A SURVEY OF THE GROWTH AND DEVELOPMENT OF NATIONAL SAFETY
TO DETERMINE THE EDUCATIONAL CONTRIBUTIONS OF
INDUSTRIAL INSTITUTIONS TO THE
NEW SOCIAL ORDER

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THESIS

Presented to the Graduate Council of the North
Texas State Teachers College in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

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Dallas, Texas

August, 1939
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CHAPTER I

INTRODUCTION

The individual no longer accepts blank statements, but demands reasons upon which to base his attitudes. Facts in history are valuable in that they establish an acceptance of required conduct in present environment.

A study of how safe conduct was imperative to the survival of man in his early stages, how it has been necessary through the changes in his mode of living, and how it is demanded in the present age of power and speed, will motivate the acceptance of the problem by the new social order. This problem must not be accepted as a fly-by-night publicity campaign, but as one that is of major importance and is with us to stay. This problem was accepted by the ancestors of man and was overcome by them. Now, due to modern environment, it is a greater problem to be met by modern man. This is a problem whose hazards have no equal in past history.

To secure the picture of the bigness and social acceptance of the program of national safety, one must know two things: (1) how safety consciously or unconsciously motivated the steps of man in progress, and (2) how extensively and intensively individuals, groups, states, and nations have organized to control the menace of accidents. The individual must be conscious of the fact that over 100,000 lives are
taken each year in traffic accidents.¹ This knowledge must be assimilated if it is to be made a part of the attitudes and habits of the man of the new social order.

In the present rapid transition, many things are lightly passed, by virtue of the fact that conditions demanding attention will pass out within a day or a week. Prophecy is looked upon as guesswork but history is an accepted fact, and the things substantiated by it are injected into our attitudes, conduct, and habits, whether or not we realize it.

The purpose of this thesis was to make a survey of the growth and development of safety. In so doing, the writer desires to present in an acceptable form, material that would be of usable value to man. Safety-consciousness in the individual may be developed by determining the educational contributions that have been made in the field of safety for our generation by the industrial and social organizations.

At the present time individuals realize that the heavy educational task in safety has been assumed by non-school organizations. Therefore there now exists a definite need for educators to take active leadership in the field of safety education. To accomplish this it will necessitate not only leaders but also materials for specific situations. The materials are abundant, but few people are acquainted

¹Public Safety, California State Automobile Association, Nevada Division, 1937, p. 2.
with the sources of these materials. It shall be part of the task of the writer to supply the sources of materials in this thesis.

President Franklin Delano Roosevelt said:

The conservation of human life, and the prevention of accidental injury, is of vital importance to our welfare and happiness. While much progress has been made in accident prevention during the past two decades, particularly in the field of industry, there is still much that should be done.²

To cope successfully with the battle of safety, man must make use of the three weapons listed by Lieutenant F. M. Kreml, Director of Northwestern University Traffic Safety Institute, and of the Safety Division of the International Association of Police Chiefs. Those three weapons are the three E's—Enforcement, Engineering, and Education.³

Enforcement means the strict administration of traffic laws, aimed to protect the careful, safe, conscientious driver and to discover and punish the careless and criminal driver.

Engineering means eliminating the physical hazards and danger points. It means taking the pitfalls from the pathway of the safe motorist. That is the big task of modern traffic engineering.

²President Franklin D. Roosevelt, Safety and Safety Education, National Education Association of the United States, Washington, D. C., 1939, p. 5.

Education means fulfilling the pressing need for information and training in safety. The vast majority of motorists and pedestrians desire to play safe and try to abide by the law and prevent accidents. They cannot know how to do it until fundamental safety principles are brought to their attention and safety habits are developed.

The enforcement and engineering angles are given close attention at the present time; but unless the educational angle is stressed, the success, which is ultimately desired, cannot be obtained. The enforcement angle is to be left to the police departments, the engineering angle to the engineers, and responsibility for the educational angle is to be assumed by the field of teaching. Of the three phases, education has been the most neglected. Before another decade shall have passed, let it be hoped that this statement may be relegated to the ash heap.

It is the desire of the writer that the material, as well as the method of presentation, serve as a guide for those in search of materials to be presented to persons taking courses pertaining to safety. In writing the history and development of safety, the given list of contributions (relating to safety) were made by institutions of our country.

Physical accidents must be looked at not as things within themselves, but as evidences of inabilities to harness and control the forces of production.
The increase in the number and severity of accidents is not a mysterious thing, but it appears as a natural concomitant of the increased intensity of the industrial process. The greater the production, the greater the number of accidents, is a natural conclusion.

The new safety movement is different from that of the past decade for it has to meet not static conditions, but the increasingly difficult conditions of our industries where such conditions are continuously growing more intense.

The safety movement did not become a felt need in Germany until the latter part of the nineteenth century. In England the need was felt about 1895, while in America it did not come into existence until about 1905.

Three sets of forces assisted in the development of the American Safety Movement. These forces were:

1. Humanitarian reaction to the increasing number of industrial accidents.

2. Accident elimination which has come to be viewed as an aspect of good management.

3. Mandatory legislation (on statute books) which compels indifferent employers to adopt measures which had been proved to be beneficial alike in industry as in labor.

These three sets of forces brought about the establishment of the Association of Iron and Steel Electrical Engineers in 1907, and this association, in turn, became the
National Safety Council, organized in 1912. At the present time, the National Safety Council is one of the strongest safety forces in the United States.

Since the Industrial Revolution, it may be said that the safety movement has progressed through five stages:

1. Accidents caused by inadequate safeguarding of machines and other physical condition.
2. Human factors of carelessness, ignorance, inexperience, inadequate skill, and improper supervision caused accidents.
3. Refinement (through better organization) of safety functions: the extension, improvement, and engineering analyses of statistical records, the establishment of medical units, and the introduction of psychological studies.
4. Greater attention to problems of safety on the part of major executives and inclusion of safety among questions of general administrative policy.
5. The preparation of safety codes, especially the standard safety codes of the American Standards Association.4

It is with the last three of these stages that man is most concerned. The material explained and listed in the following pages was written with a desire to help strengthen the betterment of safety policies.

CHAPTER II

A SURVEY OF THE GROWTH AND DEVELOPMENT OF NATIONAL SAFETY
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The Automobile

The movement of goods and persons from one place to another has always been a vital problem. Not only has it been a vital problem but also it has been a difficult one. One of the greatest inventions of man was the wheel and axle. The fact cannot be stressed too much, because it marked the beginning of the new order of society which has resulted from the Industrial Age.

From the time of the invention of the wheel and axle transportation has improved steadily. Where formerly foot-paths had sufficed, it became necessary to build roads. Domesticated animals were used to pull vehicles as well as to carry goods and persons.

As time marched on, the ox-cart gave way to the wagon, the wagon gave way to the buggy, the buggy, in turn, was followed by the bicycle, and the bicycle was followed by the self-powered vehicle.

Man has worked for the last three centuries to develop faster and more economical means of transportation. The automobile was the result of this work of man, and the
presence of this vehicle produced an entirely new problem. This problem, the traffic accident problem, is stupendous in its scope. Only a partial explanation of the tremendous loss of lives in traffic accidents can be given. Man has been unable to keep pace with the added duties and responsibilities which transportation has demanded.

Figure 1 shows the increase in horsepower of three well-known cars of different prices for the ten-year period of 1925 to 1934. Little wonder that automobile accidents have become more serious, the way many drive such high-powered cars.

![Graph showing increase in horsepower of three different price classes of cars from 1925 to 1934.]

**Fig. 1—The Increase in Horsepower of Three Well-Known Cars of Different Prices for the Ten-Year Period of 1925 to 1934.**

Drivers must realize that the instant the position is taken behind the wheel of an automobile more power is at their command than was available at the finger tips of the ancestors of man. The automobile can be made an asset or a liability. If we understand the machine we should be able to convert the automobile into a useful vehicle and not into a nuisance.

Knowledge of the mechanical make-up of a car provides the individual with material to cope with the accidents that occur as a result of ignorance. Some of the mechanical phases follow:

The front axle and wheels are arranged to give the driver control of the car. Wheels that are out of line cause the tires to wear irregularly and make the steering more difficult. The front axle and wheels should be checked regularly.

The rear axle and the wheels include the differential. The differential balances the power between the two rear wheels; it also balances the varying wheel speeds. Few individuals understand the value of the differential. When a corner is turned, one of the wheels turns faster than the other. The differential balances this difference in speed, and simplifies the control of the car.

The words "My brakes did not work," should infuriate the safety-conscious individual. Man realizes that brakes are one of our most effective means of car control. When
the brakes are ineffective, the car becomes master of the man, rather than man master of the car.

Brakes can be kept in good condition when the following four features are checked regularly:

1. Brakes squeal when they are glazed or smooth or when they are improperly adjusted. The squealing may be stopped sometimes by removing the sheels and roughening the lining with a stiff brush.

2. Make systematic brake inspection a habit. The loss of a cotter pin may lead to a serious accident. When a lock washer is removed, do not put it back; use a new one.

3. If the brake lining is worn down to the rivets, have the brakes relined.

4. If the car has hydraulic brakes, see that the brake fluid is checked regularly. This is usually done by the mechanic when the car is lubricated, but a double check should be used. The owner should ask if the fluid has been checked when he calls for the car.

Figure 2 shows the average braking distance, the reaction distance, and the average stopping distance of cars at varying speeds when the brakes are in good condition.

When God said, "Let there be light," He must have foreseen not only man's needs at the beginning of time but in the automobile age as well.

The evolution of light has been interesting. There have been four stages in this evolution: (1) oil lamps (used
Fig. 2—Hetzel Brothers Engineered Brake Service, Los Angeles, California, 1937.

in horse-drawn carriages and the first "horseless-carriage"). (2) acetylene gas-lamps (consisted of burners, spherical mirrors, and glass fronts). (3) early electric lamps (made possible by electrical systems, starters, and generators and consisted of a vacuum lamp, carbon filaments, silvered metal
parabolical reflectors, and plain glass lenses); and (4) the present electric lamp (consisting of the new-improved lenses and reflectors and these spread the light fan-wise over the road surface.)

Figure 4 shows the evolution of lamps.¹

Statistics revealed the following facts: (a) that more than 20,000 persons were killed after nightfall during 1935, (b) that night driving is hazardous, and, (c) that accidents caused from night driving are fifty per cent greater than those caused from day driving. When we consider that there is a much greater volume of traffic during the day than at night, the per cent of night accidents is several hundred per cent that of day accidents instead of fifty. These percentages reveal the importance of lights in the increase or decrease of these hazards.

Why should we not be afraid of the dark? Figure 3 will show why we should be afraid of night driving.

![Pie chart showing killed annually during various hours.

Fig. 3—Why We Should Fear Night Driving.](image)

Fig. 4.—The Evolution of Lamps.
During the normal daylight hours of 6 A.M. to 6 P.M., 413,890 automobile accidents resulted in 13,670 deaths. During the normal hours of darkness from 6 P.M. to 6 A.M., 342,610 accidents resulted in 16,230 deaths. The rate of death per accident was 43.5 per cent greater during the hours of darkness than during the hours of daylight.²

A further indication of this fact is to be found in a comparison of deaths in the four rush hours of the morning and the four rush hours of the evening. From Chart 2 we can see that deaths in the four evening hours exceeded the record of the four morning hours by 281 per cent.

From 1 A.M. to 6 A.M., automobile accidents in 1933 numbered 55,150 and deaths, 3,100. The rate of death per accident in this five-hour period was 42 per cent greater than the average of all accidents. Drivers and pedestrians should be afraid of the dark.³

Many angles enter into the cause of accidents after darkness. One feature is the rate of speed at which the car is driven at night. A car should never be driven at night at a speed that will cause "over-driving the headlights." What is meant by the term "over-driving the headlights" is that the distance that can clearly be seen by headlights is limited, and that the individual is likely to let the car speed get

beyond the point where the car can be easily stopped within that limited distance.  

The greatest causes of accidents during night driving are: (1) blinding headlights, (2) one-eyed cars, (3), missing tail-lights. Other causes are (1) driving into intersections with only parking lights on, (2) poorly adjusted headlights, and (3) being without spare fuses or bulbs.

Because of inadequate lighting at night, the pupils of the eyes are enlarged considerably, in order to admit more light to the retina (the sensitive membrane of the eye which receives the image and is connected with the brain by the optic nerve.) With illumination inadequate, however, not enough light is admitted to the eyes to make a clear image upon the retina. Consequently, drivers at night see only those objects that are within relatively short distances—and imperfectly then.

"Only a part of one's sense capacity," says Dr. Luckiesh, Director of the Lighting Research Laboratory of the General Electric Company, "is available for seeing a given object when driving an automobile." "The abilities and sense capacities and sense capacities of a driver," he added, "are largely in use otherwise, which factor of safety in driving, and especially during dusk and darkness." "The ability to see in any case," says Dr. Luckiesh and Mr. Frank K. Moss, "is intricately entwined with the ease of seeing and the latter is influenced by many psycho-physiological factors as well as by external ones ordinarily considered in connection with visibility." Among the outstanding work of Dr. Luckiesh and Mr. Moss in their research on light is the discovery that nervous tension increases as illumination becomes increasingly inadequate. So

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4We Drivers, General Motors Corporation, 1936, p. 21.
it can be said that poor illumination at night produces human effects which by themselves increase the probabilities of serious accidents.\(^5\)

While driving at night, the individual should be ever conscious of the thought that death deals doubly during dusk and darkness.

People are cognizant of the fact that regular car inspection should become a law. In many states this law has been passed. The sooner it becomes a law in all states, the sooner the accident rate will be lowered. In tests that have been made, it has been found that out of every one hundred cars that had been inspected regularly, only about twenty per cent needed any adjustments or repairs.

Although the automobile is an economic necessity, it may be a destroyer of life and property. If handled properly, the car will be a blessing to humanity, but if handled improperly, it will be a menace to humanity. The prevention of accidents by the automobile will result when the driver keeps it in good condition at all times.\(^6\)

The horn, windshield wiper, and mirror are safety devices and should be kept in the best of condition and should be used to bring drives happy memories instead of unpleasant nightmares.

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\(^5\) *They Call Us Civilized*, The Traveler's Insurance Company, 1935, p. 43.

The horn should be used to warn fellow-drivers of the desire of the individual to pass. The windshield wiper provides a clearer view of the road in inclement weather than otherwise would be possible. The mirror provides a rear view of the road, and is a safety device in that the driver need not turn his head to see what is approaching. Many accidents have been prevented by the use of the mirror. Since all mechanical devices remain static until their operation is induced by man, so with the automobile. The machine remains immovable until the driver is injected into the picture. So the mentality of man plays a big part in safe driving.

Every year hundreds of people approach some familiar railroad crossing at such speed that they drive into the path of a speeding train. These accidents happen, not only at unguarded crossings, but also where there are watchmen, gates, and flashing signals.

By means of laws and processes of education automobile accidents at railroad crossings have been greatly decreased. There were approximately five thousand automobile accidents in 1937.\(^7\) These accidents would not have occurred if the slogans, "Stop, Look, and Listen" and "Cross Crossings Cautiously," had been observed.

Overhead bridges and underpasses have done much to eliminate railroad crossing accidents. However, the locations

\(^{7}\)What to Do at a Railroad Crossing, Royal Indemnity Company, 1933, p. 4.
of these bridges and underpasses sometimes present hazards within themselves. If underpasses are approached at an angle that makes a blind curve, then danger is ever present. In crossing overhead bridges and underpasses, the car should be slowed down and kept to the right side. An underpass means, "Slow down."

Automobile accidents at railroad crossings are due principally to drivers' permitting themselves to become so familiar with grade crossings on their daily routes that they cease consciously to "Stop, Look, and Listen." This may go on for months or years until finally the extra train, or a late one (making up time) finds cars or trucks on the tracks too late to avoid a fatal accident. The eyes and ears of drivers see and hear the train, but when these telephone the brain, "the lines are busy," a fraction of a second is not enough time in which to apply the brakes to avoid an accident.

Accidents often happen where there are watchmen, gates, and flashing signals. Watchmen are not infallible, and may fail to signal or lower gates until too late. Flashers do not always work. There is only one answer. The price of safety is eternal vigilance and strict observance of regulations. Never let familiarity with crossings relax your vigilance.8

In the game of driving, as in all other games, poor sportmen are to be found. The best example is the "passomaniac" whose attitudes are exemplified in the quotation which follows:

The kleptomaniac has an uncontrollable impulse to steal. The pyromaniac has an uncontrollable impulse to start fires. When caught, they are put where they cannot harm or endanger others.

But what of the menacing "passomaniac" at the wheel of a high-powered car with his habitual urge to pass everything on the road? Caution and consideration of others mean little to his uncontrolled impatience at delay.

8Ibid., p. 8.
Traffic laws, white road lines, and warning signals do not restrain his craving for speed. He runs "amuck" on every street and highway in the land, leaving a trail of death, injury, and destruction—and all too often he escapes unharmed and uncaught.\footnote{The Passomaniac, Royal Indemnity Company, 1935, p. 18.}

When the individual does not drive a car properly, the driver and every one else on the road is imperiled. Accidents that occur because cars are on the wrong side of the road take a great number of lives each year. When a street car has made a stop, it is a safe policy to wait until the street car begins to move before the motion of the automobile is resumed. Accidents that occur because the driver fails to wait for the street car to continue on its way, are the result of ignorance or of unjustified haste; both of these are inexcusable. Drivers who incorrectly pass cars often continue the habit until disaster results. Eventually the "lane driver" ends with an accident.

To avoid accidents when a car is passed or overtaken these rules should be followed:

1. Stay in line rather than weave through traffic.

2. Pass on the left, never on the right. There is one exception to this rule; street cars should never be passed on the right side.

3. Do not cut in and cut sharply; drive out of the lane gradually, sound your horn, and swing back gradually.

4. Pass at reasonable speed.
5. Pass a street car when it is in motion or when the passengers who descend are protected by a safety zone.

6. Always make sure there is a clear road ahead before another vehicle is passed.

7. Make right turns from close to the right side of the road.

8. Make left turns from close to the center of the road, and turn after the traffic on the opposite side of the street has passed.

9. Approach all intersections prepared to stop. The other fellow may have poor brakes—he may not see you—he may ignore or fail to see the STOP sign or red light set against him. Stop and let the other driver pass in front of you—not crash into you. Never pass at intersections, on curves, or over hill tops.\footnote{Public Safety for the Driver of Tomorrow, California State Automobile Association, Nevada Division, 1937, p. 4.}

The rules which follow should be observed in the use of brakes:

1. When a steep hill is to go down, or when an ordinary hill is to be descended when the car is heavily loaded, put the gear in low speed at the top of the hill, and leave the clutch engaged.

2. When a car is driven down an ordinary hill, the clutch should be left engaged and the gasoline throttle closed. This helps cool the engine, and also makes it
unnecessary to use the brakes so continuously. Never cut the ignition off in hill descent, for this tends to pump the gasoline through the cylinders, and to dilute the oil and wash it away.

3. When the driver desires to come to a stop on a straight-away, the gasoline throttle should be shut off and the clutch left engaged until just before the stop is made; This method is particularly advisable in wet weather, because it lessens the tendency of the car to skid. It also helps to distribute the power of the brakes equally, and assists the action of the brakes. The ignition should not be shut off until the stop is made; it may be necessary to make a quick start.

4. When it is necessary to apply brakes, the wheels should never be locked. If the wheels are locked, not only is the liability of the car to skid increased, but also is the wear on the tires increased.

5. When an emergency stop is necessary, leave the clutch engaged, apply the foot brake, and pull the emergency brake. Do not "lock the wheels." Keep the wheels rolling; otherwise there is danger that the car may slide or skid.\footnote{Specific Accident Problems, Royal Indemnity Corporation, 1936, p. 2.}

There are a few practices that will insure safe parking. These suggestions are:
1. Leave the tail and parking lights on when a car is parked at night.

2. Do not park on curves or intersections.

3. Rules for pedestrians apply immediately to passengers as they descend from a bus or street car.

4. Be sure the car is not parked in any location where its position may obscure the road from other drivers.

5. Do not stop the car on the crown of a hill.

6. Do not park the car on the traveled portion of the highway where a car that passes may be forced out into the other lane with the possibility that an accident may occur.

7. See that the emergency brake is on, and if the car is parked on an incline, put the gear in "low," and turn the front wheels toward the curb or side of the highway.\(^{12}\)

A definite procedure for securing an operator's license should be advocated by all states.

The examination of an applicant for a driver's license has come to be recognized as one of the most effective means to control safety upon streets and highways. A majority of states have already adopted driver's license laws, and it is only a matter of time before this type of regulation will be adopted by every state and nation in the civilized world. The principal purpose of a driver's license is to determine whether or not a person is qualified to drive a motor vehicle skillfully and safely.\(^ {13}\)


\(^{13}\) *Public Safety for the Driver of Tomorrow*, California State Automobile Association, Nevada Division, 1937, p. 7.
An examination for a driver's license should include the following phases:

1. A test of color perception.

2. A vision test with Snellen's Eye Chart.

3. A test of the familiarity of the applicant with highway warning and direction signs and their meaning.

4. A test of the applicant's knowledge of the required hand signals in making turns, stops, or pulling away from curbs.

5. A practical test should be given to the applicant, with the examiner present. The examiner observes the applicant handle the machine, and checks his observance of traffic regulations and his recognition of the rights and privileges of other drivers and of pedestrians.

