Wheel—Color, 17 min., Loan—1. A truck fleet safety film designed to correct the faulty driving habits of professional drivers.

Chance to Lose, The—10 min., Loan—2. Compares chances taken by drivers with those in gambling. Factory scenes show safety features built in modern cars.

Current Flashes—9 min., Loan—2, Purchase—7. Workings of the generator, voltage regulator and battery.

Defensive Driving—35mm. Filmstrip, Rent and Purchase—9. Principles of defensive driving: Keeping equipment in safe condition, following at safe distances, stopping slowly, using hand signals, braking at safe distances and driving courteously.

Driven to Kill—10 min., Purchase—3. Necessity for the average driver to recognize the responsibility of handling a potentially dangerous vehicle.

Free Air—10 min., Loan—2, Purchase—7. The operation of the carburetor and the proportion of air and gasoline used to make a correct mixture.


Horsepower—9 min., Purchase—7. The meaning of horsepower in relation to the automobile.

Horse Sense in Horse Power—10 min., Loan—2. Development of automotive industry and how modern cars are tested.

*The number after each film refers to the list of organizations on page 85 from whom films may be borrowed or purchased. Unless otherwise indicated, all films are 16mm. and in black and white.
Hothead--15 min., Purchase--7. An explanation of the automobile cooling system.

Hydraulics--10 min., Purchase--7. Principle of hydraulic pressure as applied to automobile braking systems.

In the Drivers' Seat--15 min., Loan--6, Purchase--6. Nation-wide safety program developed by the President's Highway Safety Conference to correct the traffic evils growing out of the advent of the automobile.

A Knight Falls--15 min., Silent, Loan--2. Safe practices in driving a car.

It's Wanton Murder--10 min., Loan--2, Purchase--3. Tragedy of carelessness on our streets and highways and the need for more care, consideration and common sense on the part of drivers. Commentary by Lowell Thomas.

Knights on the Highway--9 min., Loan--2, Purchase--7. Commercial vehicle operation and safety in night driving.

Last Date--16 min., Loan--8. Dramatization of events leading up to tragedy in the lives of teen-agers caused by an automobile accident.


No Use Skidding--35mm. Filmstrip, 20 min., Loan--9. The hazards of winter driving and how to avoid them.

On the Level--8 min., Purchase--7. The workings of front and suspension in traveling over rough surface.

Periodic Checkup--18 min., Loan--2, Purchase--4. Necessary steps in the periodic checkup of a car, including tuning up engine, servicing brake system, inspecting steering system, chassis and body.

Power--10 min., Loan--2, Purchase--7. The workings of the pistons and moving parts of an automobile.


Riding the Film--8 min., Purchase--7. An explanation of the oil system of a car.

Seeing Green--9 min., Purchase--7. How traffic lights control traffic and promote safety. Different types of traffic lights and the need for standardization.
Short Stops--9 min., Loan--2, Purchase--7. The operation of the perfected hydraulic brake, the effect of speed and road surface on stopping distances and how to use the brakes most effectively for smooth, safe stops.

Smooth Starts--9 min., Loan--2, Purchase--7. The problem of inertia as it applies to starting automobiles. The clutch as a means of supplying friction evenly.

Speed and Reflexes--11 min., Loan--2, Purchase--10. Demonstration and explanation of human reflex or reaction time. Effects of fatigue on reaction. Importance of natural laws such as friction, gravity, kinetic energy.

Stop that Car--8 min., Loan--2, Purchase--7. The brakes of the automobile, and how they operate.

Story of a Storage Battery--32 min., Loan--11. Production of storage batteries, inspection, testing, and proper care. Animated drawings visualize action in battery during charging and recharging.

Teach Them to Drive--20 min., Loan--2, Purchase--2. Need for training high school youths to drive. How community public opinion is organized to set up standard high school driving course.

Turnabout Man--10 min., 16mm. or 35mm., Loan--2 (35mm. only), Purchase--7. Driving habits and courtesy.

When You Know--10 min., Purchase--7. Essential features of the car and how they contribute to safe driving.

With Care--10 min., Loan--2, Purchase--7. How truck drivers make safety records and highway courtesy.

You Bet Your Life--11 min., Loan--2, Purchase--10. Sound driving practices. The meaning of signs and signals and the importance of observing them.

Your Driving Habits--20 min., Purchase--4. Elements of good driving; how to start engine; use clutch and shift gears, use brakes, drive on curves, etc.

X Marks the Spot--20 min., Purchase--7. New Jersey Motor Vehicle Dept. of Safety Education, Trenton, New Jersey. The traffic experiences of a typical driver, Joe Deakes, and what happens to his "Spirit."
SUPPLEMENTARY FILM BIBLIOGRAPHY*

A Closed Book--27 min. Human interest story dealing with traffic hazards, suggest organized effort to combat traffic toll. Sponsor--Farm Bureau Insurance Companies, 246 N. High St., Columbus, Ohio. Producer--Wilding Picture Productions, Inc.


And Then There Were Four--27 min. Habits of five different drivers during one day, their actions in traffic that caused accidents. Sponsor--Socony-Vacuum Oil Company, 26 Broadway, New York 4, New York. Producer--Roland Reed Productions.


*These films are those on Traffic Safety included in a list of all safety films submitted to the National Committee on Films for Safety, National Safety Council, Chicago.

Look What You're Missing—27 min., Color. Showing various traffic conditions the everyday driver must be prepared to meet. Sponsor—Liberty Mutual Insurance Company, 175 Berkeley St., Boston 17, Massachusetts. Producer—Master Motion Picture Company.

Paths of Safety—27 min., Color. Efforts of local communities to promote observance of traffic signs, signals, and general rules of safe driving. Sponsor—Oklahoma City Safety Council, 323 Hales Bldg., Oklahoma City, Oklahoma. Producer—City Movie Makers Club, Oklahoma City, Okla.