The pedestrian should be protected because of his seniority and because of his inability to cope with steel.

"Self-preservation" was the first law of nature. It is also the basis of all laws; however, there are only a few laws to protect the pedestrian.

Last year in 826,690 automobile accidents that caused deaths or injuries, 36 per cent involved children and pedestrians that were struck. Of the nearly 300,000 of those hit, over 16,000 were killed and almost 260,000 were injured.

The statement is made by competent experts and supported by statistics that two out of every three automobile accidents resulted from mistakes of drivers—speed, bad judgment, lack of control, and disregard of the cardinal principles of careful, skillful driving.

However, great numbers of pedestrians of all ages, through haste, ignorance, thoughtlessness, or lack of foresight, constantly disregard common caution, and
create the skillful driver's most difficult accident prevention problem.14

Recent study of fatal accidents in thirteen of the largest cities in the country shows that 75 per cent of fatal automobile accidents involve pedestrians. In some cities this accident rate reaches 87 per cent. In two out of three of these accidents the pedestrian is over fifty years of age, and in every third accident over sixty years of age. In 1936, more than 4500 children under the age of fifteen were killed by motor vehicles. This says very plainly, "Look out for young and old pedestrian."15

It is difficult to anticipate the reaction of a pedestrian. Fright, sudden illness, undue haste, or inexplicable reactions may cause the pedestrian to do the unexpected. Too, pedestrians frequently stumble, trip, fall, or step backward off a curb. Do not depend on the pedestrian to take care of himself; do it for him.

Those who work for the safety of the pedestrian strive to impress the motorist with his obligation to the pedestrian. Many accidents are the fault of the pedestrian; he should remember that he is at a disadvantage, and many times his only recourse is the law of preservation. Regardless, the pedestrian should remember that even if the right of way is his, that fact does not protect flesh and bones against steel that moves.

Pedestrians should cross the street with the signal. If this is done, there is little likelihood of an accident. Remember that fast-moving vehicles cannot stop quickly.


15 Ibid., (Look out for Young and Old Pedestrians), Vol. II, No. 1, p. 3.
Few accidents will occur if a driver never over-drives his visibility. Some conditions that affect visibility in the daytime are fog, smoke, rain, and snow. As long as there is light we may skip around at a lively rate over this old globe of ours. But every now and then Mother Nature decides to put us in our place, and of all her devices to make us slow down, none is more effective than mist and fog. When there is mist or fog, the driver must make his way cautiously through that blinding screen. One thing is true; in spite of all our progress, transportation still depends on pairs of eyes in human heads.

Scientists who have studied fog say that it is composed of tiny drops of water. These drops are so small and light that they hang in the air, and so close together that light can hardly get through them. Instead, these little drops act like tiny convex mirrors. When we try to pierce these drops with a beam of light, a great deal of the light is thrown right back at the driver; so the effect is just like a great, gleaming curtain in front of him.16

Figure 5 shows the reaction of fog and mist to light.

![Diagram of light beam reflecting off mist drops]

**Fig. 5—How Mist Drops Reduce Illumination.**

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16*No Drivers*, General Motors Corporation, 1935, p. 16.
When the car is driven at night, the driver faces the same conditions that exist during the day. In addition he has to contend with headlight glare. Headlight glare at night and sun glare during the day are synonymous terms.

The driver should never look directly at the headlights. The eyes should be focused on the right-hand side of the road, and the car should be kept as close to the right hand side of the road as possible. This relieves the possibility of tension on the part of the driver when he passes another car.

Other problems which confront the driver are:

(a) Bicycles and Horse Drawn Vehicles.

Riders of bicycles and drivers of horse-drawn vehicles must abide by the same rules as do drivers of motor vehicles. All vehicles which move slowly should be driven on the extreme right of the road. Lights that are used at night are just as necessary for bicycles and wagons as for automobiles.

Rules for the bicycle rider as given by the Department of Public Safety of Texas are:

1. Obey all traffic laws, signs, and signals.
2. Display a white head lamp and a red tail light if the bicycle is ridden between one-half hour after sunset and one-half hour before sunrise.
3. Be alert for traffic from all directions.
4. Give both pedestrians and motor vehicles the right-of-way.
5. Do not leave a driveway or cross a street or highway until you look in both directions, and wait for traffic that approaches.
6. Do not ride on streets where there is considerable traffic.
6. Do not hitch to motor vehicles or street cars.
9. Do not ride double, nor perform tricks as you
ride on streets or highways.
10. Do not play games on your bicycle in the streets
or highways.
11. Always keep your bicycle in good condition.
12. Ride near the right hand pavement edge.
13. Do not weave sideways on your bicycle.\(^7\)

All the phases that have been discussed in the preced-
ing pages show one startling fact: Man has learned how to
invent machines, but he has not learned to control them.
Man must be made to realize that the aim of safety-instruc-
tion is three-fold:

1. To develop and make habitual safety conscious-
ness. Men and women must think in terms of safety for
themselves and for others. The habitually safety-
conscious person will always look in both directions
before he crosses the street. He will not walk out into
the street from between parked automobiles. If he
drives, he will not attempt to pass on a blind curve.

2. To bring about safety intelligence. It is not
enough to simply know that one thing is safe and another
unsafe. Man should know why. Why should he reduce his
speed when he drives at night? Why should he wait, be-
fore he walks across the street, for an oncoming car to
stop, even if the stop signal has just been shown against
the driver?

3. To create a safety conscience. This is per-
haps the most important of all. Man who has a safety
conscience is pleased with himself when he has employed
safety practices, and is uncomfortable and sorry when
he has violated them.\(^8\)

To bring about a successful completion of the above
mentioned three-fold aim, the knowledge, attitude, and re-
action of the individual must be considered.

\(^7\)Rules for Safe Bicycle Riding, State of Texas,
Department of Public Safety, Safety Division, 1938, p. 1.

\(^8\)Forrest V. Routt, District Superintendent, The Safety
Education Program of Martinez, California, 1936, p. 16.
The driver should know thoroughly the vehicle rules, laws, and driving rules of his state. A rigid examination should be passed before an operator's license is issued. Most states are much too lax in this matter. The driver needs a fair knowledge of the construction of a car, its mechanism, its system of braking and lighting, lubrication, how to pull out of a skid, and how to avoid skidding. When the safety of others is jeopardized, the safety of the driver is also jeopardized. Traffic rules are based on common sense, and the driver should conduct himself accordingly.

To be able to drive successfully, a right attitude is the first requisite. No individual should drive with worry and preoccupation as companions. Details that are overlooked when the driver is in a comfortable frame of mind become distractions. These disturbances upset the mental balance of the driver, and bring about distortions of judgment.

By reaction is meant the time it takes to "size up" a situation, to decide what to do about the predicament, and to perform the necessary action. The reaction time is usually shorter with a younger person than with an older one. The reaction time varies in individuals; it depends on the physical condition of the driver. Fatigue, drowsiness, alcohol, and drugs all have a definite effect as to reaction.

Figure 6 shows human actions that produce death, and these actions are inextricably associated with knowledge, attitude, and reaction.
Fig. 6.—Human Actions That Produce Death

To give one of the most delightful philosophies that has been found toward motorists and pedestrians, the article, "Seventeen Years Behind the Windshield" is quoted:

I have evolved a philosophy of my own concerning other motorists and pedestrians, based upon many years of close and profane observation. I go forward in my motor car on the assumption that everyone else on the road, afoot or in car, is a lunatic out for the afternoon without guards. I do not depend upon the boulevard stop signs, or red signals flashing, or the waving of a human hand, or gestures conveying questionable information. My intent is to avoid all contact with other motor cars and stand ready to dodge. If I have the right of way, I unhesitatingly surrender it to the other fellow, for I have been in hospitals to visit friends who had the right of way and can prove it through bandages. I assume that a man driving out of a side street will run into me if he possibly can do so, that a lady signaling a left turn will naturally make a right turn,
and that a person standing on the curbstone is simply waiting there to commit suicide by jumping under my front wheels.

This might seem to be an extreme way of looking at traffic, but you would be surprised at how many things you do not hit in a year’s cruising.

The pedestrian who burns me up to a cinder, and must irritate other motorists, is the haughty, aloof, or dumb—I never knew which—the haughty, aloof, or dumb individual, male or female, who strolls across the street directly in your path and never designs to turn his head and look at you. This type of submerged intellect deliberately places his life in the hands of the motorists, who may or may not be warmed with wine, saying: "My life, as you see, is of no value to me, and you may run over and kill me, if you do desire, as I am in no way interested."

I swear violently at passing motorists who go by like lightning, knocking bits of paint off the front fender, but I have long passed the stage where I race with them. There was a period when I declined to let anyone pass me, but I recognized this as an inferiority complex which should be combated. Many of the motorists who rush by other machines are the sad victims of an inferiority complex and deserve sympathy. They realize they are pretty poor specimens of the human race, and do not compare well with their fellows, are not witty, or brilliant, or charming, or handsome; cannot build a good mouse trap, do card tricks, shine socially, play a piano, or make a speech. Their only chance to indicate superiority is to pass another motor car going up a hill, and thus they should be forgiven for dashing by and cutting in.

A friend of mine, normally a calm man, was recently enraged by a passing lunatic, who shoved him into the soft shoulder and cut by, nearly shaving off a fender. Giving way to futile rage, my friend swore a loud oath, got under full headway and rammed the passer-by, now going peacefully down the road. He smashed the tank of the passer-by's car, it caught fire and both cars were scroched; so no matter how angry you may be with the road hogs, do not ram them from the rear. Nature will attend to them.19

19 Seventeen Years Behind the Windshield, Saturday Evening Post, January 13, 1934, pp. 2-3.
Summed up in a few words, we may say that the traffic accident problem is a question of individual responsibility. It is your problem and my problem. The nation looks to its young drivers to lead the way out of the present predicament. The automobile should be the servant and not the master of man. It is our hope that the "Driver of Tomorrow" will not shirk this newly imposed responsibility, but will accept the challenge and make the world a better and safer place in which to live.

The Safe Highway

The general conditions of highways, the types of construction used and the number of hazards such as curves, hills, and grade crossings, have a direct bearing on the safety of one who makes use of the highways.

Because of the financial burden involved, it has been necessary to leave curves, hills, grade crossings, underpasses, and various other physical hazards in the road itself. The hazards of the road were not of a serious nature, nor did they result in serious consequences, until the automobile was improved to the point that high speeds were possible. These problems of speed and the minimizing of road hazards have been met by marking the hazards with signs. Each sign is intended to convey to the driver a consciousness or a warning that a condition is present of which he should be aware. Knowledge however, is not enough. If the signs serve their purpose, their warnings must be heeded. These signs are placed along the road to protect the driver.

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The careful driver always obeys highway signs and follows the instructions or directions.

Traffic laws and regulations must be uniform in all states; they must be clear, reasonable, up-to-date and simple enough for the people to understand; they must be justifiable for police protection. Practical traffic laws are also necessary, if the remedies that are suggested by traffic engineers are to be used effectively. The great needs for uniformity were recognized as early as 1924, when the first National Conference on Street and Highways Safety was held. The Second National Conference was held in 1926, the Third in 1930, and the Fourth in May, 1934. All institutions throughout the entire nation which were concerned were represented at the latter meeting. All features in connection with motor vehicle traffic operation on streets and highways were covered. The best thoughts of the best minds had been embodied in the codes and regulations that had been drafted. President Franklin Delano Roosevelt had launched an appeal to the State Administrations and urged them (1) to adopt these traffic regulations at an early date and (2) to provide the necessary enforcement act. This was done to lessen the toll we pay in human lives and suffering.

The reasons advocated for these policies are well expressed by the following quotation:

Uniformity in traffic regulations, permanently established, and backed by justified law enforcements,
will remove the lawless and arrogant driver from the streets and highways, while public sentiment will brand them as an outcast. 21

Modern highway speeds and complex intersections require signs which can be seen at long distances and understood instantly.

A uniform sign chart has been adopted and is used by most states. Signs have been standardized, and may be classified as follows: Regulatory, Warning, Guide.

Regulatory sign is used to indicate the required method of traffic movement or use of public highway. Regulatory signs are placed to notify traffic of provisions in the law which, if disregarded, constitute a misdemeanor. This group contains stop signs, speed limit signs, and signs that regulate movement or parking.

The stop sign has a distinctive red color and is octagonal in shape. Other regulatory signs are usually black letters on white background, and are either square or rectangular in shape. Figure 7 shows some examples of regulatory signs.

A warning sign is used to designate conditions which are actually or potentially dangerous to highway users. Warning signs have black letters on a yellow background. This group of signs is used only to indicate some physical condition of the highway or an operation hazard.

21 Enough, Engineering Division, Maryland Casualty Company, Baltimore, Maryland, 1937, p. 2.
Figures 8 and 9 show some examples of warning signs.

**Fig. 7**—Examples of Regulatory Signs.

**Fig. 8**—Warning Signs (Slow Type).

**Fig. 9**—Warning Signs (Caution Type)
A guide sign is one used to inform traffic. Guide signs are composed of black letters on a white background. Route numbers, route signs, detours, and by-passes are indicated by guide signs.

Figure 10 shows some examples of guide signs.

Fig. 10--Guide Signs

In addition to the highway signs, there are highway markings to make driving safer for the motorist. The white line is the most familiar of all highway markings. It is used to divide a highway into traffic lanes for the guidance of the motorist. A secondary use is that of a guide which in fog and storm helps to keep the car on the road.

Quotations from the National Vehicle Code concerning these points are as follows:

The white line is used to make highways into the two lane, three-lane, and four-lane. Cars must be driven on the right half of the highway and as close as practical to the right hand curb or edge of the highway, except on one-way streets when the right side is impassable, or to get into position for a left turn or to overtake another vehicle. On a two-lane or unmarked highway, a car must be kept on the right hand side of the white line or center of the highway at all times except under the condition named.22

22National Vehicle Code, Section 525, Department of Interior, 1935.
On a three-lane highway the center line may be used only to pass a vehicle or in preparation for a left turn. This turn is to be made only when it can be accomplished safely. In some cases the center-lane may, by official signs, be allocated for the exclusive use of traffic that moves in such direction as may be designated.

On a four-lane highway, the two lanes on the right side of the center of the highway may be used by traffic that moves in the same direction.

Wherever a highway is divided into lanes, a car must be driven entirely within a single lane and cannot be moved from that lane until such move can be made with safety.

A car cannot lawfully be driven in the left hand of the center of a highway when it approaches the crest of a hill; on blind curves; within 100 feet of any bridge, viaduct, or tunnel; or within 100 feet of an intersection or railroad right of way. To protect the motorist a double white line is frequently placed down the center of the highway by the State Department of Public Works, Division of Highways, at locations where it is dangerous to drive on the left side of the center of the highway. When signs that read "No Passing Over Double Line" accompany these lines, the signs must be obeyed. This requirement is established under the authority of Vehicle Code, section 465, which gives the Department of Public Works, Division of Highways, authority to direct traffic.

Other markings are white marks that are used to indicate a change in the number of traffic lanes, railroad crossings, school crossings and pedestrian crossings, in addition to the appropriate warning signs.

Traffic signals are also safety devices, installed to aid and protect the driver and the occupants of his vehicle. Many accidents occur because a driver tries to ease through an amber light to beat the red light while at the same time

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23Ibid., Section 526.  
24Ibid., Section 525.  
25Ibid., Section 526.  
26Ibid., Section 530.
another driver that may come from the side times his approach so as to just hit the green. When this is done the speed of the first driver is too fast to enable him to stop or to avoid the car that attempts to ease through. No driver has the right to race a light or to ignore a signal. No matter how careless a driver may be of his own life, he cannot divest himself of his obligation to fellow human beings on the road.

No driver has the right to turn a vehicle or change its course of travel unless such movement can be made with reasonable safety and then only after an appropriate signal has been given. The proper arm signals are as follows:

1. Left turn—hand and arm extended horizontally beyond the side of the vehicle.

2. Right turn—hand and arm extended upward beyond the side of the vehicle.

3. Stop, or sudden decrease in speed—hand and arm extended downward beyond the side of the vehicle.

In cities the traffic is regulated at certain intersections by traffic signals. These signals may be located on each corner of the intersection or on two diagonally opposite corners, or suspended in the center of the intersection. It is important that the driver of the motor car carefully observe each intersection to determine whether or not traffic signals are located there and are in operation.²⁷

Traffic signals of various types are used. The most common is the type using three colored lights arranged vertically in the following order, beginning at the top: red, yellow, green. If the red light shows, the driver must stop until the green light shows, when he may proceed. If the yellow light shows, it is indicated that the signal is about to change and the intersections should not be entered. The purpose of the yellow light is to permit traffic in the intersection to clear before cross traffic enters the intersection. Some types of signals use no yellow lights. In certain types of signals a bell is rung to indicate that an immediate change of the signal is about to take place.

A flashing yellow light ordinarily means CAUTION--GO SLOW. A flashing red light ordinarily means STOP-THROUGH STREET or HIGHWAY.

There are certain regulations pertaining to parking and these are embodied in the following quotation:

Where vehicles may park: No person shall stop, park or leave a vehicle, whether attended or unattended, upon the paved or main traveled portion of any highway outside a business or residence district when it is practicable to stop, park, or leave such vehicle off such part or portion of said highway. 28

Where parking is prohibited: No person shall stop, park, or leave any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or traffic control signal device, in any of the following places:

a. Within an intersection except beside curbs as may be permitted by local ordinance.

28 National Vehicle Code, Section 582, Washington, D.C.
D. On a crosswalk.

c. Between a safety zone and nearest curb opposite such zone or along such curb for such a distance as may be indicated by either a sign or red paint on such curb erected by local authorities.

d. Within fifteen feet of the driveway entrance to any fire station.

e. In front of a public or private driveway.

f. On a sidewalk.

g. Alongside or opposite any street or highway excavation or obstruction.

h. On the roadway side of any vehicle parked at the curb or edge of a highway.

i. Alongside curb space authorized for a passenger loading zone when such zone is indicated by a sign or red paint on the curb erected or placed by local authorities.

j. In a tunnel or tunnel.

Parking on highway: In no event shall any person stop, park, or leave a vehicle, whether attended or unattended on any highway outside of a business or residence district unless at least 15 feet of the width of the paved or main traveled portion of the highway opposite such vehicle is left unobstructed, except in cases where the vehicle is disabled to such extent that it is temporarily impossible to move it.

Manner of parking: Except when merchandise is being unloaded or loaded, no person shall park any vehicle or leave it standing at the curb or edge of a through highway unless both right wheels of such vehicle are within 16 inches of the curb or edge of such highway. Local authorities may permit angle parking under certain circumstances.

Parking near fire hydrant: No person shall stop, park, or leave any vehicle within 15 feet of a fire hydrant except when local authorities indicate a different distance by signs or markings, and except when such vehicle is attended by a licensed operator or chauffeur who is seated in the front seat and who can immediately move such vehicle in case of necessity.

Unattended Motor Vehicles: No person in control or in charge of a motor vehicle shall permit it to stand on any street or highway unattended without first effectively setting the brakes and stopping the motor.

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29Ibid., Section 586.
30Ibid., Sections 583, 584. 31Ibid., Sections 588.
32Ibid., Section 587. 33Ibid., Section 595.
Many serious accidents are caused when brakes that are ineffectively set allow vehicles to start in motion, even on a slight incline.

City authorities that adopt parking regulations and indicate them by the use of paint upon curbs, must use the following colors for the purposes indicated and for no other purposes:

Red indicates that no vehicle may be stopped or parked, whether attended or unattended, except that a bus may stop in a red zone marked or signposted as a bus loading zone.

Yellow indicates a vehicle may be stopped only for the purpose of loading or unloading passengers or freight for such time as may be specified by local ordinance.

White indicates that a vehicle may be stopped only for loading or unloading passengers for such time as may be specified by local ordinance.

Green indicates that there is a time limit parking specified by that local ordinance.34

As improved methods of transportation were developed, a companion problem, that of highway hazards, was created to provide adequate roads over which to travel. The first roads of America were deep-rutted trails made by buffalo, moose, elk, and deer that beat a path over hills and across plains in search of food and water. The Indians used these trails for foot-path transportation and later to ride over on horseback. Still later came the stock trails, then came the wagon, and finally the more modern forms of transportation.

Turnpike, or the construction of toll-roads, began on an extensive scale in 1830. Shortly after that the bicycle craze swept the nation. The bicyclists' desire to increase

34Ibid., Section 472.
the length of the rides led to a demand for the improvement of rural roads.

It is quite possible that the cycle enthusiasts were responsible for the establishment of the first state highway departments, the forerunners of the governmental units that now have charge of highway systems in all states.

Today more than 3,000,000 miles of roads and highways are within the boundaries of the United States. Highway development has never been able to keep pace with the increase in the demands of automobiles. The tremendous expense involved in highway construction and the permanent nature of this work have resulted in slow progress. At the same time the traffic of motor vehicles has developed very rapidly, and the development of highways has been unable to compete with that rapid development. Automobiles are constantly improved each year; new improvements are added and more cars are placed on the highways.35

Changed traffic conditions have already made hazardous and obsolete many roads in the highway system that exists today. The automobile of today is capable of faster speeds than the majority of highways will permit with any degree of safety.

The principal highway hazards are as follows:

1. Railroad Grade Crossings

35Highway Hazards, New York State Automobile Association, 1936, p. 15.
2. Dangerous Intersections
3. Blind Curves
4. Glazed and Slippery Pavements
5. Steep Grades
6. Soft Road Shoulders
7. Narrow highways, Bridges, and Subways.

Railroad grade crossings are dangerous, and the only safe rule to follow is:

When in doubt as to the approach of a train, stop and proceed in low gear over the tracks if the way is clear. If at any railroad crossing a signal indicates the approach of a train, the car must be stopped not less than 10 feet nor more than 50 feet from the tracks, then proceed across the tracks if it is safe to do so. When a human flagman, at a railroad crossing, signals the approach of a train, the car must be stopped and may not proceed until the flagman ceases to signal. 36

Dangerous Intersections and Blind Curves must be considered. An intersection is "blind" when traffic on the road or curve that intersects cannot be seen from a distance of 100 feet or more. Blind intersections and curves must be approached with caution. Fifteen miles per hour is the lawful speed when a blind intersection or curve is approached.

Neither turns nor sharp curves can be taken at a high rate of speed. When a car is in motion and moves in a straight line, centrifugal force tends to keep the car in a straight line even when the driver attempts to go around a curve. This centrifugal force is simply the law of momentum, and momentum plays the major part when a car rounds a

36Vehicle Code, Section 575.
curve. Momentum not only wants us to move, but also wants us to move in the same direction. While momentum tries to make the vehicle go straight instead of curving our course, it operates under the name of "centrifugal" force. This centrifugal force causes a side thrust of "push" toward the outside of the turn, or curve. Everyone who has ridden in a car has felt this side thrust. The greater the speed on a curve or turn, the greater the side thrust. The side thrust as it becomes greater raises the inside wheels off the ground, then pushes the car off the road, and finally turns it over. To overtake and pass a car on a blind curve is prohibited. The horn must be sounded whenever the view on a curve is obstructed.\textsuperscript{37}

Slippery pavements are made so by snow, ice, rain, fog, oil, leaves, loose gravel, and other foreign substances. On such a pavement the tires have little traction, and it is this lack of traction that tends to cause a car to skid, particularly if the wheels of the car are turned or the brakes are applied suddenly. To overcome this type of hazard, the tires must have a good tread, the speed must be reasonable, the directions of the car must not be changed suddenly or at too high a rate of speed, and the brakes, when applied, must be applied slowly. Slippery pavements on state highways are usually marked by highway signs.

\textsuperscript{37}Ibid., Sections 511(a), 529, 530(b), and 597.
The danger of steep grades lies in the descent. A car should not be driven down hill in neutral. The engine of the car makes a very good brake when no fuel is given and the car is in gear, because the force required of the rear wheels to turn the engine over uses the energy developed by the forward progress of the car, and thus keeps the speed down. When a steep grade is descended, the car should be kept in gear and the brakes used to supplement the brake action of the car. If necessary when the descent is begun the gears should be shifted to a lower-gear to increase the brake action of the engine. The lower the gear, the greater the brake action of the engine because the engine turns over faster with each revolution of the driving wheels. Grades on state highways are indicated by highway signs.38

Soft road shoulders are dangerous for the reason that if a car gets off the pavement and onto the soft shoulder, particularly at a high rate of speed, the driver may lose control of the car. The State Department of Public Works has erected signs that designate soft shoulders wherever they exist. No car should be driven off the pavement onto a soft shoulder except to stop, and then only if the car proceeds at a low rate of speed.

Narrow highways necessitate care on the part of the

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driver. If it is necessary to pass another car, extra caution should be observed so that the car will be kept on the pavement without crowding the car that is to be passed. Narrow highways, bridges, and subways on the highway are usually indicated by highway signs.

Table 1 shows the road location of automobile accidents in 1937.

**TABLE 1**

ROAD LOCATION OF AUTOMOBILE ACCIDENTS WITH PER CENT AND NUMBER KILLED AND INJURED IN 1937

<table>
<thead>
<tr>
<th>Road Location</th>
<th>Killed</th>
<th>Per Cent</th>
<th>Injured</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Intersections</td>
<td>9,430</td>
<td>23.4</td>
<td>394,630</td>
<td>32.3</td>
</tr>
<tr>
<td>Rural Intersections</td>
<td>1,650</td>
<td>4.1</td>
<td>46,400</td>
<td>3.8</td>
</tr>
<tr>
<td>Highway</td>
<td>15,600</td>
<td>38.7</td>
<td>220,410</td>
<td>18.1</td>
</tr>
<tr>
<td>Driveway</td>
<td>280</td>
<td>0.7</td>
<td>10,990</td>
<td>0.9</td>
</tr>
<tr>
<td>Curve</td>
<td>4,250</td>
<td>10.5</td>
<td>69,600</td>
<td>5.7</td>
</tr>
<tr>
<td>Street Intersections</td>
<td>6,720</td>
<td>16.7</td>
<td>455,710</td>
<td>37.3</td>
</tr>
<tr>
<td>Railroad Crossing</td>
<td>1,730</td>
<td>4.3</td>
<td>7,470</td>
<td>0.6</td>
</tr>
<tr>
<td>Bridge</td>
<td>640</td>
<td>1.6</td>
<td>15,880</td>
<td>1.3</td>
</tr>
<tr>
<td>40,300</td>
<td>100.0</td>
<td></td>
<td>1221,090</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In spite of caution signs and signal lights, more than 40 per cent of car and truck accidents occur at intersections. Yet, to cross successfully any intersection is only a matter of the sufficient time and care. Thousands of people have lost their lives or suffered irreparable injuries because they took one chance too many.

A driver who blames the other fellow for a collision frankly admits that he depended on the other fellow, and not on himself to get across an intersection safely. 39

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39 *Intersection Collisions, Royalty Indemnity Company,* 1936, p. 3.
When a driver approaches an intersection, it is advisable to follow the following rules:

1. Place car in the proper lane, and give hand signals well in advance of the turn.

2. "To make a right turn at an intersection approach the right intersection and make such right turn in and from that part of the roadway as close as practicable to the right-hand curb or edge of the street or highway."\textsuperscript{40}

3. "To make a left turn at an intersection approach the intersection and make the left turn in and from that part of the right half of the street or highway nearest the center line of the roadway, and unless otherwise directed by markers, buttons or signs, pass immediately to the right of the center of such intersection."\textsuperscript{41}

4. Do not approach an intersection at a speed greater than twenty miles per hour.

5. At blind intersections where a clear view of the cross road or street is not obtainable, slow down or even stop if necessary, and see if the way is clear before going ahead.

6. Always obey traffic signals and warning signs. If there are lights, do not start on the caution (amber) light. Someone at this minute may try to squeeze through on the right angle road.

\textsuperscript{40}\textit{Vehicle Code}, Section 540. \textsuperscript{41}\textit{Ibid.}, Section 540.
7. Never insist on the "right of way." The driver may have the legal right, but may not live to prove the point. 

8. U turns should be avoided, even at intersections, if possible. 

Observing the rules above may cost the driver a few moments of time, but the rules will not cost a life. 

Figure 11 shows the three general types of intersections.

![Diagram of intersection types]

Fig. 11—The Three General Types of Intersections

When two vehicles approach or enter an unmarked intersection at approximately the same time, the driver of the vehicle on the right possesses the right of way.

There are two exceptions to this rule. First the driver of any vehicle traveling at an unlawful speed shall, in case of an accident, forfeit any claim to right of way. Second, the car which reaches an intersection first when traveling at lawful speed naturally has the right of way.

Upon the approach of an authorized emergency vehicle and the sound of its siren, the driver of every other vehicle must give the emergency vehicle the right of way and must drive to a position parallel to, and as close as possible to, the right-hand curb or edge of the street or highway, clear of any intersection, and STOP and remain stopped until such emergency vehicle has passed. 42

42 Vehicle Code, Section 554.
The driver of a vehicle must give the right of way to a pedestrian who crosses the street or roadway within any marked crosswalk or within any unmarked crosswalk at an intersection.

Whenever any vehicle has stopped at a crosswalk to permit a pedestrian to cross the roadway or street the driver of any other vehicle that approaches from the rear must not overtake and pass the stopped vehicle.43 Pedestrians that cross a street or roadway at any point other than within a marked sidewalk or within an unmarked sidewalk at an intersection must give the right of way to all vehicles upon the roadway.44

At intersections where traffic is controlled by a signal device or by police officers, pedestrians must not cross the street or roadway against a red or stop signal.45

No pedestrian shall walk upon any roadway outside of a business or residence district, other than close to his left hand edge of the roadway.46

No person shall start any vehicle which is stopped or parked on a street or highway until such movement can be made with safety.47

The driver of any vehicle who approaches a person wholly or partially blind, who carries a cane or walking stick white in color, or white tipped with red, must immediately come to full stop and must take such precautions before proceeding as may be necessary to avoid injury to the blind person. The use of white canes or white canes tipped with red is reserved by law to the blind or partially blind.48

The preceding pages are filled with rules; yet rules have governed mankind since Adam, who, by the way, was the first man to disobey a rule and suffer the consequences.

43Ibid., Section 560.
44Ibid., Section 562. 45Ibid., Section 563.
46Ibid., Statutes of 1935, Chapter 126, p. 317.
47Ibid., Section 543.
48Ibid., Statutes of 1935, Chapter 126, p. 317.
The establishment of rules by man for his own government to bring the greatest good to the greatest number is one of the characteristics which distinguished him from his less intelligent companions on earth.

Courtesy of the road means giving another driver the "breaks," including at times, the relinquishment of certain rights involved in the rules of the road. "Live and Let Live" should be the motto of every automobile driver.

Safety in the Home and on the Farm

Home, which should be the safest, happiest place in the world, produces more accidents than industry or any other unit of accident production.49

The discussion which follows includes not only descriptions of the causes of accidents in the home and on the farm, but also various suggestions for an educational program of safety procedures.

Death by automobile is spectacular. Frequently the motorist is to blame. Death in the home is much less sensational than death by automobile but nevertheless is as real. Usually, no damage can be collected. There are no law suits. In the majority of places, safety in the home is much more of a problem than safety on the highway. In industry and on the highways, legislation will accomplish

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some phases of safety. Education is the only factor that will promote safety in the home. 50

Statistics concerning accidents on the farm and in the home for the year 1934 are available and enlightening. Accidents on the farm in 1934, had disastrous results. More persons, it is stated, met accidental death during 1934 in agricultural pursuits than in any other single occupation. "There were 4,400 deaths as a result of farm accidents." 51

Accidents in farm and city homes in 1934 were also extremely disastrous. Such accidents killed 34,500 people, just 1,500 less than were killed on the highway. They caused injuries to nearly 5,000,000 people, which was twice as many as those on the highways and at work combined. These home accidents permanently disabled 150,000 men, women and children. This number represents almost as many accidents as those which occurred jointly during the same period on the highways and at work. 52

Deaths from home accidents in 1934 classified by the American Red Cross are as follows: 53

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Poisoning (gas excepted) 1,500
Poisonous gases 1,000
Conflagrations, burns, explosions 5,400
Mechanical suffocation 800
Firearms 800
Falls 14,000
Other Home accidents 6,300

The home is interpreted to mean the house, the yard that surrounds the house, and the garage. In rural areas, the home includes the entire farm. Every type of home from the palace of the millionaire to the hut in which the most humble person lives, has its potential accidents.

The chief causes of loss of life in the home are: falls, burns, asphyxiation, and suffocation, poisons, and electricity. Due to the educational work of many agencies accidents from poison seem to be on the decrease.

The farm home includes all the hazards of the city home, plus many dangers peculiar to the farm. In most rural homes, hot water is obtained only when the water is heated on the stove in large vessels. Risks of scalding are involved because of the size of the containers. Handles of pans are sometimes turned in such a way that little hands that are directed by an insatiable curiosity pour the contents over little bodies with disastrous results. All too frequently, homemakers are guilty of setting tubs of hot water on the floor where children may fall into them.

Lye is a substance used in many homes. Nothing is more terrible than the results of accidents with lye. Children do not realize this danger, and they sometimes eat lye. If
death does not occur, the child is usually mutilated for life. If lye is used in the home, it should be labeled properly and kept where children cannot reach it, as a safety measure. Children should be taught not to handle such substances. Other household cleaners that contain lye should be handled with the utmost care.

The farm home is more apt to contain antiseptics that are poisonous than the city home. These antiseptics are used to treat the animals about the farm. All poisons should be kept in cabinets where only responsible adults have access to them.

In 1934, the National Safety Council tabulated deaths from home accidents according to their relative importance in the following way:

**All Ages:**
1. Falls
2. Burns, scalds and explosions
3. Asphyxiations and suffocations
4. Poisons
5. Firearms
6. Cuts and scratches

**Accidents to persons under five years of age:**
1. Burns, scalds and explosions
2. Falls
3. Asphyxiations and suffocation
4. Poisons
5. Firearms
6. Cuts and Scratches

**Accidents to persons five to fourteen years of age:**
1. Burns, scalds and explosions
2. Falls
3. Firearms
4. Poisons
5. Asphyxiations and suffocation
6. Cuts and scratches

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Specifically the items which follow are important in causing injuries and death:

1. Falls:
   From high places—chairs, tables, play apparatus, trees, windows, and porches.
   On stairs, steps
   Over obstructions on floors, such as playthings and tools.
   In bathtubs and showers.

2. Burns, scalds, and explosions
   To play with matches.
   To play near unsafe fireplaces, bonfires.
   To play with candles
   To fall against stoves, fireplaces, pipes and radiators.
   To upset hot liquids: a pan on stove or table, a coffee pot, a cup of coffee or tea.
   To play with fireworks.
   Explosions of fluids used to clean clothes.

3. Asphyxiation and suffocation:
   Suffocation in bedclothing (particularly deadly to young babies).
   To cut off air supply by swallowing foreign objects, such as coins, marbles or pieces of rubber balloons.
   To inhale poisonous gas: illuminating gas and carbon monoxide gas (the latter given off by automobiles engines, in particularly deadly because it is odorless, colorless and tasteless)

4. Poisons:
   To swallow cleaning fluids accidentally.
   To swallow medicine accidentally that is intended for external purposes only
   Contaminated food
   Plants
   Animals

5. Firearms:
   To play with guns that are supposedly unloaded.
   Careless use of small firearms, such as air-rifles and B. B. guns (more than half the eye accidents to children are caused by these small weapons)
   Accidental discharge of weapon deliberately or accidentally pointed at a person. Failure on the part of the hunter to put the loaded weapon through a fence and crawl through after it.

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6. Cuts and scratches:  
   To play with knives and pointed objects.  
   Incorrect or careless use of hand tools and knives.  
   To step on broken glass, nails and wire.  
Statistics of the American Red Cross show that,  
except for traffic accidents, falls are the most frequent  
source of injury. Falls occur from a great variety of  
conditions which together account for one-sixth of all  
accidental fatalities.  

There are several types of falls, as follows:  

On stairs: A fall down stairs may result from lack of  
a handrail, lack of a gate at the head of  
stairs in case of babies, insufficient  
ilumination, sharp turns, narrow treads,  
from articles left on the steps, water or  
greasy material on the steps and insufficient  
space on the landings. Back stairs, attic  
stairs, and cellar stairs are the chief  
offenders in the home.  

By Slipping: Another cause of falls arises from slipping  
in soapy bathtubs, on wet or icy porches  
or on outside steps.  

From Ladders: Ladders require frequent inspection for  
the sake of safety. Many ladders which are  
in daily use would be better used if thrown  
in the fireplace. One should remember, too,  
that accidents occur when objects fall

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from ladders.
It is a bad habit to stand on chairs, crates, or insecure stopladders. Serious and even fatal injuries have resulted when persons have fallen only two or three feet. This hazard is especially great for elderly people.

When not in constant use, all firearms should be taken apart and put away safely. If it is necessary that they be used immediately, they should be placed where children cannot possibly reach them.

Both the guns and the ammunition should be placed in a safe hiding place. Many of the accidents caused by firearms occur because it was thought that the guns were not loaded.

If a gun is handled, one should always consider it loaded. Never point the gun at anyone, nor hold it carelessly.

If the gun is held in the hands, keep the safety catch on and never cock the gun. When it is time to fire the gun, release the safety catch, and then cock the gun.

Check the gun before it is to be fired, to be sure there is no mud or foreign object in the barrel. A clogged barrel may cause the gun to explode.

After the hunt, be sure to unload the gun, put the ammunition in a safe place, then lock up both the gun and the ammunition.

Poisons: The number of medicines or antiseptics that
are kept in the home should be limited. Keep only those poisonous medicines and antiseptics that are absolutely essential. All medicines of the poisonous type are menaces to safety. The educational suggestions that, if followed, will go far toward safeguarding the home are as follows:

1) Keep the corks of the bottles tied to that bottle with contents that are dangerous, will be difficult to open.

2) Medicines that are poisonous should also be placed in compartments that are separate and above the compartments that contain harmless medicines. These policies will make it difficult for children to come in contact with poisons. One of the most common dangers is the accessibility to poisons because they are placed near harmless medicines.

A good policy to be followed is: Never take medicine from a bottle that is not labeled. Then, too, make it a habit to read all labels on bottles very carefully.

Contaminated food may cause illness or death. Examine all food carefully, both by smell and by taste. If the food does not smell or taste right, do not use it.

Do not eat mushrooms that have been picked by someone other than a connoisseur. Remember, one mistake can be fatal.

Electrical Hazards: Energy in the form of electricity is one of the greatest conveniences that man possesses. In addition to its convenience, it is the safest method to produce heat and light if it is used properly. The use of electricity banishes the necessity of such dangerous substances
as gasoline and kerosene when used to produce heat or light. Still, as in the use of all good things, care must be maintained in the usage of electricity. Hazards to both life and property are present in the use of electricity. Fires may be started and persons may be shocked, if conditions are not right. To combat these hazards, it is necessary to have knowledge and understanding of electricity.

There are three types of electrical hazards, namely:

1. Shocks to persons
2. Burning of persons
3. Burning of property

If an electrical current of an appreciable magnitude passes through the body, a shock is felt. If only a small voltage passes through the body, a tingling sensation is felt, but if a large voltage passes through the body, involuntary muscular contractions result and if a still larger voltage passes through the body, death results.

Burns from electricity that pass through the body scar the tissue at the point of contact with the skin. This does not happen except on circuits of comparatively high voltage.

These electrical hazards can be prevented by following a few simple practices. Shocks are often felt in damp places. To avoid shocks in such places, do not use portable appliances. If portable appliances are essential, then do not touch these appliances when the hands are wet or when the floor is damp. Electric washers, that must be touched by wet hands, should
be safeguarded. This can be done if a wire is connected to the frame and to a coldwater pipe. This grounds the electricity, and the hazard is removed.

A device known as a fuse is connected in the circuit to prevent excessive currents in the electric wire. This fuse is selected by electrical engineers in such a way that there is no interference with service as long as the current does not exceed the proper amount. Should the current pass the limit, the lead in the fuse melts, and the current ceases to pass. Since fuses vary in size and capacity, be sure to obtain a fuse that is the right size and of the right capacity. This is not difficult, because all fuses have numbers.

There are many hazards to be found in household electrical appliances. The portable cord is one example of electrical appliances that often proves hazardous. Electrical cords cannot be protected by exterior metal guards, and naturally, they deteriorate readily. Portable cords afford more shocks than any other electrical device. Moisture, heat, and oil affect electrical cords. As a measure of prevention, repair an electrical cord as soon as a break in it occurs.

When portable appliances and lamps are used in the bathroom, caution must be used to prevent shocks. Never touch any electrical appliance while the body is wet. Water is known to be an excellent conductor of electricity. If a person is in the bathtub at the time an electrical appliance
is touched, there is no means of ascertaining just what part of the water conducted the current and death may result.

Dry wood is not a conductor of electricity. For that reason, the handles of most appliances are made of wood. The current should be turned off when the appliances are not in use. One of the most common causes of electrical fires is failure to turn off the current in electric irons. This hazard is lessened by the use of irons with automatic temperature control.

When an electrical appliance is to be chosen, use the educational check to see if it meets the requirements of the National Electric Safety Code and the National Electrical (Fire) Code. It is poor policy to select portable cords with a thin insulation just because of their cheapness. A cheap cord may prove to be costly. Electrical stoves sometimes have such inadequate insulation that the frames become a menace.

One of the modern conveniences for man is the electric refrigerator. The hazards of the electric refrigerator are similar to those of all motor-driven appliances but the chemical substances used in the process of refrigeration may prove to be an added danger. The chemical reagents of refrigeration chiefly used are ethyl chloride ammonia, sulphur dioxide, and methyl chloride. The gases from these reagents are poisonous and corrosive to the tissues of the body. Leaks do not occur often, but if they should, the
first thing to be done is to raise the windows. Be careful not to breathe the fumes.