Practice Makes Perfect Drivers—10 min. Good drivers become so only through constant awareness of safe driving habits. Sponsor—General Motors Corporation, 7-213 General Motors Bldg. Producer—General Motors Corporation, Detroit, Michigan.


The Case of Tommy Tucker—23 min. How interest in the safety program of a community was aroused by one traffic accident. Sponsor—Chrysler Corporation, 341 Massachusetts Avenue, Detroit 31, Michigan. Producer—Wilding Picture Productions, Inc.

The Jay-Walker—10 min., Color. An eccentric driver becomes an irresponsible pedestrian—humorous treatment. Sponsor—MFA Mutual Insurance Company and Missouri State

We Drivers--13 min., Color. Good driving techniques to avoid accidents with cartoon characters urging caution and recklessness. Sponsor--General Motors Corporation, 7-213 General Motors Bldg., Detroit 2, Michigan. Producer--Jam Handy Organization.

Your Permit to Drive--10 min. Pointing out the obligations and privileges afforded by a driving permit. Sponsor--General Motors Corporation, 7-213 General Motors Bldg. Producer--General Motors Corporation, Detroit 2, Mich.
APPENDIX "E"

AGREEMENT FOR THE USE OF A DUAL
CONTROL DRIVER TRAINING CAR
AGREEMENT FOR THE USE OF A DUAL
CONTROL DRIVER TRAINING CAR
Between
THE AMERICAN AUTOMOBILE ASSOCIATION
and.................................................. School or College
and.................................................. AAA Automobile Club
and.................................................. Local Dealer

THE AMERICAN AUTOMOBILE ASSOCIATION AGREES TO

1. Assign the school a current model five-passenger sedan, equipped with AAA basic dual controls appropriate lettered and properly licensed.

2. Leave the car in possession of the school for the period agreed upon.

3. Provide the forms for any necessary records and reports.

THE SCHOOL AGREES TO

1. Conduct a driver education and training course which meets the requirements of the State Department of Public Instruction where such requirements have been set up, otherwise the minimum requirements set forth in the AAA "Teacher's Manual for Sportsmanlike Driving."

2. Provide the instructor named in the application who shall be approved by the State Department of Public Instruction (in the case of high schools) and prepared in driver training methods and techniques under an AAA approved system of training. This instructor will devote the number of periods per week to behind-the-wheel and classroom instruction indicated in the application.

3. Use the car ONLY when taking delivery or returning it, when giving driver instruction and when having it serviced. The car will not be driven by a student unless accompanied by the instructor, or in the case of teacher training courses, by a practice teacher who has received proper training for the lesson to be given. The school may use the car for teaching adults at times which will not interfere with the regular school program. FAILURE TO COMPLY WITH THIS SECTION MAY RESULT IN IMMEDIATE CANCELLATION OF THIS ASSIGNMENT.

4. See that insurance coverage is provided for the protection of the school, the Local Dealer, the instructor, other users of the car, and include the American Automobile Association in the policy as an "Additional Assured." (No additional cost for this.) The coverage must include at least: (A) 25-50 thousand dollars Public Liability; (B) 5 thousand dollars Property Damage, and (C) 50 dollars Deductible Collision. (Fire and Theft insurance to be carried by the Local Dealer.)

5. Permit the use of decalcomanias on sides and rear of the car reading "AAA Dual Control Driver Training Car" and permit a Dealer courtesy line under each decal in letters not over 1½" high.

6. Return the car to the Local Dealer at the expiration of the Agreement Period in first class condition and with all routine greasing, oil changes, etc., up to date. Upon the return of the car, the Local Dealer and the school will fill out and sign the "Joint Inspection Report" in the presence of each other. This report is for the protection of the parties concerned. In case the car is turned over to another school or college, the same procedure should be allowed to protect the first assignee.

7. Pay for any servicing or repairs necessary to put the car in the same condition as received, except for normal wear and tear, when it is returned or transferred to another school.
8. Keep records necessary for making the "Term Report" and submit to the American Automobile Association reports when requested, such as:
   b. Notice of Beginning of Course.
   d. Term Report (Summary of Semester).

9. Pay all maintenance and expenses incidental to the operation of the car as outlined in the owner's manual, including especially the following items:
   a. Gasoline.
   b. Complete lubrication and oil change job at each 1,000 mile speedometer reading.
   c. Use of sufficient antifreeze of best quality in the radiator during cold weather.
   d. Storage of car in a safe garage at night and when not in use.
   e. Car inspection and tune-up at speedometer reading of 1,000, 3,000, 5,000 and 7,000 miles by the Local Dealer or by a service station he approves.
   f. Report, in case car is damaged, immediately to the Local Dealer.

10. Take every precaution to see that the car is kept in first class condition both as to operation and maintenance. This includes responsibility to see that every user is personally requested to keep the car in good condition and is held responsible for any abuse.

3. THE LOCAL DEALER AGREES TO

1. Provide the school for its EXCLUSIVE use a current model five-passenger sedan, appropriately lettered and properly licensed, equipped with dual controls, outside mirrors on both right and left sides and heater with defroster where required by local climatic conditions for the period from _____________________ to _____________________.
   (Dual controls may be ordered from the American Automobile Association)

4. THE AAA AUTOMOBILE CLUB AGREES TO

(Any responsibilities to be assumed by the local AAA Automobile Club such as supplying decalcomanias, dual controls and other materials should be listed by number below and crossed out of what the school or dealer agrees to do.)

This agreement shall take effect when SIGNED by persons authorized to act for the organizations involved.

For the School

For the Local AAA Automobile Club

For the Local Dealer

Address

City

State

For the American Automobile Association

Title