If a refrigerator is to be bought and used, the following items should be kept in mind:

1. Be sure the refrigerator has been approved by a disinterested organization, such as the Underwriters' Laboratories, Incorporated, or the Good Housekeeping Institute.

2. Make sure the refrigerant that is used has a pronounced odor so a leak may be detected.

3. Keep in mind the facilities of the local company as to service for that particular type and make of machine.

4. Call a trained service man when repair or adjustment is necessary.

5. Give the room plenty of ventilation, shut off the machine, and call the service man when a leak of the refrigerant is detected.58

A check that can be used to help prevent accidents in the home is suggested by the Engineering Division of Maryland Casualty Company of Baltimore, Maryland, and is given in Figure 12.

The farm home embodies all the hazards of the city home and, in addition, many other hazards typical of the farm alone.

Fire is more serious on the farm than in the city, because trained fire-fighters and adequate firefighting equipment are not available there. Kerosene and gasoline lamps, stoves, and other types of equipment demand that inflammable supplies be kept on the farm. The methods that are used to

<table>
<thead>
<tr>
<th>Stairways</th>
<th>Tripping Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well lighted?</td>
<td>Stairways clear of mops,</td>
</tr>
<tr>
<td></td>
<td>brooms, packages, toys,</td>
</tr>
<tr>
<td>Rails secure?</td>
<td>buckets, etc.?</td>
</tr>
<tr>
<td>Treads slippery?</td>
<td>Rear walkways level?</td>
</tr>
<tr>
<td>Broken</td>
<td>Rear walkways free from</td>
</tr>
<tr>
<td></td>
<td>loose boards, boxes, barrels, tools?</td>
</tr>
<tr>
<td></td>
<td>Front sidewalks level?</td>
</tr>
<tr>
<td></td>
<td>Front sidewalks in good repair?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Floors</th>
<th>Poisonous Medicines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polished?</td>
<td>Each one plainly marked?</td>
</tr>
<tr>
<td>Slippery?</td>
<td>Kept away from children?</td>
</tr>
<tr>
<td>Rugs slip or slide?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electric Equipment</th>
<th>Emergencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation on wires and</td>
<td>Do you have a First Aid Kit?</td>
</tr>
<tr>
<td>cords in good condition?</td>
<td>Is it complete?</td>
</tr>
<tr>
<td>Appliances and fixtures in</td>
<td>Is there anyone in the home qualified</td>
</tr>
<tr>
<td>good working order?</td>
<td>to give First Aid?</td>
</tr>
<tr>
<td></td>
<td>What is the number of your Fire</td>
</tr>
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<td></td>
<td>Department?</td>
</tr>
<tr>
<td></td>
<td>Police department?</td>
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<tr>
<td></td>
<td>Doctor?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Fires</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furnace fires banked at night?</td>
<td>Are sharp-pointed instruments kept</td>
</tr>
<tr>
<td></td>
<td>away from children?</td>
</tr>
<tr>
<td>Heaters turned off?</td>
<td>Are children protected from scalding</td>
</tr>
<tr>
<td>Cigarettes, etc., extinguished?</td>
<td>liquids?</td>
</tr>
<tr>
<td>Cellar and attic free from</td>
<td>Are icy sidewalks made safe?</td>
</tr>
<tr>
<td>rubbish and junk?</td>
<td></td>
</tr>
<tr>
<td>Matches away from flame?</td>
<td></td>
</tr>
<tr>
<td>Matches out of children's</td>
<td></td>
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<tr>
<td>reach?</td>
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</table>

<table>
<thead>
<tr>
<th>Step Ladders</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>In good repair?</td>
<td>Are sharp-pointed instruments kept</td>
</tr>
<tr>
<td></td>
<td>away from children?</td>
</tr>
<tr>
<td>Used in place of boxes and</td>
<td>Are children protected from scalding</td>
</tr>
<tr>
<td>chairs?</td>
<td>liquids?</td>
</tr>
<tr>
<td></td>
<td>Are icy sidewalks made safe?</td>
</tr>
<tr>
<td></td>
<td>Are water leaders and rain spouts kept</td>
</tr>
<tr>
<td></td>
<td>in good repair?</td>
</tr>
</tbody>
</table>

Write Yes or No in each blank space.

Fig. 12—Home Accident Report Form*

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*Home Accident Report Form, Engineering Division of Maryland Casualty Company, Baltimore, Maryland, 1937.
heat the houses on the farm are more likely to cause fires than those used in the city. If these inflammable substances were not kept in the house, it would reduce the hazard of fire. If it is necessary to fill the tanks of lamps and stoves, the flames should be extinguished and tanks cooled before they are filled.

The mother on the farm usually has more duties than the mother in the city, and children have to amuse themselves, often playing in places that are dangerous. Usually the farm child plays near the place where the father or mother works, and the kitchen, which is a dangerous place, is where the child plays a great deal of the time.

A check to be used for farm hazards is suggested by the American National Red Cross, and this suggested form is shown in Figure 13.

A check list for common hazards in and about the home suggested by the American National Red Cross is shown in Figure 14.

Many activities on the farm provide definite danger hazards. When hogs are killed, the dangers of knives and hot water are in evidence. Canning and cooking for harvest hands present possibilities of burns. When firewood is cut, the axe offers an added danger.

These dangers can be avoided if only a few precautions are used. If the check-list suggested by the National Red Cross is used constantly, many accidents may be avoided,
1. Machinery
   Have you read printed warnings attached to new machinery?  
   Is machinery kept in good repair?  
   Is it kept well oiled?  
   Is it used only by experienced operators?  
   Is it used with due care?  
   Are children kept away from dangerous machinery?  

2. Tools and Equipment
   Is there a place for everything?  
   Is everything in its place?  
   Are sharp and jagged tools hung flat against the wall?  
   Are hammering tools solid in handles?  
   Is hay-hoisting equipment in good shape?  
   Are pulleys securely fastened?  
   Are ropes strong and serviceable?  
   Are carriers kept oiled?  
   Are ladders safe?  

3. Yard
   Is yard cleaned of outworn machinery?  
   Are wells and cisterns properly covered?  

4. Farm Home
   Use check list in Figure 14.

5. Buildings
   Are all buildings in good repair?  
   Are decrepit structures torn down or restored?  
   Are doors high and wide enough?  
   Is entrance to hay-loft protected by railing?  
   Are trap doors kept closed?  
   Are stairs too steep?  
   Are steps too narrow?  
   Are wall-ladders secure?  
   Is there ample fire protection?  
   Are lanterns securely hung in safe places?  
   Is gasoline stored at safe distance?  
   Have you read Farmers Bulletin on Spontaneous Combustion issued by U.S. Department of Agriculture?  

6. Animals
   Are dangerous animals, such as bulls and boars, secured to prevent injuring people?  
   Are all pens, stalls, fences, safely constructed?  
   Are animals spoken to when their stalls are entered?  
   Are pets, such as calves and colts, handled with care by children?  
   Are animals with young protected from annoyance?  
   Are cross dogs tied up?  

Fig. 13.—Check List for Common Hazards on the Farm.*

*Check List for Common Hazards on the Farm, American National Red Cross, Washington, D.C., 1936.
Fig. 14.--Check List for Common Hazards in and About the Home.*

*Check List for Common Hazards in and About the Home, American National Red Cross, Washington, D. C., 1936.
If the individual makes a study of the causes of home and farm accidents, he will arrive at two conclusions:
(1) careless habits and practices on the part of the family group cause many home injuries and deaths; (2) faulty home equipment causes home injuries and deaths. The problem is to study ways to eliminate these causes. Prevention of most accidents is within the ability of man; it is a matter of knowledge and the application of this knowledge. The policy should be less theory and more practice.

Safety in Water

Two-thirds of the surface of the earth is water. Since this fact is well known, self-preservation in water becomes a necessity for the individual who desires the joys of fishing and swimming. A basic knowledge of swimming, along with self-confidence in water, is essential for the safety of every individual who seeks pleasure upon or near a body of water.

The advantages for an individual who knows how to swim are numerous. First, the ability to swim not only contributes to the development of the physical body, but it also assists in physical fitness. Second, this ability may enable the individual to save a life. Third, this ability is a step toward participation in many water sports which would not be safe unless one were a swimmer.

Swimming aids in the development of proper posture, through the rounded development of the body. It also
develops ease and grace of movement, promotes regular breathing, and increases endurance. Swimming also assists in the development of proper mental attitudes. It contributes to self-confidence and self-reliance.

Every man, woman, and child should know how to swim, not only because it is fun and good exercise, but also because some day life may depend upon it.

Several important safety rules that are suggested by the Kentucky Department of Education in regard to swimming are as follows:

1. If cramps occur, the muscle should be rubbed gently.
2. Never enter the water when overexposed.
3. Watch for excessive sunburn. This can be very serious.
4. If the water is cold, one should remain in for only a few minutes. If the teeth chatter or the skin begins to turn blue, the swimmer should come out at once and take sufficient exercise to warm up.
5. Never attempt more than your endurance will permit.
6. Do not go in swimming until at least one hour after a meal and do not eat anything immediately after a swim.
7. Always swim in reasonably clean water.\(^{59}\)

When a person stays under water long enough to become unconscious, first aid measures are of utmost importance if his life is to be saved. Every man, woman, and child should be educated to give and demonstrate artificial respiration.

The Prone Pressure Method, first advanced by Edwin

Harpey Schafer in 1903, is recognized as the most efficient and safest method of artificial respiration.60

A Standard Technique for applying prone pressure was approved in 1927 by the following organizations: American Gas Association, American Red Cross, American Telephone and Telegraph Company, Bethlehem Steel Corporation, National Electric Light Association, National Safety Council, Bureau of Medicine and Surgery, Navy Department, Office of the Surgeon General, War Department; U. S. Bureau of Mines; U. S. Bureau of Standards; and U. S. Public Health Service.61

The Standard Technique includes eleven steps of procedure. These steps are as follows:

1. Lay the patient on his belly, one arm extended directly overhead, the other arm bent at elbow and with the face turned outward and resting on hand and forearm, so that the nose and mouth are free for breathing.

2. Kneel straddling the patient's thighs, with your knees placed at such a distance from the hip bones as will allow you to assume a free and comfortable position. Place the palms of the hands on the small of the back with fingers resting on the ribs, the little fingers just touching the lowest rib, with the thumb and fingers in a natural position and the tips of the fingers just out of sight.

3. With the arms held straight, swing forward slowly, so that the weight of your body is gradually brought to bear upon the patient. The shoulder should be directly over the heel of the hand at the end of the forward swing. Do not bend your elbows. This operation should take about two seconds.

4. Now immediately swing backward so as to remove the pressure completely.

5. After two seconds swing forward again. Repeat unhurriedly twelve to fifteen times a minute the double movement of compression and release, a complete respiration in four or five seconds.

6. Continue artificial respiration without interruption until natural breathing is restored, if necessary four hours or longer until a physician declares the patient dead.

60First Aid Text Book, American Red Cross, 1937, p. 106.

61Ibid., 106.
7. As soon as artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient’s neck, chest or waist. Keep the patient warm. Do not give any liquids by mouth until the patient is fully conscious.

8. To avoid strain on the heart when the patient revives, he should be kept lying down and not allowed to stand or sit up. If the doctor has not arrived by the time the patient has revived, he should be given some stimulant such as one teaspoonful of aromatic spirits of ammonia in a small glass of water, or a hot drink of coffee or tea. The patient should be kept warm.

9. Resuscitation should be carried on at the nearest possible point to where the patient received his injuries. He should not be moved from this point until he is breathing normally, of his own volition, and then moved only in a lying position. Should it be necessary, due to extreme weather conditions, to move the patient before he is breathing normally, resuscitation should be carried on during the time he is being moved.

10. A brief return of natural respiration is not a definite sign for stopping the resuscitation. Not infrequently the patient, after a temporary recovery of respiration, stops breathing again. Patient must be watched and if natural breathing stops, artificial respiration should be resumed at once.

11. In carrying out resuscitation it may be necessary to change the operator. This change must be made without losing the rhythm of respiration. By this procedure no confusion results at the time of change of operator and a regular rhythm is kept up.  

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Individuals must be educated not only in methods of resuscitation, but also in methods used to rescue persons from the water. Safety in water would not be complete without instruction in water rescue work.

A man with sportsman qualities would not permit a human being to drown if it lay within his power to save a life, yet the would-be rescuer may be handicapped with a lack of knowledge as to proper procedure. Basic knowledge...  

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Ibid., pp. 109-112.
of the principles of life-saving may be given through illustration and courses of study, but it is only through practice that proficiency is developed. Much practice is necessary before an individual is able to break the so-called "death grip."

Should a companion call for help, the would-be rescuer can assure his own safety if he lets the suggestions which follow be the guides in the procedure used.

First, remove heavy clothing. Then, judge the distance carefully before you dive. As the approach is made, be sure to keep out of reach of the arms of the person who needs help.

The unfortunate person is probably doubled up and the muscles of his throat are tensed with suffocation. This will cause his head to be drawn forward. Approach from the rear, reach across the shoulders of the victim, catch your fingers under his chin, pry his head back and up. This latter part is accomplished if the shoulder is used as a fulcrum for the forearm of the rescuer. As this is done, use a side stroke with the free arm, along with a vigorous scissors kick to get the victim in motion. This process will tend to level the victim out on the surface, then it should not be difficult to tow him.

If the victim sees the approach and circles in the water and thus prevents a rear approach, there are two ways in which to approach from the front. If the head of the
drowning person is below the surface and hands above, it is practical to grasp a forearm in such a manner that it cannot be turned upon the rescuer. The right arm of the rescuer should cross over the grasp the right hand of the victim, hold it tightly, then kick backward, suddenly twist his arm to reverse his position, and at the same time, give the victim a pull which will tend to level him out.

Another front approach is the underwater approach; however, this approach should be used only by an experienced swimmer. To use this method, make a surface dive some eight or ten feet in front of the subject, and swim under water until it is possible to reach the legs of the victim at a position near the knees. It is necessary to keep the eyes open during this movement.

When the knees of the subject are grasped, it will be a simple matter to turn him around. Then come to the surface behind him; at the same time keep his head above water. Keep both hands along his sides to prevent his turning; at the surface, proceed exactly as in the rear approach. It should be kept in mind that the best approach is the rear approach.

After the victim has been approached and leveled out, the next step is to carry him to safety. The "cross-chest carry" is the most common method employed for this. Hold the subject with an arm across his chest and under him armpit. This leaves the rescuer with free use of one arm
and both legs. Use a side arm pull and scissors kick.

The "haw carry" is another method, and perhaps is the simplest of all. After the victim has been leveled out, grasp with the palm downward, a handful of hair near the forehead. This will keep his head back and chin and mouth above water. The rescuer should hold his arm straight and swim with a side arm pull and scissors kick. Watch the face of the subject as the swim toward shore is made.

If the victim should be bald or heavy, use the head carry. At his back, hold him with both arms, press your hands on the side of his head, so that his nose and mouth can be kept clear of water, and kick beneath him. It is necessary to swim only with the feet, and at the same time the swimmer is in an almost vertical position.

The suggested approaches and carry methods are splendid if the victim does not succeed with his death grip. Should a death grip be fastened on the swimmer, more knowledge and skill are necessary.

If the death grip should be in the form of a front strangle-hold, there are several things to do. First, take a deep breath in order that you not be submerged with little air in the lungs. The head of the subject is over your right shoulder, the swimmer should place his right hand above the arms that encircle him and against the right cheek of the victim, hook your thumb under the edge of the jaw of the subject, let your left hand find the right elbow, hold
your thumb tightly in the hollow just above the inside of the elbow.

Take a deep breath and submerge with the victim. Since breaks can be accomplished best beneath the surface of the water, let the victim submerge and as he attempts to fight back for air, he will tend to release his hold.

While under the water, apply force as you push the head of the victim to the right with your hand on his cheek, lift and follow through with your hand on his elbow, duck under his arms and at the same time, continue to shove on the elbow until his back is turned to you. Do not release that elbow, even though your other hand is no longer against his face. Proceed as in the rear approach.

Practice is the only thing which will demonstrate the simplicity of this release. The important steps to bear in mind are: push sidewise with the hand against the cheek; list with the hand on the elbow; duck under the arms that encircle.

The back strangle hold is another form of the "death grip" for which one should be prepared. Remember to take the same deep breath before you submerge with the subject. The throat can be protected if the chin is lowered quickly; grip the lower arm of the subject, the one you contact first when you reach up, one hand at his elbow, the other at his wrist; hold tightly with both hands; twist the hand of the victim downward and push up on his elbow; and at the
same time, duck under his arms. Continue to twist the arm until the positions are reversed and an arm-lock hold results. Maintain the grip on the wrist so that it contacts the back of the subject and raises him to a horizontal position.

Your free arm is used to tilt and level the victim.

In life-saving it must be remembered that it is with human beings which one deals and no two will react identically. Therefore life saving technique cannot be cut and dried; there are too many factors which vary. A capable life guard is not merely an athlete who can swim well. In addition, he must have the ability to grasp a situation to eliminate certain movements or to emphasize others. Cool headwork is half the battle.63

The Coast Guard plays such an important part in the life-saving program that it merits appreciation and explanation. The Coast Guard of today is an outgrowth of the old Revenue Cutter and Lifesaving service, to which so many new duties have been added and so many burdens of responsibility have been assumed that it has aptly come to be known as the "Navy of Mercy." Other navies exist to destroy life in time of war; the main functions of the Coast Guard are to save life and enforce the maritime laws of America.64

To secure a comprehensive view of the activities of the Coast Guard, the following services of life-saving that take place each day are listed:

1. Off the Grand Banks of Newfoundland a cutter constantly shadows a huge iceberg. Ice observation

63 Paul W. Gartner, First Aid Afield, 1934, p. 71.

64 Karl Baarlag, Coast Guard to the Rescue, 1934, pp. 11-15.
officials give the position and probable shift of every iceberg that is sighted or reported by radio. Four times a day Coast Guard radiomen broadcast messages of warning for the benefit of ships of all nations. Navigators can then chart their route according to this information and can avoid collisions. Since the wreck of the Titanic in 1912, not a single life has been lost by collision with an iceberg.

2. On Lake Superior a Coast Guard is maintained to watch for distress signals at night and for situations that are perilous during the day. When ships or human beings are in distress, a non-capsizable lifeboat slides down the ways and within a few hours, rescue has taken place.

3. There is a Coast Guard station at the Falls of the Ohio. This shows that Coast Guard protection even extends inland. When the inland rivers swell beyond the banks, Coast Guard Cutters rush food and medical supplies to the people in need. These cutters also rescue marooned persons. Even Coast Guard planes drop down to rescue people who are in peril. The Coast Guard has been so loyal to its task of life-saving that the slogan, which is so inspirational, has been maintained in a most creditable fashion. This slogan is, "You have to go out—you do not have to come back." 65

From Alaska to the Grand Banks of Newfoundland and from Lake Superior to the Gulf of Mexico, the United States Coast Guard carries on its work by air, land, and sea. The Coast Guard is always prepared to "go out" without the chances of returning being weighed. 66

The Coast Guard is an organization with employees who make life-saving their business. It is not so with the average individual. For the protection of the untrained person there is generally recognized authority on swimming and life-saving. That authority is the American National Red Cross, Washington, D.C. This organization publishes pamphlets on subjects, such as: Life-Saving Methods; Organization and Supervision; Tests for Beginners; Swimming;

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65 Ibid., pp. 15-20. 66 Ibid., p. 21.
Junior and Senior Life-Saving; and Examiners. With this information so easily obtainable and the possibility of unlimited practice, the toll of lives that is exacted each year from swimming should be lessened.

Safety in the School and at Play

Every school building of today has problems of safety. Consolidated schools in towns and large school buildings in stics are more carefully constructed than were the old one-room schools. The evolution of construction of schools has been remarkable. The modern school building is as nearly fire-proof as it is possible to make it. Although the dangers that occurred in the old-type buildings have been practically abolished, the modern building has its own problems of safety. These problems are those that are embodied in the management of the buildings, on the school playground, and in bus transportation. Another important item that is to be considered is that more children attend school in one building now than our forefathers ever dreamed would gather in any one place to secure an education. Because of these new safety problems that have accompanied the progress of building construction and the growth in number of school children, safety education plays an important part in school life.

The phases which should be covered in the safety education program of any school are as follows:
1. Heating facilities in rural schools.
2. Exits in rural schools.
3. Records of accidents.
4. Survey of the school plant.
   a. Gymnasium
   b. Vocational shop
   c. Classrooms
   d. Stairs, stairways and corridors
5. Survey of school grounds.
   a. General conditions that influence safety on the playground.
   b. Playground equipment and accidents.
   c. Causes of accidents.
6. Motion picture film.
7. School safety patrols.
8. Fire protection
9. Special occasions.

Figure 15 shows the necessity for having adequate inspection and instruction for safety for all school children.

Fig. 15.—Where School Children Accidents Occur.*

*Six-Year Reports from School Systems that Average 500,000 Enrolled, National Safety Council, 1936.
Rural schools have a special problem in heating. The heating apparatus in a rural school usually consists of a furnace located in the basement or stoves located in each room. There are definite standard safety rules to be applied to these stoves. All stoves should be provided with metal jackets, metal floor plates, and good, secure stove pipes. It is necessary, too, that the stoves have ample clearance from the desks of the children and from the exists. The pipes of the stove should lead directly to the chimney, never through the cloakroom or wooden partitions. If it is absolutely necessary to have the pipes go through a wooden partition, then this partition should be protected by a metal plate. The heating equipment should be thoroughly inspected and repaired before school opens each fall.

An unjacketed stove is a source of constant danger. The stoves are often cared for by an inexperienced child who is not aware of the dangers of coal gas explosions, of fires banked improperly at night, and of the improper use of drafts and checks. The practice of using kerosene to kindle fires is a common one in rural sections. Poor stoves, flues and chimneys endanger health and safety, because they permit gas to escape and because they provide inadequate and irregular heat.

The proper maintenance of a fire offers an excellent situation for safety lessons that have direct value in the home life. Many children have seen the adult use kerosene
to kindle a fire. Positive teaching, where the teacher demonstrates the proper way to lay a fire so that kerosene is not needed, may result in a saved life.

Explosive substances, such as coal oil (kerosene), gasoline, and naphtha, should never be kept in school. In school shops where a small amount of gasoline is necessary, such substances should be kept in fireproof containers that are approved by the Board of Fire Underwriters.

Doors in all school buildings should open outward. The State Law of Texas demands that doors of all public buildings shall open outward.

The average one-room school has only a single exit. A safe condition never exists in a building which has but a single exit. When a second exit door is not provided, windows must be looked on as possible exits. These should be kept in such a condition that they open easily. Windows should not be blocked with bars or screens which cannot be easily removed. All exits should be kept clear, door locks should be kept in good repair, and no door, window, or gate should be kept locked during the school day.

All individuals should realize that every regulation that concerns school buildings has for its prime purpose the safety of children. For that reason, every conceivable attempt should be made to carry out the regulations not only to the letter, but also in the spirit of the law.

An educative process in any community would be to keep
a record of every accident that happens to children. Such a record is valuable when a safety program is to be planned. Even though a record of every accident that occurs is not recorded meticulous care should be used to see that an accident report is made of every accident that occurs at school. These records should be analyzed and tabulated each year, and each should be studied so there will not be a repetition of the same type accident. If the analysis should reveal the cause of the accident, such as poor lights or a repair that should be made, remedy the cause. If procedure is to blame, for instance, the way the children pass or the route used, use a new procedure. Often, accident records show that certain intersections are dangerous and some method should be introduced to care for these hazardous places, such as safety patrols or signal lights.

Figure 16 gives an example of a student accident report.

The first condition to be considered is its location. The gymnasium should be located near fire plugs, in order that fire protection may be accessible. A second phase to be considered is the allotment of space for the building and grounds around it. Ample space for the participant in gymnasium contests should be rigid requirement worthy of first consideration. A check should be made to see that ample space is available before any activity is permitted. Overcrowding must always be avoided. The spectators must keep
STUDENT ACCIDENT REPORT FORM

Who was hurt?
Name
Address
Age Sex School attended Grade

When did accident happen?
Date Time A.M. P.M.

Where did accident happen?
At school Is so, in building or on Playground
On the street If so, where
Was this an automobile accident?
If on the street, was it on the way to school?
from school At home If so, was it in the
house? Outside house?
If somewhere else, state where

How did the accident happen?
What was person doing when hurt? (Playing ball, crossing street, jumping rope, climbing stairs, sawing wood, washing dishes, building fire, etc.)

Describe the accident
What kind of injury was it? (broken arm, fractured skull, cut finger, bruised toe, burned hand, etc.)

Number of days kept from school
Signature of Teacher

Fig. 16.—Student Accident Report Form.*

within their boundaries. Spectators should not be permitted to crowd in aisles which should be kept clear at all times.

A third item of consideration is the facilities to seat the spectators. If the seats are movable, there must be space for the storage of these seats when they are not in use. Safety demands these practices.

*Student Accident Report Form suggested by National Safety Council, 1936.
A fourth item of consideration is the condition of the equipment. The floors must not be too highly polished. A slippery floor is dangerous for regular class play. Do not use bars and horses, unless mats are placed underneath them. Check and see that radiators, uprights, and other projections against which a participant may fall are well padded. The locker rooms and showers should be checked each day to see that sanitary conditions exist. The ideal situation is one where a matron is in charge of the locker and shower room. It is impossible to secure maximum benefit from the use of a gymnasium if the athletic clothing is not kept in a sanitary condition.

The fifth condition to be checked is of prime importance. A careful medical examination should be given to each student who plans to take part in gymnasium activities, whether these activities be in major or minor sports. Should there be minor injuries, the instructor should know ahead of time that first aid is available. Minor injuries should be cared for immediately. Students should never take part in gymnasium activities when an instructor is not present.

The vocational shop occupies a place of unique importance as a place for accidents.

The equipment in a shop deserves consideration of four divisions; as follows, condition of equipment, inspection of equipment, protective devices, and the practices of operation. It is to be remembered that safety practices in the vocational
shop means safety practices in industry in years to come.

The condition of the equipment involves several questions: (1) Are all tools in good condition? (2) Is there ample space between machines? (3) Are all machines properly protected? If these three questions are answered satisfactorily, there need be no worry about the condition of the equipment.

In the inspection of equipment it must be known that the machines are inspected daily and that necessary repairs are made immediately.

As for protective devices, it is essential that "guards" be installed on all the power machinery of the shop.

In consideration of the practices of operation, there is much to be said and done. These practices can and should be developed into a safety code for the shop to which strict obedience must be required. To educate for safety, the practices should be as follows: (1) all shop activities must be supervised constantly; (2) all students must be given adequate instruction before they are allowed to operate a machine or use a tool; (3) all accidents must be reported promptly, and all injuries carefully dressed; (4) all students must wear proper clothing (neckties removed and sleeves rolled); (5) safety zones must be established around grinders, lathes, joiners, power drills, and band saws, and all students except the operator must remain outside these zones when the machine is in operation; (6) all machines must be
stopped before any attempt is made to oil, clean, or adjust them; (7) tools must be kept off the floor as much as possible; (8) all flames must be confined to furnaces; (9) all oil must be wiped up promptly, and oiled rags must be kept in metal containers.67

Classroom safety should also come in for its share of consideration.

It is necessary that all the classrooms be large enough to accommodate the pupils who are assigned to them; the seats must be in good condition and properly adjusted to the size of the pupils; there should be an aisle between the seats, windows and doors properly. Teachers should secure fire protection in advance by having one student, or an alternate in each class appointed to assume the responsibilities for closing windows and doors in the classroom before it is left.

It is essential not only to check all classrooms for the above mentioned factors, but also to check particularly the chemistry classroom. Chemistry is not a particularly hazardous subject, yet the chemistry classroom necessitates greater precaution than does the classroom of Latin or English.

Besides the classroom, stairs, stairways, and corridors should also contribute to school safety.

Involved in the construction and care of stairways, stairs, and corridors are the following: adequate light must be present at all times; the steps must be even; necessary repairs must be made promptly; floors and steps must not be highly polished.

To secure freedom from obstructions it is necessary to check the following: there must be no crowding or pushing in halls and on stairways; show cases, bulletin boards, and other pieces of furniture must be properly located; turns in the stairways must be kept free from tables and chairs; passages, halls, and doorways must be kept clear at all times. Care should be used when a swinging door is pushed. Someone may be just on the other side. It might be well to adopt this rule in the school building: "No sudden or jerky movements."68

To secure the maximum benefit from the use of stairs, stairways, and corridors, we should obey at least the two suggestions which follow: there must be traffic rules which are clear and reasonable to the student body; class schedules and bells should be so arranged as to prevent haste, crowding, and confusion. Students may aid in the formation of other safety rules when necessary.

There are several conditions which influence safety on the playground, namely:

68Ibid., pp. 41-49.
(1) The size of the grounds necessarily varies with the size and the type of the school. One state suggests five acres for elementary schools, ten for junior and twenty for senior high schools.

(2) If playgrounds are adjacent to heavily traveled streets, fences should be used to keep balls and other similar equipment out of the street. Appoint a definite student to be ball monitor for each class and let him be the only student who is to go into the street to retrieve the balls and other equipment.

(3) The playground should be properly surfaced, drained and kept free of rocks and refuse of all kinds. Have a clean-up campaign often enough to keep rocks, broken bits of glass, nails and other dangerous substances removed from the playground. Pride in safety of the playground can be instilled in the students to the extent that safe practices will be used.

(4) The supervision of the playground is of major importance. Proper supervision assures two things: safety and maximum value of play space and play periods.69

In the selection of the playground equipment care should be used to see that it is sturdily built, and that it is of the type to give the maximum benefit to the children.

As to the position of the equipment, two things must be considered: (1) place the equipment so that the use of one piece, or of any pieces of equipment does not interfere with the use of the full space designated for sports and games; (2) do not place pieces of equipment too close together.

All playground equipment should be inspected and tested daily. Needed repairs should be made promptly. By this practice, innumerable accidents can be prevented.

In a special survey made under the auspices of the National Safety Council, it was found that accidents that

occur in schools are caused by the following reasons: "pupil
carelessness, hasty work, disobedience, improperly guarded
machines, crowded conditions, work, worry, anger, work after
school hours, and clothing."70

In this survey it was found that twenty one per cent of
the school accidents occur on the playground. The peak of
playground accidents occurs in the sixth grade.71

The causes of school accidents can be at least partially
eliminated if the practices that have been discussed in this
section are followed minutely.

The motion picture film is one of the most recent addi-
tions to the field of education and, as is usually the case
with all new additions, new hazards have arisen, which are
associated with this newcomer.

The danger lies chiefly in the film. Film is a fire
hazard within itself, and great care should be exercised in
its use. There are two types of raw film stock. These are
composed of nitro-cellulose and cellulose acetate. Nitro-
cellulose film burns with great rapidity, and as it decom-
poses, it produces a peculiarly poisonous and explosive gas.
It was this gas which came from X-Rays that were burned on
nitro-cellulose stock, that killed one hundred twenty-four

70Survey of School Accidents, National Safety Council,
Education Department, 1935, p. 8.
71Ibid., p. 12.
persons in the Cleveland Clinic disaster in 1929.\textsuperscript{72}

Cellulose acetate is called a "safety film," but this is a misnomer. Cellulose acetate is much safer than nitro-cellulose, but it should be remembered that even cellulose acetate burns about as rapidly as a newspaper. However, as it burns, no poisonous gas is produced, though the fumes which it gives off are disagreeable. All government films are now made in "safety film," rather than the nitro-cellulose.

There are definite laws and insurance regulations in regard to the use of nitro-cellulose film which must be observed if this type of film is used.

To develop safety-consciousness by means of education, a set of Standard Rules for the Operation of School Safety Patrols was formulated by a committee composed of representatives of the American Automobile Association, National Congress of Parents and Teachers, National Education Association, National Safety Council and United States Office of Education. This set of rules was formulated in 1930 and during 1936 and January, 1937, the rules were revised by educators, safety experts, traffic engineers, parents, and police officers.

The rules are based on experience and on the careful observation of patrol operation in approximately 1,200 cities, in at least one of which the work has been carried on for

\textsuperscript{72}\textit{Accident Facts}, National Safety Council, Education Department, 1934, p. 2.
over twenty years with outstanding success in the practical elimination of accidents.

The set of rules which was formulated is as follows:

1. Function. The function of the school safety patrol is to instruct, direct and control the members of the student body in crossing the streets at or near schools. Patrols should not be charged with the responsibility of directing vehicular traffic, nor be allowed to do so, other than signalling to a motorist who approaches the crossing after the student pedestrians have left the curb.

2. Selection. Patrol members should ordinarily be appointed by the principal of faculty adviser. These members are generally boys, but girls may be appointed in certain cases. They should be selected from the seventh and eighth grades, or from the sixth grade if that is the highest in the school. Patrol members should be selected for leadership and reliability. Their service should be voluntary and only with written approval of parent or guardian. Officers should serve for at least one school term; other members may be changed quarterly. Any officer or member should be removed for cause.

3. Size and Officers. The size of the patrol varies with street conditions and size of school. The average patrol has ten to twelve members including officers. Each patrol should have a captain. Lieutenants and sometimes sergeants may also be appointed.

4. Instruction and Supervision. Instruction and supervision are essential if the patrol is to be efficient and permanent. School officials are responsible for all school activities including safety patrols. Safety patrols are a means through which the instruction in traffic can be extended beyond the classroom. In the detailed training and supervision of patrols the best results generally are obtained by continuous supervision by a faculty sponsor and by utilizing the cooperation of the police department through one or more officers detailed for that purpose.

   The local motor club, safety council, parent teacher association or other civic body also may cooperate by providing general supervision and encouragement and by furnishing equipment. New members of the patrol should, where practicable, serve with and under the guidance of experienced members for at least a week.

5. Insignia. The standard insignia for patrol members is the white Sam Browne belt made of two-inch material. This must be worn at all times while on duty.
Special badges for officers may be worn on the left breast or left arm. Auxiliary equipment, if any, should be standard throughout the community.

6. Increasing Visibility of Patrol Members Where Special Need Exists. The standard patrol belt is adequate to attract the attention of motorists under normal conditions. However, occasionally hillcrests, curves, foliage and other conditions prevent the motorist from seeing the patrol member soon enough to insure a safe stop or other driving adjustment which may be needed.

Under such unusual conditions one of the following procedures is warranted:

a. If the patrol member cannot be seen at least as far away as the safe stopping distance for the legal speed at that location, a different location for the patrol-protected crossing should be selected.

b. If this change is not practical, an auxiliary patrol member should be stationed on the approach to the crossing where he can be seen soon enough and such patrol member shall carry and use a warning flag as hereinafter described. Or some effective flashing or other signal or sign warning of a "School Crossing Ahead" shall be so placed as to produce an adequate reduction in speed of approaching vehicles.

c. If the motorist can see the patrol member soon enough to make appropriate readjustments in his speed but for some reason often does not see the patrol member soon enough, the patrol members shall use a warning flag as hereinafter described.

Any such warning flag shall be approximately 24 inches square and shall be made of color-fast Federal yellow colored material. Such flag shall be fastened along one edge to a rod approximately four feet long. The flag may bear the word "School" or the words "School Crossing." The flag shall be held upward and outward at an angle of about 45 degrees. The flag may be waved sufficiently to assure attracting the attention of any approaching motorist.

Note: When the flag is held at an angle of 45 degrees it presents the diamond shape which is the national standard signifying "Slow." The designated Federal yellow color is likewise the standard color for a "Slow" sign in accordance with the Manual on Uniform Traffic Control Devices. The size is also standard. It shall be clearly explained to patrol members that their use of such flags is solely for advising and assisting motorists and that patrol members
have no power to control vehicular traffic. The use of a red flag is not approved, for red is intended to mean "Stop" and might easily cause criticism against patrols which have no power to stop vehicular traffic. Patrol members while on duty shall not have in their possession and stick, signal device, whistle, or other type of sign than the proposed yellow flag.

7. Position and Procedure. The patrol member should stand on the curb, not in the street, and hold back the children until he sees a lull in traffic. When this occurs, he motions for the children to cross the street in a group. He still keeps his position on the curb, except that if his view of traffic is obstructed by parked cars or otherwise he may step into the street a sufficient distance to obtain a clear view, but not more than three paces; after the children have crossed, he returns to his station on the curb.

School authorities should arrange for proper parking of cars near schools so that only in exceptional cases will the patrol need to walk three paces into the street.

Where the street is wide or the traffic heavy, there should be two patrol boys at the crossing. One operates as described in the preceding paragraph, on the side from which the children are coming. The other operates similarly on the opposite curb, giving attention to possible traffic approaching on that side and assisting the group of children to reach that curb in safety.

Where there are no adequate lulls in vehicular traffic occurring at reasonably frequent intervals and of sufficient duration to allow pupils to cross the street or highway safely, the traffic problem is not a patrol responsibility but should be handled by the municipality.

8. Hours on Duty. The patrol members should reach their posts ten or fifteen minutes before the opening of school in the morning and at noon and should remain until the last bell. At noon and afternoon dismissal they leave their classes two or three minutes before the dismissal bell and remain on duty until all pupils who are not stragglers have passed their posts. If any classes are dismissed earlier than the others, it is essential that the patrols be on duty at all times while children are crossing the street.

9. Relation to Police Officers. At intersections when traffic is controlled by an officer or a traffic signal or both, the patrols will direct the crossing of the children in conformity with the directions of the signal or the officer. At intersections without regular traffic control, the traffic may be sufficiently heavy to require the special assignment of a police officer at the times
when children are going to or from school. When this is
done, it is recommended that the police officer should
not stand in the intersection but at the curb and, when
a group of children has been collected, escort them
across the street, stopping vehicular traffic for this
purpose is necessary. The function of the patrol is then
to hold the children at the curb until the police officer
is ready to take them across.

10. Bus Duty. Where pupils are transported to and
from school by bus, patrol members may be assigned to bus
duty. Such assignment shall in no wise change or remove
the full responsibility which the bus driver has for the
safe conveying of children to and from school. The bus
patrolman's function is purely that of assisting the bus
driver. School authorities should instruct children to
obey the bus driver and any patrol members assigned to
bus duty.

One or two patrol members may be appointed for each
bus, depending upon its size. When two are on duty one
shall be at the rear of the bus and one at the front. In
selection of patrol members for bus duty, consideration
should be given to the location of the home of each patrol
member. It is desirable that the bus patrol members should
be among the first to board the bus en route to school
and among the last to leave the bus on the way home from
school.

The duty of the bus patrol members shall be:

a. To see that all pupils are aboard the bus and
   seated before it starts.

b. To assist the bus driver in maintaining order
   while the bus is in route. The patrol member
   will see that no children have heads, arms, or
   hands out of windows and that they maintain their
   seats enroute.

c. To assist the bus driver in checking attendance.

d. To assist the bus driver in seeing that booklets
   lunch kits, and other packages are placed where
   children are not likely to stumble over them.

e. To assist the bus driver in seeing that children
   board and leave the bus in a quiet and orderly
   manner. When children are to leave the bus, the
   patrolman should leave first and stand ready to
   give assistance if necessary to getting children
   off the bus. If, after the children have un-
   loaded some of them must cross the street or
   highway, the patrol member shall make certain
   that the roadway is clear in both directions
   before indicating to the children that there is
   a suitable lull in traffic for them to cross.

f. When a bus stops to pick up children or when
   a patrolman comes on duty at a bus stop, it
shall be the duty of the patrol member to advise any children who must cross the highway to board the bus. The patrol member shall make certain that the road is clear in both directions, before indicating that there is a sufficient lull in traffic for the children to cross. Except when the patrol member himself is to board the bus or is to leave the bus, no patrol member shall escort children across the highway.

5. In case it should be necessary the patrol member shall assist the driver in the use of the emergency door on the bus. For this purpose he should be given instruction by the bus driver.73

The education of students will be enhanced if these safety patrol instructions and rules are carried out carefully. Knowledge of procedures to be followed in given situations lessens the possibility of accidents.

By virtue of the position of the school administrator, the responsibility for the supervision of educative processes to prevent fires, falls on his shoulders. It is his responsibility to conduct inspection tours to determine whether or not the school plant is safe from fires.

Teachers and pupils should join with the superintendent and janitor in an effort to keep schools free from fires.

The superintendent should make a tour of inspection each year before the school is to open. He should be accompanied by the fire chief and an agent of the fire insurance company.

This inspection tour should cover such points as: Protection of furnace pipes; see that hot air ducts and flues are clean; see that all windows open easily and, if screened,
that the screens open from the inside; see that fire escapes are in good order; see that waste paper and trash are burned in suitable place. If any repairs are found to be necessary when this inspection is completed, see that they are made immediately.

Even though the school administrator has everything in readiness, his responsibility does not end here, nor does it end as long as he holds his position, for equipment gets out of order and is broken and it should require his constant vigil.

The administrator must see that the trash is disposed of regularly and not placed where it will become a fire hazard. Also, the hallways and exits must not be blocked or partially blocked by supplies or equipment, and the fire alarm signal must be in good condition.

It is physically impossible for one person to do all these things alone; so the administrator must have the cooperation of the faculty and the entire student body. It is necessary for all pupils to know actual conditions and to assist in the attempts to carry out desirable practices, to obtain knowledge which will lessen hazards in the prevention of fire and to secure knowledge of how to evacuate a building in case of fire.

Fire drills are essential, if proper conduct at an actual fire is to be developed. Several rules must be carried out if drills are to function smoothly. These drills are
as follows:

1. Use the fire signal for no other purpose.
2. The pupils should walk out in orderly lines.
3. No one should run one step, say one word or push one person.
4. The teacher should be the last to leave the room, should follow his class out of the building to see that all go outside and should see that the pupils do not return until permitted.
5. The drill should be taken seriously.
6. All schools should have fire drills regardless of the type of building, for even though the building should be fire-proof, if it should be filled with smoke and the pupils have not been trained to get out quickly and in order, there may be a panic that would mean injury to many of the boys and girls.
7. Every building should have at least two exits. Fire signals should be well understood and should have a definite signal as to which exit is to be used.
8. There is a definite educational value in orderly fire drills.

Many educative practices may be followed which will tend to aid the cause of fire prevention. These practices are as follows:

1. Fire extinguishers are placed in many school buildings. In each school where there are fire extinguishers,
the use of the specific kind of extinguisher used in your school should be learned definitely. Learn fully and definitely how to use the extinguisher.

The fire extinguisher should be kept charged at all times and the nozzles should be kept free from erosion at all times.

2. The utmost care should be used when matches are handled. A match that was thrown away carelessly has been the cause of many a fire. Make it a practice to develop habits of carefulness. It would be well to emulate the habit of the trained forester in regard to matches. A trained forester always breaks a match, after it has been extinguished by pressure on each end and in the middle. If this is done, there is a certainty that the glow is out before the match is thrown down.

3. Different communities have different methods of calling the fire department. Consult the fire chief in your community as to the method used and then impart this knowledge to the students.

4. There is a definite need for the rule of a fire drill to be obeyed. These rules have been made in order to get everyone out of a building that is burning, in the least amount of time with the smallest number of accidents. Strict adherence to the rules is necessary to accomplish these purposes. The least infraction slows things up and raises the potential danger of panic. Panic spreads even more
quickly than the fire and where there is panic there is always unnecessary death, injury and destruction.

Safety from fire hazards in a school depends upon level-headed people. Calmness and sureness of procedure when "under fire" can be attained only by practices and forethought and constant adherence to rules for fire prevention and protection.

An invaluable educational aid in fire prevention is utilized when special days are set aside to emphasize fire prevention. There may be safety weeks or special school assemblies. Speakers should be chosen not only because of their interest in safety, but also because of their ability as speakers to children. Often the best assembly programs are those arranged by the children themselves.

If students are to live safely at school, then they should be permitted to plan and participate in school procedure that is designed for safe living. Each type of school has its particular problems. These problems may be used to educate the children in safe-living. These problems can be stressed in the classrooms of those subjects which embody specific problems related to fire prevention.

Safety practices are as essential as the development of character traits, and much time should be given to the development of both safety practices and character.
Safety in Health and Physical Education

The knowledge of the human body itself, of its workings, its needs, its enemies, and its natural defenses, which makes possible its intelligent care, we owe to many people in many ages. Gradually, through their effort, the light of knowledge, as it passed down through the years, grew stronger and stronger, until today we move in a world where we think of health as a blessing which we can, in a large measure, secure for ourselves. By mastering the lessons of the past and their followers in the present can teach us we may hope to move on to new triumphs in the future.\(^7^4\)

The story of man's search for health is really the story of all the things we do today to protect our own health and that of our neighbors. The boy with a cut finger, who cleanses the wound carefully and puts on a sterile dressing; the girl with a cold, who covers her mouth and nose with a clean handkerchief when she sneezes are both using knowledge won for them many years ago.\(^7^5\)

To secure a comprehensive view of the progress of mankind in his search for health and physical well-being, it is necessary to begin with the Stone Age and travel upward by successive stages until the last stage is reached—the period in which mankind lives at the present. This section was put in outline form due to a dearth of material, all of which is invaluable. The writer desired to make use of all the material because of its concreteness.

Definite steps of progress in protection of health were


\(^7^5\) Ibid., p. 3.
taken in different eras. These steps are as follows:

1. 12,000 B.C.—Health in the Stone Age
   a. The medicine man was the source of power in repelling the work of evil spirits. Sickness was believed to have been caused by malignant spirits during the Stone Age.

2. 701 B.C.—Hebrew Health Code (embodied in the Priestly code of the old testament).
   a. Moses aided in the prevention of disease by:
      (1) Stressing the importance of cleanliness.
      (2) Working on the possibility of controlling epidemics by isolation and quarantine.

3. 420 B.C.—Health in the Golden Age of Greece.
   a. Hippocrates, "The Father of Medicine," introduced the study, observation and ability to recognize each particular disease and to find its cause and remedy. Thus was developed the method of science that each disease has its own nature and that each disease arises from a natural cause.

4. 97 A.D.—Sanitation in the Roman State
   a. Julius Frontinus was the first water commissioner.

5. 1348 A.D.—The Black Death.
   a. The Salerno School of Medicine was established. Disease was studied at first hand, surgery was greatly improved, sensible hygienic rules were given to the public and quarantine was introduced.

a. Andreas Vesalius taught students to go to the human body for information of the body activities rather than to the works of Galen. Vesalius taught anatomy and knew anatomy as no one ever had known it before. Each student was taught to observe the body and this was a decided step in the progress of protection of health.

7. 1628 A.D.—A King's Physician.

a. William Harvey, physician-in-extraordinary to his majesty, King James I, discovered the circulation of the blood. This discovery ranks him as one of the four greatest pathfinders in the history of medicine.

Vesalius taught men to observe the body, Harvey taught them to study its workings. The whole modern science of physiology rests upon the basis which he laid.

8. 1796 A.D.—Health in the Smallpox Scourge.

a. Jenner perfected the introduction of the virus to combat smallpox. He was the first to introduce vaccination.


a. After an appointment as Sheriff of the County of Bedfordshire, John Howard was impressed with the terrible conditions under which prisoners
were kept in jail. Finally, he presented to
Parliament a report which led to the first great
prison reform, not only in England but through-
out the world. This effort resulted in John
Howard's being known as the Prison Reformer.

b. In 1847 Lord Ashley who had carried on the work
of Michael Sadler in a fight for the factory chil-
dren resulted in the passage of the Ten Hour's
Bill (after fourteen years of almost ceaseless
struggle).

c. Edwin Chadwick, secretary of the Poor Law Com-
mission of England, became convinced that pre-
ventable disease is an important cause of
poverty. In 1842 Chadwick published a famous
report which awakened both England and the United
States to the need of reform. This report
brought about "the great sanitary awakening."
The world-wide movement for better housing, better
water supplies, and the removal of waste from
cities has formed the basis for the public health
movement of the present day.

10. 1854 A.D.—The Lady With the Lamp.

a. Florence Nightingale was the founder of modern
nursing. In 1860 at Saint Thomas's Hospital in
London, the first high-grade modern nursing school
was founded from the "Nightingale Fund." The
example of the school and, above all, the leadership of its founder, Florence Nightingale, changed the whole conception of nursing throughout the world. To Florence Nightingale we owe the whole concept of the public health nurse as a minister of healing and as a messenger of health.


a. John Lister, Professor of Surgery at the University of Glasgow, made use of the discovery of Louis Pasteur that fermentation or decomposition is caused by living germs.

Lister finally hit upon carbolic acid to purify instruments and dressings and during operations, carbolic acid was sprayed into the air above the incision.

b. In 1795 anesthesia was introduced and in 1895, X-Rays were introduced by Roentgen. These two great discoveries contributed to the progress in the field of surgery.


a. Louis Pasteur, by his use of the microscope, made a successful study of rabies and eventually succeeded in the production of a vaccine for rabies.

b. In 1876 Robert Koch discovered and described the
germ which causes tuberculosis. So, the mystery which had surrounded "the pestilence that walketh in darkness" was solved. The work of Koch paved the way for the prevention of such diseases as cholera, typhoid fever and scarlet fever.


a. Edward Livingston Trudeau made a vastly beneficial contribution to the field of health by the introduction of sanitorium treatment for tuberculosis. Trudeau proved the importance of personal hygiene and that the build up the general vital resistance of the body is as essential a part of the health program as the control of sources of infliction in the environment of the body.

14. 1892 A.D.—The Modern Health Department.

a. Several discoveries came in this period namely:

(1) Robert Koch taught his students how to grow microbes for study.

(2) Herman Michael Biggs established the first bacteriological laboratory.

(3) Biggs and his assistant, William Hallock Park, introduced a diagnosis for diphtheria and perfected the anti-toxin for diphtheria.

(4) Biggs successfully sponsored a program for the control of tuberculosis.

(5) Biggs successfully sponsored a program for
the promotion of the health of infants and young children and in 1902 a Division of Child Hygiene was established.

15. 1900 A.D.—The Conquest of Yellow-Fever.

a. Walter Reed discovered that the bite of the mosquito causes yellow fever. Walter Reed was assisted in his further research by James Carroll, Jesse W. Lazear, and Aristides Agramonte. Lazear made the supreme sacrifice in the study of yellow fever when he allowed himself to be bitten by a mosquito that had bitten a yellow fever victim.

b. William Crawford Gorgas made use of the development of Walter Reed and freed Panama of yellow fever. This made possible the construction of the Panama Canal.


a. Clifford Beers spent several years in an asylum for the insane. He recovered and wrote "The Mind That Found Itself." This book revealed in all frankness the tortures endured by the insane. Beers established a Society for Mental Hygiene, "to work for the conservation of mental health; to help prevent nervous and mental disorders and mental defects; to help raise the standards of care for those suffering from any of these disorders."
b. As a result of the work of Beer, the attitude of the world toward insanity was changed.

c. The mental hygiene movement teaches us that, for little emotional troubles and for the more serious ones which point toward insanity, there is often the possibility of prevention and of cure. The field of mental health has become a science and a science which is full of promise.

17. 1922 A.D.--The Chemistry of the Body.

a. Eijkman discovered vitamins.

b. Funk gave the mysterious substances which Eijkman had discovered the name of vitamins.

c. Banting and McLeod furthered the cause of the study of hormones, diabetes and insulin.

d. F. G. Banting and his associates produced an effective preparation of insulin, the anti-diabetic hormone.76

In this brief summary of the contributions made during the various eras in health history, it may be said that of all the doctors listed, perhaps the four greatest figures in the history of medical sciences are the Grecian, Hippocrates; the Belgian, Vesalius; the Englishman, Harvey; and the Frenchman, Pasteur.

To secure safety in health the contributions of these

doctors in the various eras must be followed by a three-fold study:

1. Prevention of Disease.
3. Mental Hygiene and Personality.

The aim in the prevention of disease is to teach the meaning and scope of preventive medicine; to try to awaken a realization of personal responsibility in securing and in maintaining a healthful condition; to impart knowledge of public measures toward health preservation and control of disease.

Preventive medicine means preventive measures against disease and health improvement. The scope considers hygiene and sanitation. The curative aim embodies quick recovery, prevention of contagion, and knowledge of how to prevent the return of the disease. The prophylactic aim embodies the application of known laws of hygiene to make treatment unnecessary.

1. Many interesting phases have occurred in the development of preventive medicine.
   a. There were eight beliefs in the concept of disease held by the savages and ancient peoples, namely:
      (a) Disease was due to the entrance of evil spirits into the body.
      (b) Disease was an evidence of displeasure of the gods.
(c) Relief came from charms wrought by medicine men or priests.

(d) The sun was the source of life and healing.

(1) Apollo, or Helios—Greek god of the sun.

(2) Origin of heliotherapy—light radiation and violet ray.

(e) The gods were all powerful.

(1) Helios, god of athletics, health and healing.

(2) Esculapius—God of medicine.

(3) Hygeia, his daughter, goddess of health preservation.

(4) Their temples were places of treatment of the sick.

(5) Their priests were physicians to soul and body.

(a) Hygienic living habits

(b) Drugs, oils, massage.

(c) Giving nature a chance as a healer.

(f) Dead bodies were too sacred to be used for scientific study.

(g) The Greeks were cultural and scientific.

(1) Ideals of physical perfection

(2) Development of well-rounded personality through spiritual achievement.
(h) The Romans were superstitious and religious
(1) No system of medicine
(2) No physicians.
(3) Dependence upon the gods who killed or cured. 77

b. There were five predominant conditions in the development in the prevention of disease during the Dark Ages.
(a) Greek learning feared and shunned, but preserved.
(b) Roman superstition and supernaturalism prevailed.
(c) The soul was cultured and the body neglected.
(d) Persecution, by the church, of scientific workers.
(e) Lack of sanitation.
(1) Smells from large cities noticed at great distances.
(2) Pollution of food, water and milk supply.
(3) Public hospitals were breeding places for disease.
(4) Prevalence of epidemics

(a) Cause of disease unknown
(b) No protection against contagion.78

c. After the Dark Ages, perceptible steps of progress were taken.
(a) Among the Greeks, B. C.
(1) Separation of the work of the physician and the priest.
(2) Belief in the healing power of nature
(3) Origin of the theory of observation of symptoms in each case of disease.
(b) In the Middle Ages.
(1) Beginning of doubt of ancient teachings and of religious ideas about disease.
(2) Search for knowledge of structure of the human body.
(a) Dissections were made
(b) Drawings illustrated the discoveries.
(3) Realization of necessity of recognizing a disease and effect of treatment to find the cause.79

d. There were various discoveries in science that aided medical science:
(a) Circulation of the blood in

78Ibid., pp. 25-30. 79Ibid., pp. 30-33.
(1) Arteries and veins—1613
(2) Capillaries—1661

(b) Chemical respiration.
(1) Oxygen—1772
(2) Combustion is combination with oxygen.
(3) Oxygen can be breathed.
(4) Oxygen is replaced by carbon dioxide in respiration.
(5) Combustion warms the body.

(c) Aids to vision.
(1) Microscope (1590-1830)
(2) Ophthalmoscope—apparatus to examine the interior of the eye.
(3) Laryngoscope—for throat examination.
(4) X-Ray—1893
   (a)' Position and condition of fractures.
   (b)' Foreign bodies
   (c)' Concretions—adhesions
   (d)' Internal tumors.

(d) Clinical thermometer—18th Century

(e) Stethoscope—diagnosis of chest diseases in life

(f) Heliotherapy—use of sunlight, lamps and violet-ray.

(1) Sunshine prevents rickets.
(2) Light prevents infections.

(g) Importance and purpose of food elements

(h) Prevention of contagion

(1) Isolation

(2) Quarantine (Quaranta means forty and giorni means days).

(i) Immunity—resistance to disease

(1) Natural—due to protection

(a) Skin

(b) Membranes

(c) Fluids of the body.

(2) Acquired

(a) Active—protective substance
produced in system by inoculation with vaccine.

(b) Passive—protective substance
 injected into the system.

(3) Substances

(a) Vaccine

(b) Anti-toxin

(c) Serum

(1) Anti-bacterial

(11) Anti-toxic.

80 Ibid., pp. 40-50.
e. Along with the growth in scientific discoveries came the growth of humanitarian ideals

(a) Organization of Knights Hospitallers during the Crusades.
   (1) Built sanitary hospitals
   (2) Established medical libraries and schools of anatomy.
   (3) Gave their bodies for dissection.

(b) Efforts toward civic cleanliness

(c) Social and moral influence against
   (1) Alcoholism
   (2) Sexual Vice
   (3) Poverty
   (4) Unsanitary living and working conditions.

(d) Advances in surgery.
   (1) Antiseptics to prevent infection by decomposition and decay
   (2) Asepsis--sterilization through physical cleanliness.
   (3) Anesthesia--to deaden pain

(e) Importance of infantile hygiene and care of the mother.\textsuperscript{81}

2. The individual has a definite responsibility in regard to the development of preventive medicine.

a. To himself
   (a) Formation of health habits
       (1) To build resistance to disease.
       (2) To prevent growth of infection.
   (b) Frequent medical and physical examination.
       (1) To learn of any organic or functional weakness.
       (2) To begin necessary treatment in time.
   (c) Follow-up Consultations.
       (1) To receive advice and guidance as to habits of living.
       (2) To note progress in improvement.
   (d) Cultivation of high ideals
       (1) To establish right associations.
       (2) To stabilize conduct.
       (3) To live finely.\(^{32}\)

b. To Social Group
   (a) Willing observance of public health laws
       (1) Observing quarantine.
       (2) Submitting to vaccination
   (b) Clean personal habits in public
       (1) Covering mouth in sneezing and coughing.
       (2) Avoidance of spitting

\(^{32}\)Health Education, Joint Committee on Health Problems in Education of the National Education Association and Medical Association, 1930, pp. 12-15.
(3) Deposit of waste in garbage cans.
(4) Avoidance of contaminating water sources.
(c) Sanitary care of food in the home and shop.
(1) Health of those employed in its preparation.
(2) Cleanliness of utensils
(3) Destruction of vermin.
(4) Cleansing of raw food.
(d) Strict social morality.
(1) "Veneral disease could be wiped out in a couple of generations by universal adoption of standard of conduct that would eliminate promiscuity." 83

(e) Knowledge of First Aid
(1) To prevent infection
(2) To counteract poison
(a) Chemicals
(b) Plants and animals 84

3. From the individual the responsibility broadens and thus leads to the Public Health Administration.
   a. Measures for public protection, by inspection and control of

83 Arthur Newsholme, Evolution of Preventive Medicine, 1927, pp. 80-90.
84 Health Education, Joint Committee on Health Problems in Education of the National Education Association and American Medical Association, 1930, p. 18.
(a) Milk Supply

(1) Health of the herd.
(2) Care in preparation
   (a) Health and cleanliness of workers
   (b) Sterilization of utensils
   (c) Pasteurization.
(3) Care in delivery.
   (a) Refrigeration
   (b) Bottling

(b) Water Supply

(1) Running Water
(2) Filtration
(3) Sterilization by heat and drugs

(c) Food Supply

(1) Refrigeration
(2) Protection from
   (a) Insects
   (b) Vermin
   (c) Dust
(3) Sanitary preparation

(d) Housing regulations

(1) Prohibitions on overcrowding
(2) Sanitary plumbing

(e) Disposal of waste

(1) Garbage incinerators
(2) Sewage systems
(f) Destruction of nuisances
   (1) Ponds
   (2) Ditches
   (3) Swamps
   (4) Cesspools
   (5) Rodents and insects.85

b. Control of contagious disease.
   (a) Isolation of infected persons
       (1) Hospitals
       (2) Homes
   (b) Immunization
       (1) Inoculation with germ
       (2) Vaccination with vaccine
       (3) Injection of serum
   (c) Maintenance of coastal quarantine

c. Supervision of child hygiene and maternal care.
   (a) Clinics
   (b) Child Centers
   (c) Hospitals

d. Compilation of Vital Statistics
   (a) Record of births and deaths
   (b) Cause and prevention of various diseases
   (c) Prevalence and location of diseases
   (d) Study life span in various localities.

85Smiley and Bould, Community Hygiene, 1929, pp. 60-75.
e. Foundation of laboratories for
   (a) Research
   (b) Analysis of food and medicine

f. Establishment of bureaus for
   (a) Advice to public
   (b) Supervision of manufacture of vaccines, serum, and anti-toxin.

g. Supervision of military and naval hospitals.

h. Supervision of interstate commerce health conditions
   (a) Pure Water on trains
   (b) Cleanliness of food. 86

4. Agencies employed in carrying out health regulations.

a. Local
   (a) School Health Departments
      (1) Health inspection
         (a)' For healthy mental and physical growth
         (b)' To remove handicaps and prevent more serious developments.
      (2) Medical examination
         (a)' To remove causes of remediable defects.
         (b)' To encourage changed living habits and treatment.

86 Ibid., pp. 75-100.
(3) Health promotion
   (a)' Nutrition classes
   (b)' Open air schools
   (c)' Mental Clinics and opportunity classes for the retarded.

(4) Sanitation of buildings and grounds
   (a)' Heating
   (b)' Lighting
   (c)' Ventilation
   (d)' Seating
   (e)' Sanitary toilets
   (f)' Pure drinking water
   (g)' Adequate play space

(5) Physical Education
   (a)' Activities to counterbalance effect of
      i. Sedentary life
      ii. Indoor air
      iii. Nervous tension
      iv. Eyestrain
      v. Individualism in attainment
      vi. Narrow social interests
      vii. Limited social contacts.
   (b)' Health Knowledge
      i. Formation of wholesome mental and physical habits.
11. Improvement of environment.

111. Underlying causes of conditions.\textsuperscript{87}

"No other agency compares with the school in the opportunities offered for contributing to the health of the succeeding generations. We cannot legislate desirable habits of living into men and women, but we may be able to mold after our ideals the hygienic habits of the child. Only let us extend this social conception to all fields of personal and social hygiene and the school will help deliver us from a burden which is more oppressive than the burden of militarism for physical inefficiency, sickness, and premature deaths are costing us as much as all our crime and good-sized perpetual war besides.\textsuperscript{88}

(b) City Board of Health

(1) Control of communicable disease

(a)' Medical Inspection

(b)' Hospitalization

(c)' Immunization

(d)' Veneral disease

(e)' Tuberculosis

(2) Child Hygiene

(a)' School inspection

\textsuperscript{87}Ibid., pp. 100-150.

(b) Infant mortality

(3) Sanitation
   (a) Privies (Chic Specialities)
   (b) Housing
   (c) Plumbing
   (d) Fly and mosquito control

(4) Food and milk supply
   i. Adulteration
   ii. Sanitation

(5) Care of sick poor people

(6) Laboratory

(7) Education

(8) Vital Statistics

(c) Health Center

(1) To associate public and private
    health activities under one roof.

(2) To act as physical headquarters for
    public health work in a community.

(3) To provide hospital service
    (a) Beds
    (b) Nursing
    (c) Laboratory and X-Ray facilities

(4) To establish clinics for
    (a) Tuberculosis
    (b) Child Welfare

89 Smiley and Gould, Community Hygiene, 1929, pp. 150-160.
(c)' Venereal disease
(d)' Mental Hygiene

(5) To be a clearing house for information on facilities for
    (a)' Nursing
    (b)' Hospital
    (c)' Medical Treatment
(6) To distribute educational matter,90

(d) County Health Unit
(1) Headquarters for organizations of county health centers.
(2) Compilation of vital statistics in the county.
(3) Disease control
(4) Child health
(5) Sanitation
(6) Laboratory
(7) Education91

b. State Public Health Work

(a) Most of it done by the local authorities which were first organized by the federal government.

(b) Supervision of local boards of health
(c) Uniform regulations on sanitation

(d) Collection of vital statistics.
(e) Publicity campaigns for education.92

c. Federal Public Health Work

(a) Department of Vital Statistics

(b) Collection of Vital Statistics

(b) Department of Labor

(1) Child Hygiene

(2) Maternal hygiene

(3) Industrial hygiene

(a) Factories

(c) Department of Agriculture

(1) Inspection of

(a) Meat

(b) Food

(2) Eradication of

(a) Coyote

(b) Ground Squirrel

(3) Home Economics

(d) Department of Interior

(1) School hygiene

(2) Industrial hygiene

(a) Mines

(3) Medical work among the Indians

(e) Treasury Department

(1) U.S. Public Health Department

92Ibid., pp. 180-185.
1. Interstate Commerce health conditions.

(2) Costal quarantine

(3) Maritime and army hospital services

(4) Administration concerning narcotics

(5) Cooperation with local boards of health

(6) Control of manufacture and sale of

   i. Vaccine

   ii. Serums

   iii. Toxins

(7) Investigation on human diseases

(8) Education in public health

D. Voluntary health organizations.

(a) American Public Health Association

(b) American Social Hygiene

(c) American Medical Health Association

(d) National order of Public Health Nurses

(e) American Child Health Association

(f) American Tubercular Association

(g) American Society for Control of Cancer

(h) National Committee on Mental Hygiene

(i) American Red Cross

93 Ibid., pp. 185-225.
To determine the nature and cause of disease two things must be done to give a definite idea of what constitutes ill health or disease; to explain some underlying causes of diseases.

1. Nature of Disease

a. Disease is a process

(a) The sum of many factors which often are too small in themselves to cause disease;
   (1) Lack of sufficient rest
   (2) Wrong food combinations
   (3) Infection
   (4) Over-exertion

(b) Disease differs from other processes in the body, as digestion and respiration, in that it is destructive, not constructive.

b. Absence of ease or comfort due to unsoundness or poor working of any part that interferes with the entire mechanism.

c. Based upon

(a) Time when cause originated.
   (1) Hereditary—found in plasm of germ cell before conception.
   (2) Acquired
      i. Prenatal or congenital—during uterine life.
      ii. Post-natal—from birth to death.
(b) Effects produced in the body.

(1) Organic—invoking change in structure of any part
(2) Misbehavior or poor working of any part.

(c) Duration

(1) Acute—(indigestion)
   (a)' Rapid development
   (b)' Quick termination
(2) Sub-acute
   (a)' Sudden onset
   (b)' Gradual termination
   (c)' Gradual onset and termination.\textsuperscript{94}
(3) Chronic (dyspepsia)
   (a)' Outgrowth of other two
   (b)' May last for years

2. Cause of disease

   a. Condition of the individual
   (a) Hereditary weakness
   (b) Unhygienic living
   (c) Mental and emotional states
   (d) Physical degeneration

   (1) Loss of elasticity in walls of arteries.

\textsuperscript{94}\rlap{F. D. Meredith, Hygiene, 1931, pp. 10-35.}
(2) Hardening of organs and tissues
(3) Deterioration of kidneys
(4) Wild growths
   (a)' Cancers
   (b)' Tumors
(5) Nerve defects
   (a)' Infections--infantile paralysis
   (b)' Non-infective--epilepsy
(e) Overgrowth--adenoids.
(f) Chemical unbalance.
   (1) Glandular disturbances
   (2) Malnutrition\textsuperscript{95}

b. Injuring agents.
   (a) Parasites.
      (1) Bacteria--one-celled plants
      (2) Molds--thread-like plants
      (3) Protozoa--one-celled animals
      (4) Worms
         (a)' Hook Worm
         (b)' Tapeworm
         (c)' Ringworm
   (b) Insects--(fevers and plagues)
      (1) Mosquitoes
      (2) Flies and fleas.

\textsuperscript{95} Burkard and Chambers, \textit{Health and Human Welfare}, 1931, pp. 40-60.
(c) Animals--(rabies)
   (1) Rats and snakes
   (2) Dogs (mad) and wolves

(d) Mechanical injuries
   (1) Cuts
   (2) Bruises

(e) Poisons
   (1) Plant
   (2) Chemical
   (3) Animal

(f) Local infections
   (1) Teeth
   (2) Throat
   (3) Nasal passages

(g) Germ Carriers

(h) Missed light cases of disease.\textsuperscript{96}

\section{Environment}

(a) Climate

(b) Density of Population

(c) Living and working conditions

(d) Housing

(e) Occupation

(f) Economic condition

(g) Community sanitation

\textsuperscript{96}H. L. Chapin, \textit{How to Avoid Infection}, Harvarrn Series, 1929, pp. 18-29.
(h) Control of disease.97

The aim in this discussion of mental hygiene and personality is: (1) to explain the meaning of mental hygiene and show its need in daily living and (2) to show what relation exists between mental hygiene and a balanced personality.98

1. Meaning of mental hygiene
   a. Science of happiness
      (a) Happiness is a sign of mental health
   b. Art of living harmoniously
      (a) Self adjustment—to environment and people
      (b) Self management—of all emotions
         (1) Impulses
         (2) Desires
         (3) Moods
         (4) Passions99

2. Aim
   a. To conserve and promote a healthy personality.
   b. To spread knowledge concerning factors that impair mentality and lower the quality of human behavior.
   c. To discover the motives for human behavior.

97Ibid., pp. 29-40.


99Groves and Blanchard, Mental Hygiene, 1935, pp. 3-10.
d. To understand the difficulties that people have.

e. To try to find out why people have shortcomings and how to overcome them.100

3. Conditions showing the need of mental hygiene.
   a. Annually 50,000 people admitted to state hospitals for insane.
   b. One adult in ten in New York admitted sometime in life.
   c. Number of beds in insane hospitals equal those occupied by all other sick combined.
   d. Every second hospital bed in whole country occupied by an insane patient.
   e. Five to ten million other people have unhealthful mental conditions that cause actual breakdown; or partial or complete social or business failures.101

4. Problems in mental hygiene
   a. In childhood
      (a) Personal traits
         (1) Shyness
         (2) Stubbornness
         (3) Timidity
         (4) Excessive day dreaming
         (5) Restlessness
         (6) Inattentiveness102

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102 La Rue, Mental Hygiene, 1927, pp. 45-47.
(b) Anti-social tendencies
   (1) Lying
   (2) Bullying
   (3) Destructiveness
   (4) Sexual problem

(c) Poor habit formation
   (1) Eating habits
   (2) Insufficient sleep
   (3) Thumb sucking
   (4) Nail biting
   (5) Bed wetting

(d) Learning difficulties
   (1) Less than average intelligence
      (a) Progress slowly
   (2) Normal intelligence--difficulty with
       one or two subjects.
   (3) Normal intelligence--needs vocational
       guidance with one or two subjects.

b. In adolescence.

(a) Development of work and play life
   (1) Feeling of inferiority
   (2) Fear of failure or exposure of weakness.
   (3) Fear of economic independence, or
       self support.

103 Ibid., pp. 48-55. 104 Ibid., pp. 55-60.
105 Ibid., pp. 60-73.
(4) Conflict with parental authority and attachment.
(5) Effort to live up to religious demands and ethical standards.
(6) Irksomeness of social standards and customs.
(7) Desire for approval and success.¹⁰⁶

(b). Development of sex and social life.

(1) Forming heterosexual relationships.
(2) Adjustment to fundamental operations of life without repulsion.
(3) Social ostracism due to handicaps.¹⁰⁷

c. Origin of the problems.

(a) Bodily and mental handicaps

(1) Deformities
(2) Birthmarks
(3) Defects of special senses
   (a) Deafness
   (b) Cross eyes
   (c) Speech
(4) Crippling diseases
(5) Peculiarities in feature and stature.

¹⁰⁷ Ibid., pp. 24-32.
(6) Nutritional disorders
   (a) Skin defects
   (b) Under or overweight
(7) Muscular weakness
(8) Hereditary
(9) Congenital disease

(b) Over indulgence at home
   (1) Insists on attention
      (a)' Asks special favors
      (b)' Pouts or sulks
      (c)' Temper
      (d)' Mischief
      (e)' Develops ailments
(2) Too much dependence on older persons
    and mates.

c) Over Suppression
   (1) Shown by
      (a)' Nagging
      (b)' Bullying
      (c)' Brutality
      (d)' Idealistic demands--to "be like"
            someone else
(2) Causes feeling of insecurity and

\[\text{Leon Blumgart, Observation on Maladjusted Children, National Committee on Mental Hygiene, 1931, pp. 13-31.}\]
\[\text{Ibid., pp. 31-38.}\]
apprehension.

(3) Develops resentment against authority.\(^{110}\)

(d) Experiences due to accident or situation

(1) Day dreaming

(2) Self consciousness

(3) Over self assertion

(4) Sex perversions\(^{111}\)

2. Personality

a. Factors that express personality

(a) Bodily contour

(b) Complexion

(c) Facial expression

(d) Clothing

(e) Manners

(f) Voice

(g) Speech

(h) General Behavior—temperament.\(^{112}\)

b. Forces that make personality

(a) Circulatory system

(1) Transports to or from the cells.

(a)' Nutriment

(b)' Oxygen

(c)' Waste products

\(^{110}\)Ibid., pp. 38-47.  \(^{111}\)Ibid., pp. 47-59.

(a)' Heat

(2) Blood pressure keeps the brain in best working condition.

(3) Hemorrhage may result in permanent loss of some brain cells.\textsuperscript{113}

(b) Nervous system

(1) Brain is the special organ of mental personality.

(2) Mental health means that the nervous current must be normal in its action.

(3) The nervous current that flows to and from the brain is stimulated by many influences inside or outside the person.

(4) The healthy personality responds more often to outside influences.\textsuperscript{114}

(c) Endocrine system.

(1) Influences growth of body

(2) Determines mental development

(3) Develops sex characteristics

(4) Governs metabolism.\textsuperscript{115}

c. Temperaments

(a) Result of physical and mental forces

\textsuperscript{113}\textit{Haven Emerson, "Mind in the Breaking," Hygeia, (February, 1931), pp. 213-216.}

\textsuperscript{114}\textit{Ibid., pp. 81-85.  115\textit{Ibid.}, pp. 8, 5-89.}
(b) Quality of mind and body determines behavior

(c) The sanguine type reacts willingly and hopefully and rises higher in life and goes further.

(d) Some types retard mental development, progress and happiness.
(1) Morose—disagreeable
(2) Hysterical—explosive
(3) Combative—stubborn and belligerent
(4) Lymphatic—sluggish and lazy
(5) Nervous—efficient but ungracious. 116

d. Balances personality

(a) Qualities
(1) Reserve energy
   (a)' Freedom from strain
      i. Excess fatigue
      ii. Boredom
      iii. Irritability
      iv. Worry
      v. Suspicion
(2) Interest in each day's work
   (a)' Achieved through healthful living

i. Cheerfulness

ii. Resourcefulness

iii. Tolerance

iv. Self-control

(b') Meet brilliant success or misfortune or failure without losing head.

(3) Faith in other people and self

(4) Enthusiasm enduring to the end of the work or through life—not merely day dreams.

(5) Constructive and well-balanced attitudes toward life fundamentals.

(a') Authority

(b') Society

(c') Bodily functions.

(b). How secured

(1) Study your personality inheritance

(a') Learn your powers

(b') Know your temperament.

(c') Recognize the conditions in your environment and make the most of them.

(2) Keep up your general health

(3) Do not overwork nor attempt what is beyond your capacity.
(4) Avoid extremes of
   (a)' Stimulation
   (b)' Inhibition
   (c)' Scenery

(5) Self-adjustment
   (a)' Keep in touch with the world and play your part in it.
   (b)' Do not shrink and become a fossil.

(6) Practice adaptability.
   (a)' Recognize and accept real conditions.
   (b)' Actively meet them.\textsuperscript{117}

After a thorough study of the three-fold problem has been made the individual is faced with the realization that if all the information is applied to the process of living there will result the attainment of the dream of Ancient Greece--love of health and beauty and moral excellence. What more can be demanded of life than that culmination of that dream?

It is desirable to have a type of check-up which will determine if the individual lives up to the three-fold study. A personal health inventory is suggested.

Figure 17 shows an example of the suggested personal

\textsuperscript{117}Haven Emerson, "Mind in the Breaking," \textit{Hygeia}, (February, 1929), pp. 81-83.
health inventory.

<table>
<thead>
<tr>
<th>Name</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First impression: (100)</td>
<td></td>
</tr>
<tr>
<td>a. Have I enthusiasm? (20)</td>
<td></td>
</tr>
<tr>
<td>b. Have I poise? (20)</td>
<td></td>
</tr>
<tr>
<td>c. Have I self confidence? (20)</td>
<td></td>
</tr>
<tr>
<td>d. Do I show interest in others? (20)</td>
<td></td>
</tr>
<tr>
<td>e. Is my voice agreeable? (20)</td>
<td></td>
</tr>
<tr>
<td>2. Build: (200)</td>
<td></td>
</tr>
<tr>
<td>a. Is my weight what my doctor advises for my height, build and age? (100)</td>
<td></td>
</tr>
<tr>
<td>b. Is my weight following an even course? (100)</td>
<td></td>
</tr>
<tr>
<td>3. Posture: (100)</td>
<td></td>
</tr>
<tr>
<td>a. Do I conform to good posture standards?</td>
<td></td>
</tr>
<tr>
<td>b. Do I conform to good posture standards?</td>
<td></td>
</tr>
<tr>
<td>c. Do I conform to good posture standards?</td>
<td></td>
</tr>
<tr>
<td>4. Feet: (100)</td>
<td></td>
</tr>
<tr>
<td>a. Are my toes straight and without corns? (30)</td>
<td></td>
</tr>
<tr>
<td>b. Are my arches strong? (30)</td>
<td></td>
</tr>
<tr>
<td>c. Are my shoes chosen to protect my feet health? (40)</td>
<td></td>
</tr>
<tr>
<td>5. Hair: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Is my hair clean, in healthy condition? (30)</td>
<td></td>
</tr>
<tr>
<td>b. Is my scalp free from dandruff? (20)</td>
<td></td>
</tr>
<tr>
<td>6. Eyes: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Are my eyes clear and alert? (10)</td>
<td></td>
</tr>
<tr>
<td>b. Are my lids free from inflammation? (10)</td>
<td></td>
</tr>
<tr>
<td>c. Can I read ordinary print at 15 inches? If not, have I &quot;correct&quot; glasses? (30)</td>
<td></td>
</tr>
<tr>
<td>Score either one or the other.</td>
<td></td>
</tr>
<tr>
<td>7. Ears: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Can I hear ordinary conversation at 15 feet? (50)</td>
<td></td>
</tr>
<tr>
<td>8. Mouth: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Are my lips moist and natural color? (20)</td>
<td></td>
</tr>
<tr>
<td>b. Are my gums firm and pink? (20)</td>
<td></td>
</tr>
<tr>
<td>c. Are my lips relaxed? (10)</td>
<td></td>
</tr>
<tr>
<td>9. Teeth: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Have all necessary dental corrections been attended to? (30)</td>
<td></td>
</tr>
<tr>
<td>b. Are my teeth cared for? (20)</td>
<td></td>
</tr>
<tr>
<td>10. Nose: (50)</td>
<td></td>
</tr>
<tr>
<td>a. Are my air passages free? (30)</td>
<td></td>
</tr>
<tr>
<td>b. Am I free from excessive nasal secretion? (20)</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 17.--Personal Health Inventory Score Card.
It is known that neuro-muscular skills develop ease and grace of movement, balance, and poise, which assists in immediate response and lessens the liability to stumble or fall. A good physical development with controlled muscular skills that enable the individuals to make body moves, coupled with an alert mind, make a combination which will do much to save one in hazardous situations.

Through physical and health education society desires to develop physical skills, emotional stability, right attitudes and appreciations with reference to both individual and group safety in health and accident prevention.
First Aid

First aid continues to grow in importance because industries, city, state, and Federal authorities, schools, and colleges, and youth organizations have come to realize the importance of training in first aid as a means to accident prevention. The appalling loss from accidents and the need for immediate first aid is being more and more appreciated by the public in general. 118

To secure a comprehensive view of first aid, it is necessary to understand the symbol of first aid,—the red cross. The Red Cross is recognized by all nations. Those who gather under the shadow of the Red Cross do so because they are there to work together for the health, welfare, and happiness of all the world.

The Red Cross emblem is composed of five equal squares, as shown in Figure 18.

\[\begin{array}{ccc}
4 & & \\
3 & 5 & 2 \\
 & 1 &
\end{array}\]

Fig. 18.—The Red Cross Emblem.

The first square is dedicated to Tradition—the glorious history of the Red Cross movement. This is placed at the bottom because it is the foundation. 119

The second square is dedicated to Hope. The Red Cross is the Hope of those in distress in time of emergency. 120

The third square is dedicated to Faith. Those who are members of the Red Cross, and those who respond to its appeal in time of emergency have faith that the funds will be wisely used and the needs of the sufferers will be adequately met. 121

119 Ibid., p. 1. 120 Ibid. 121 Ibid.
The fourth square is dedicated to Love for it is love of humanity that has, from the beginning, been the motivating force in the Red Cross. It is placed at the top because it is written that 'the greatest of these is love.'\textsuperscript{122}

The fifth square is dedicated to Service because without service there can be no Red Cross.\textsuperscript{123}

With clear conception of Red Cross in mind, it is easier to comprehend first aid. "First aid is the immediate, temporary treatment given in case of accident or sudden illness before the services of a physician can be secured."\textsuperscript{124}

If an individual knows what to do in an emergency, it may be possible to save a person much suffering and to help him make a quick recovery. It is just as important to know what not to do as it is to know what to do. The next step is to know how to render first aid.

When an injured person is given aid the following things must be remembered: (1) keep cool and think clearly; (2) give the injured person all the air possible. This means that the crowd must be kept away and if the patient is indoors, that he be placed in a well-ventilated room; (3) send for the doctor unless you know the injury to be so slight that the patient will not need medical services; (4) do not move the injured person until it is known that it can be done without making matters worse.\textsuperscript{125}

The purposes of First Aid training courses are:

\textsuperscript{122}Ibid., p. vi. \textsuperscript{123}Ibid., p. 6. \textsuperscript{124}Ibid., p. 3. \textsuperscript{125}Ibid., p. 4-7.
1. To prevent accidents. To make the individual see an accident in terms of possible pain to himself and his pocket book is an important feature of any safety program. Impressing the results of failure to have small injuries immediately cared for is one of the best methods of getting people to have all minor injuries treated without delay.

2. To equip the individual with sufficient knowledge to determine the nature and extent of an injury. This does not mean that the first aider is expected to make a complete and accurate diagnosis such as the physician makes, but he should be able to come to some decision as to the nature and possible extent of the injury.

3. To train the first aider to do the proper thing at the proper time. Likewise knowing what not to do is equally important.\(^\text{126}\)

If a person is injured, the trained man possesses the ability to render first aid and he should tactfully assume charge of the situation. To acquire such skill, the learning mechanism plays a vital role.

The individual cannot learn manual performances by observation alone, nor by hearing how and why the work is done. A sound psychological principle verifies this. The learning mechanism, a receiving-linking-responding activity, completes its function only when the idea to be fixed is carried over into a reaction. To learn a performance the knowledge in the consciousness as to how a performance is carried out must find its response in actual performance with the use of the hand and eye. The nerves and muscles must "get the feel of it," and this must be recorded in consciousness before the act is fixed of learned. Then, and

\(^{126}\text{Ibid., p. 3-4.}\)
then only, is it safe to assume that the knowledge is a
usable part of the individual's aptitude.\textsuperscript{127}

There are a few general directions by which the individual
must abide if the greatest success is to be attained. These
rules are as follows:

1. Keep the patient lying down.
2. Look for himorrhage, stoppage of breathing,
wounds, burns, fractures, dislocations and poisons. Be
sure that all the injuries are found.
3. Serious bleeding, stoppage of breathing, and
poisoning take precedence over everything else and
demand immediate attention.
4. If the patient is unconscious or semi-con-
scious following an accident of violence, an injury to
the head is usually the cause.
5. Keep the patient warm.
6. Send someone to call a physician or ambulance.
7. Keep cool and do not be hurried into moving
the injured person until a clear idea of the nature and
extent of the injury is obtained and first aid is
rendered.
8. Keep onlookers away from the injured.
9. Make the patient comfortable and cheer him in
any way possible.
10. Avoid letting the patient see his own injury.\textsuperscript{128}

If something special does not need attention, the first
thing to do is to get the injured person into a safe and
comfortable position. The best position, unless there is
some reason to the contrary, is on the back with the head
low. If the face of the patient is flushed, the head may be
raised slightly; if the face is pale, the head should not
be raised at all.

\textsuperscript{127}Lucy Brinkerhoff, \textit{Learning By Doing}, American

\textsuperscript{128}Enlows, \textit{op. cit.}, p. 4-7.
Very often a person loses consciousness when he has been injured. His clothing should be loosened so that he may breathe freely and so that the blood may circulate without restriction.

After this has been done, check to see if the unconsciousness may have been caused by one of the following:

1. Fainting
   a. Symptoms: paleness, weak and slow pulse, sometimes cold perspiration on forehead.
   b. Treatment: If the patient "feels faint," have him bend forward with his head between his knees. If unconscious, lay him down with his head lower than his body. Aromatic spirits of ammonia may be held under the nostrils. Never try to make an unconscious person drink anything.\(^{129}\)

2. Heart failure
   a. Symptoms: paleness, weak pulse, pain in region of heart. Treatment: Lay patient down and keep him warm. If he is unconscious, use inhalant; if conscious, give liquid stimulant.
   b. Symptoms: flushed face, shortness of breath. Treatment: Prop patient up enough to permit easier breathing and give stimulants as above.\(^{130}\)

3. Apoplexy
   a. Symptoms: face red or gray in color, pulse strong and slow, breathing deep and nasal, pupils of eyes possibly unequal in size. The mouth may be twisted.
   b. Treatment: keep patient lying down, with head and shoulders raised a little. Apply cold wet clothes to head; keep patient quiet; do not give stimulants.\(^{131}\)

4. Shock
   A person who has been in an accident or narrowly escaped death is likely to be suffering from shock.
   a. Symptoms: face pale, eyes glassy, pulse rapid but weak, cold perspiration, chills and possibly nausea.
   b. Treatment: Apply heat. Patient should be well covered with blankets to help retain the body heat.\(^{130}\)\(^{131}\)

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\(^{130}\)Ibid., p. 11.  \(^{131}\)Ibid., p. 12.
warmth. Heat should be applied if available, but be careful not to burn the patient. A person in the state of shock burns easily. The heat should be applied on the soles of the feet, between the thighs or across the abdomen.  

5. Sunstroke  
   a. Symptoms: face red, hot, and dry; pulse strong and fast; high fever; perhaps nausea. Sunstroke is caused by prolonged direct exposure to the sun's rays.  
   b. Treatment: lay patient on his back in a cool place away from the sun, raising head and shoulders a little. Apply cold wet cloths. Bathe the victim in cold water, following with a rub down. Do not cool patient too rapidly. Do not give any stimulant.  

6. Heat Prostration  
   a. Symptoms: face pale, pulse weak, perspiration profuse on forehead, face and hands; faintness and nausea. Cause may be any kind of heat, indoor or outdoor.  
   b. Treatment: lay patient flat on back with head low and keep him quiet. Put extra clothing or covering on patient and apply heat. If conscious, the patient may be given salt water to drink; do not chill the water. If patient does not feel better soon, call a doctor.  

7. Epileptic Fits  
   a. Symptoms: muscular jerking of body; clenching of teeth; rolling head and throwing arms; drooling saliva from mouth.  
   b. Treatment: keep patient from injuring himself but do not try to stop the jerking. If possible, put something between teeth to keep patient from biting his tongue. Keep body warm.  

Much may be said about stimulants. If the person who is injured asks for water, it may be safely given. The majority of people think of stimulants in terms of alcoholic drinks. An alcoholic stimulant is seldom necessary and may do a great deal of harm. The best thing to do is to keep

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132 Ibid., p. 13.  
133 Ibid., p. 13.  
134 Ibid., p. 13.  
135 Ibid., p. 13.
the patient warm and comfortable, if possible.

Stimulants are beneficial in the treatment of mild cases of shock but they should be administered carefully if the case of shock are coffee, tea, and spirits of ammonia.\(^{136}\)

If the patient has a fractured skull, or in cases with a strong pulse and red face, such as sunstroke, a stimulant must not be given. In cases of severe bleeding, either inwardly or outwardly, only water may be given with safety. Even water must be given very slowly. Other stimulants should not be used until the bleeding is stopped.\(^{137}\)

Aromatic spirits of ammonia, tea, or coffee may be administered carefully when a patient has been revived by artificial respiration.\(^{138}\)

When a person has been the victim of an epileptic fit, no stimulant of any sort should be given.

If an individual has a heart attack, a stimulant of aromatic spirits of ammonia, coffee, or tea may do some good. Certainly it will do no harm.\(^{139}\)

Nosebleed occurs from various causes or it may occur without an injury to accompany it. If the nosebleed is only slight, there is no harm done, and little treatment is needed. If the bleeding is continuous, then it is past First Aid, and a physician should be called immediately. A piece of

\(^{136}\)Enlows, op. cit., p. 88.  \(^{137}\)Ibid., p. 90.

\(^{138}\)Ibid., p. 89.  \(^{139}\)Ibid., p. 205.
absorbent cotton placed in the nostril is often beneficial, especially with children. This cotton provides a greater possibility of coagulation. When the nosebleed occurs to a baby or an elderly person it may be dangerous. If nosebleed is serious, have the patient sit up with the head slightly forward. Additional aids are: apply cold cloths to the back of the neck, and loosen the clothing.\textsuperscript{140}

Carbon monoxide poisoning is particularly dangerous because carbon monoxide gas is tasteless, odorless, and colorless. It is very deadly; only one per cent is necessary to produce death in a very few minutes.\textsuperscript{141}

To prevent the possibility of carbon monoxide gas poisoning, two things should be done: (1) do not run an automobile engine in a closed garage, and (2) do not sit in a closed parked car while the engine is running.\textsuperscript{142}

The symptoms of gas poisoning are yawning, headache, dizziness, nausea, and a fluttering of the heart. Unconsciousness and death generally follow. Often the skin is a peculiar cherry red color.\textsuperscript{143}

To care for a victim, get him into fresh air quickly. Fresh air and artificial respiration cause the carbon monoxide to leave the blood. To be sure that the desired results be obtained, the safest policy is to use the inhalator.\textsuperscript{144}

\textsuperscript{140}\textit{Ibid.}, p. 104. \textsuperscript{141}\textit{Ibid.}, pp. 121-125.
\textsuperscript{142}\textit{Ibid.}, pp. 123-125. \textsuperscript{143}\textit{Ibid.}, pp. 121-125.
If the patient is conscious, stimulants help. 144

If a person has been poisoned, it is necessary to act immediately. For information concerning poisons, Table 2 gives the poisons, symptoms and treatments.

When the surface of the body has been exposed to poison ivy, poison oak, or sumac, the exposed places should be washed as soon as they begin to itch. The spots should be washed with a five per cent aqueous solution of Ferric Chloride. This should be followed with common soap and water. If this is done the development of the disease will be prevented in most cases. 145

The symptoms of convulsions are not very evident. Extreme restlessness and twitching of the face muscles sometimes precede an attack. The face is pale at first, and later becomes blue. The body may become stiff. To treat a victim, the first thing to do is to get the patient on the ground or floor, give him plenty of air, and keep onlookers at a distance. The patient should be prevented from biting his tongue by placing a towel or cloth in his mouth, between his teeth. If possible, undress the patient, and give him a hot bath. Keep a cold cloth on his head at the same time that the bath is given. Immediately after this, give the patient an enema. Then place him in bed, preferably between warm blankets. 146

### TABLE 2

**POISON TABLE**

<table>
<thead>
<tr>
<th>Poison</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Acid and alkali poisons—</strong>&lt;br&gt;Give no emetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong acetic</td>
<td>1. Burns of mouth and throat.</td>
<td>1. Drink freely of lukewarm water.</td>
</tr>
<tr>
<td>Hydrochloric</td>
<td>2. Nausea, severe shock.</td>
<td>2. Give magnesia, wall plaster, chalk lime water—a tablespoon of these in glass of water.</td>
</tr>
<tr>
<td>Nitric</td>
<td>3. Abdominal pains</td>
<td>3. Soothing drinks</td>
</tr>
<tr>
<td>Sulphuric</td>
<td></td>
<td>4. Piece of ice to suck.</td>
</tr>
<tr>
<td>Car-bolic</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Alkalies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caustic Potash</td>
<td>2. Nausea, severe shock.</td>
<td>2. Give vinegar or lemon juice, sour wine, (one or two tablespoons in water)</td>
</tr>
<tr>
<td>Lime</td>
<td>3. Abdominal pains</td>
<td>3. Soothing drinks</td>
</tr>
<tr>
<td>Washing Soda</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>II. Poisons in which emetics should be given</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drugs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narcotics or sleeping drugs</td>
<td>1. Pupils of eyes contracted.</td>
<td>1. Give emetic</td>
</tr>
<tr>
<td>Headache powders</td>
<td>2. Tired or sleepy feeling.</td>
<td>2. Give strong hot tea or coffee, no liquor.</td>
</tr>
<tr>
<td>Laudanum or opium</td>
<td>3. Sort of dazed.</td>
<td>3. Deep patient awake.</td>
</tr>
<tr>
<td>Morphine</td>
<td>4. Very slow pulse.</td>
<td>4. Apply heat.</td>
</tr>
<tr>
<td>Veronal</td>
<td>5. May be unconscious.</td>
<td>5. Artificial respiration.</td>
</tr>
<tr>
<td><strong>Irritant Poisons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloride</td>
<td>1. Gagging or vomiting, diarrhea</td>
<td>1. Give emetic</td>
</tr>
<tr>
<td>Arsenic</td>
<td>2. Cramps; possible fainting.</td>
<td>2. Give quantities of water.</td>
</tr>
<tr>
<td>Flypaper</td>
<td></td>
<td>3. Soothing drinks</td>
</tr>
<tr>
<td>Copper Sulphate</td>
<td>3. May have abdominal pains</td>
<td>4. Give hot tea or coffee.</td>
</tr>
<tr>
<td>Creosote</td>
<td>some time later.</td>
<td>5. Keep patient warm.</td>
</tr>
<tr>
<td>Bichloride of Mercury</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Poison</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar of Lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxalic Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver Nitrate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc or Zinc Chloride</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Poisons in which Emetics should be given

<table>
<thead>
<tr>
<th>Phosphorus Poison</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus paste</td>
<td>1. Sagging or vomiting, diarrhea</td>
<td>1. Give emetic</td>
</tr>
<tr>
<td>Match heads</td>
<td>2. Cramps; possible fainting.</td>
<td>2. Give quantities of water.</td>
</tr>
<tr>
<td>Rat poisons</td>
<td>3. May have abdominal pains some time later.</td>
<td>3. Soothing drinks</td>
</tr>
<tr>
<td>Vermin killer</td>
<td></td>
<td>4. Give hot tea or coffee</td>
</tr>
<tr>
<td>Stimulating Poisons</td>
<td></td>
<td>5. Keep patient warm.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. One tablespoon epsom salts in water.</td>
</tr>
</tbody>
</table>

| Turpentine                | Pupils of eyes dilated.                       | 1. Give stimulants (no Liquor) |
| Belladonna                | 2. Heavy snoring, breathing.                 | 2. Keep warm                   |
| Deadly nightshade         | 3. Strong rapid pulse.                       | 3. Induce vomiting             |
| Alcohol drinks or Alcohol |                                               | 4. Artificial respiration      |
|                           |                                               |                                |
| Liniments                 | Weak pulse                                    | 1. Induce vomiting             |
| Camphor Essence           | 2. Faintness                                  | 2. Give stimulants             |
|                           | 3. Odor on breath                             | 3. Keep warm                   |
|                           | 4. Delirium; convulsions.                     | 4. Inhalant (smelling salts).  |

| Food Poisons              | Vomiting and diarrhea                         | 1. Give emetic                 |
| Tinned Foods             |                                              | 2. Give castor oil             |
| Fungi or toad-stool      |                                                        | 3. Warmth, lots of fluids.    |

In all wounds there is some bleeding. If the wound is an ordinary one, the bleeding can be stopped by exposure to air or by the application of pressure of the wound dressing. If there is dangerous bleeding, it must be stopped immediately. To do this, one must have a knowledge of the pressure points.

These pressure points are as follows:
1. For arterial bleeding above the ears and eyebrows, digital pressure should be applied at a point directly in front of the top of the ear.

2. For arterial bleeding below the eye and above the chin, apply pressure to jaw. (If you run your finger along the jawbone, you will find a hollow place-pressure should be applied here).

3. For bleeding from the throat or neck, place fingers along the front of the two main cords and press firmly inward and backward toward the spine. (Be careful not to choke the patient).

4. For bleeding from armpit, shoulder, or upper arm, pressure should be applied in the hollow of the collarbone, downward and backward.

5. For bleeding of the arm at any point from the hand to the middle of upper arm, place pressure about four fingers' width, or a handbreadth, down from the armpit, pressing inward against the one bone of the upper arm.

6. For bleeding of the leg, apply digital pressure four fingers' width or a handbreadth, down from the crotch, pressing inward against the thigh bone.\(^{147}\)

Tourniquets are used to stop bleeding from arteries. A tourniquet must have a strap (a large handkerchief will do) to go around the limb, a pad to place on the artery, and some means of pressure to stop the flow of blood.

The tourniquet may be applied to two places:

1. Around the upper arm, just below the armpit, for bleeding at any point below.

2. Around the upper leg or thigh, just below the groin, for bleeding at any point below.\(^{148}\)

When a tourniquet is applied, care must be used not to bruise the skin and muscles.

Sprains are injuries to joints. (temporary dislocations). These injuries may be caused by the ligaments of the joints.

\(^{147}\)Zwetsch, op. cit., p. 38. \(^{148}\)Ibid., p. 38.
being torn, twisted or stretched. The best treatment is to elevate the injured part and to apply cold applications. Give the sprained section plenty of rest. In case of a severe sprain, the place should be bandaged into its normal position. 149

A dislocation is a bone that gets out of place at a joint. Dislocations occur frequently in the shoulder, jaw, elbow, knee-cap and thigh. They are usually caused by blows or falls. 150

Only a doctor should treat a dislocation. Until a physician arrives, the patient should be placed in a comfortable position and the injured joint should be covered with cloths that are wrung out of very hot or very cold water. 151

Injuries to the eye usually come from the presence of splinters, bits of glass, metal shavings, foreign bodies, (dirt, sand, cinders, glass, coal, emery dust) in the eye. 152

Do not rub the eye. Close the eyes so that tears may gather to wash the objects from the eye. This also prevents harm to the sensitive tissue that covers the eyeball. If this policy fails, then take the upper lid, pull outward and downward. At the same time, close the nostril on the opposite side of the injured eye and blow the nose hard. If the

object can be seen in the eye, remove it with the corner of a clean handkerchief. If the object is difficult to find, consult a doctor at once. If the eye is painful, wash it out with a good eye wash or a little castor oil and apply a bandage that has been dipped in cool water.\footnote{Ibid., pp. 101-104.}

Bruises are the commonest of all injuries.

A bruise is usually caused by a blow to some part of the body which breaks the small blood vessels in the tissue just under the skin. As the blood oozes into the tissue of these broken vessels, it causes swelling and discoloration, as in the familiar "black eye."

Usually no treatment is needed. Ice or cloths wrung out of very cold water when applied immediately, help to prevent discoloration, to keep down the swelling, and to relieve the pain.\footnote{Ibid., p. 175.}

If any injury breaks the skin, the important thing is to keep the wound clean and kill any germs that may have entered. With a cotton swab, apply tincture of iodine. Apply this disinfectant to the wound and surrounding skin. Cover the wound with dry, sterile dressing held in place with a bandage, but do this only after the wound has been washed off with alcohol. Iodine, if covered, tends to blister the wound. Special care must be used if the wound has been caused by a rusty nail, or any dirty object. The tetanus anti-toxin should be administered in such a case. Do not touch the wound with fingers or any object that has not been properly sterilized. Infected wounds are those in which pus has formed. The symptoms are those of inflammation:
heat, redness, swelling, pain. The wound throbs and the victim cannot use the affected part of his body as well as usual.\textsuperscript{155}

The type of wound caused by a nail, the puncture-wound, is a dangerous type of wound, because it cannot be easily disinfected and because it usually fails to bleed profusely enough to carry off any unsanitary matter forced into the puncture. The danger of blood poisoning or tetanus is greater in punctured wounds.\textsuperscript{156}

Bites and Stings: Stings of poisonous insects are painful, but seldom fatal. These stings can usually be relieved by applications of soda or ammonia. The teeth of animals make bad, lacerated or punctured wounds. These bites should be treated as ordinary wounds are treated, unless there is a possibility of the animals being rabid. If this possibility exists, then take no chances; take the rabies vaccine treatment.\textsuperscript{157}

For burns by acids, wash the burns with a solution of water and soda. In case of burns from alkalis, wash the parts with lemon juice or vinegar water. If the burn comes from an electric current, treat them like any other burn.

\textsuperscript{155}\textit{Ibid.}, pp. 64-82. \textsuperscript{156}\textit{Ibid.}, pp. 91-93. \textsuperscript{157}\textit{Ibid.}, pp. 96-100.
Baking soda dissolved or lard are good dressings for burns. If a person is badly burned and his clothing sticks, soak the clothing off with castor oil or olive oil. Exclude the air from the burned surface with a thin layer of boric-acid ointment or sterile vaseline.158

158 Ibid., pp. 176-184.
CHAPTER III

CONCLUSIONS AND RECOMMENDATIONS

As a result of the comprehensive study of safety in all its phases, the writer arrived at the following conclusions:

1. Since the public pays for accidents in one way or another, the traffic accident problems are recognized, and thought is given to the economic costs of accidents.

2. The parts of an automobile to be kept in good mechanical condition are: brakes, lights, tires, steering gear, and windshield wiper.

3. A good driver avoids accidents despite weather conditions and poor visibility where such hazards exist by the simple means of exercising increased care and caution.

4. Many drivers foolishly feel that they have their cars under absolute control when their speeds are actually far in excess of the dictates of safety.

5. Carelessness is an important factor in the traffic accident situation, and it is one of the evils to be corrected if we are to cope successfully with this particular problem.

6. Carefulness shows thoughtfulness, courtesy, and consideration for the rights of others, a habit which is strangely lacking in many drivers of today.
7. "Chance-taking" amounts to reckless driving and "reckless driving" amounts to "incompetent driving." Chance-taking is the intentional performance of an act in which an element of danger is involved. The reward is not worth the risk involved because the chance-taker, sooner or later, is called upon to pay.

8. Driving an automobile requires constant alertness. A driver whose mind is occupied with thoughts far afield is in no position to drive with safety to himself or to others. The safe and intelligent operation of an automobile cannot survive absent-mindedness.

9. The primary purpose of a drivers-license law is to prevent persons who are physically or mentally unfit from driving vehicles on streets and highways.

10. People who own or drive automobiles must understand the civil and criminal responsibility arising out of the use, ownership, and operation of motor vehicles.

11. The speed law requires every motorist to recognize his margin of safety under existing conditions and to regulate his speed accordingly.

12. Definite speed restrictions are set up as guideposts to indicate safe speeds for various zones where recognized hazards exist.
13. Drivers not only should know traffic rules, but they should also obey them.

14. Public safety requires the elimination of the physical causes of accidents; therefore, from the point of view of safety, it is an accepted fact that planning for the future in street and highway construction and in the regulation of traffic is important.

15. Man is a creature of habit, and the development of the habit of safety is one of the best habits man can form.

16. The traffic accident problem is a question of individual responsibility.

17. The major hope for a permanent solution of safety problems lies in the field of education.

18. A course in safety broadens the interests of the participants.

19. The facts in safety are of importance to man in his daily life.

20. A course in safety increases intellectual curiosity and causes individuals to seek further knowledge of the subject.

21. The safe way is the right way and the best way, not only from the standpoint of human satisfaction, but also from the standpoint of social efficiency, good citizenship, and economy.
22. A study of the national organizations engaged in
the promotion of the safety movement results in the
development of the bigness of the problem and the
social acceptance of safety.

23. The game of Safety has three sets of rules: those
made by legislatures, those made by physics, and
those made by common sense.

24. All parents know enough of traffic hazards to wel-
come stress on traffic safety instruction in the
schools.

25. The habitually safety-conscious individual looks
in both directions before he crosses a street; he
does not dart out into the street from between
parked automobiles; he does not attempt to pass a
car on a blind curve.

26. It is not sufficient for an individual simply to
know that one thing is safe and another unsafe; he
must know why.

27. The person who has a safety conscience is pleased
with himself when he has employed safety practices,
and is comfortable and sorry when he has violated
them.

28. Real education implies a knowledge of first aid.

To benefit the new social order, it is recommended that
compulsory instruction should be given in every elementary
and secondary school in the state in the subjects of public
safety, accident prevention, and accident care, to insure the acquisition of each individual of the following factors:

1. Safety-consciousness
2. Safety intelligence
3. A safety conscience
4. Road courtesy
5. The ability to render first aid in case of necessity.
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