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58th NATIONAL SAFETY CONGRESS

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REMARKS

By STEPHEN HESS

National Chairman, 1970 White House Conference on Children and Youth

On one level a White House conference is a piece of machinery, composed of all the expected things: desks and accountability, personnel slots, a mandate, mimeograph machines, not enough money, and a great quantity of carbon paper. Such a machine has a short life, however. A White House conference lasts just a few days and then is disassembled.

The White House Conference on Children and Youth has gone through this cycle of assembly and disassembly six times in this century. It was first called by President Theodore Roosevelt in 1909 and has been convened by Presidents every 10 years since then. President Nixon announced the 1970 Conference last year and conferred upon me the honor of being its chairman. Now and then I am reminded of that wonderful remark by Daniel Webster: "The President carries on the government; all the rest are subcontractors."

The conference we are planning is in two parts: a White House Conference on Children, to be held in December; and a White House Conference on Youth next year. It would have been easier, I guess, to have remained with the traditional design and have had a single conference on children and youth. It would have been easier—but it would not have easily fitted the needs of this time.

The problems are quite different among these two age groups. The opportunities are different, also. For example, two-thirds of the participants at our youth conference will be between the ages of 14 and 24. This is a rather special opportunity we have seized, and I'm happy we did.

There are a number of aspects of the Youth Conference that are special this time. Perceptions, for example. The point has been well demonstrated that adult perceptions of youth problems have not been adequate. We see kids through a glass darkly, as it were. Therefore, it's important, we feel, to gain the perceptions of youth, given first-hand in the first person. In this we are reflecting a general awareness of the limitations of adult

vision. Young people are now invited to serve in many new capacities as peers of adults in formerly all-adult pursuits.

The movement to involve youth in faculty and administration affairs in education is now almost commonplace. But the same movement is gaining momentum in government, too. One prime example is from the Commonwealth of Pennsylvania, where Governor Shafer has already appointed 48 high school and college students to state advisory and policy-making boards, commissions, and agencies. Governor Shafer, writing to President Nixon of this exceptional program, said it was not a panacea but, "Rather, it illustrates that we can establish communication with our young people."

Such communication is among the goals of our Youth Conference. I think we are achieving a good measure of communication in the very process of building the Conference itself. The substance of the Conference has not been imposed by executive fiat; it has come to us from young people themselves. Literally thousands of young people provided the recommendations from which the 10 major concerns of the Youth Conference were drawn: the environment; drugs; education; foreign relations; poverty; employment; race relations; the draft; legal rights and justice; and a very tough one—values, ethics, and culture. A task force of citizens is working in each of these areas. Each task force has a youth and an adult as co-chairmen.

The task forces are meant to reflect the demography of youth. They come from 41 states, the District of Columbia, and Puerto Rico. Thirty-five per cent are working youth (compared with 42 per cent in the nation); 29 per cent are from minority groups (compared with 20.2 per cent in the nation). Represented are young policemen and young people who have been in trouble with the law; young people from the military and young conscientious objectors; teenage housewives and student anti-war leaders; young teachers and young blue-collar workers.

The 10 task forces came together for the first time in late August at the Irvine cam-

pus of the University of California. I was there as host and felt that particular stirring that happens when a gathering is more than just the sum of its parts. Because they were together, something larger and more significant than a meeting took place. Color, age, income, sex, speech, and dogma refused to be barriers to communication. All energies were directed toward the issues and the means by which those issues could be explored during the next seven months. There are still many problems ahead, but I have a new confidence that they will be met in what our staff now calls "The spirit of Irvine."

The Conference on Children is another matter, but no less engaging. It, too, is moving ahead with a roster of outstanding experts in such fields as early childhood education, welfare, and health. The object of our attention is the child from birth to age 13, who shares, in some respects, the same problems as older youths: uneven education, racial and ethnic discrimination, less than adequate legal protection, and harmful conflicts of values. There are also obvious differences: Selective Service and employment are special problems for youth, while immunization and reading readiness are in the center of the child's world. We may have arrived at the time when youth will predominate at a White House conference called on their behalf; it is doubtful that we can do the same with children 13 years of age and under.

But we did feel that some compensation was in order. Thus, the Conference on Children is a child-centered conference. We have combed through the professions—law, education, art, health, communications, social science, and government—to bring together in leadership roles people who have shown they really care about children.

Again, we have an embarrassment of riches in America; with 205 million Americans spread across a continent, we find thousands of capable men and women who have decided they would spend their professional lives caring about the needs of children. From these, we have chosen 384 to pull together the various issues with which the 1970 Conference must deal. There are 24 forums, with 16 members in each. A chairman and vice-chairman hold the reins on each forum, and that is quite an assign-

ment. Rather than keep the reins tight and pursue the traditional course of balanced panel discussions, we have devised the forum approach, allowing members of each forum to put together the experience they believe would be most appropriate to their subject during the December meeting. For example, the forum on handicapped children may wish to include not only a panel discussion but also show a film and schedule a site visit to an institution in the metropolitan Washington area. The forum concerned with legal rights of children may wish to employ the adversary process of the courts to dramatize the issues they believe need to be studied.

We have the privilege of securing the good offices of some very creative and innovative persons. In return, we offer them the freedom to attack their specific forum topics in the way they and their colleagues agree will be most fitting and compelling.

As you know, accidents are the number one killer of children. The National Safety Council reports that last year accidents took more lives of children up to 14 years of age than the six leading diseases combined. Nearly half of these fatal accidents were caused by automobiles.

One thousand American children from six months to three years old will be murdered this year in automobile accidents because their parents and others did not protect them with adequate restraining devices. This is "childslaughter" just as surely as if the lethal weapon had been a gun.

Another 30,000 young children will be needlessly injured for the same reason.

Preventing such senseless brutality must be of highest priority to government, the automotive industry, safety groups, and especially parents. The tragedy is that a substantial number of these fatalities could have been prevented had the children been wearing safety belts or other restraining devices. Seat belts that are appropriate for older children are already mandatory, and starting April 1 the makers of car restraining devices for younger children will have to comply with rigid safety standards. Thus, parents soon will have no alibi for letting their children die needlessly in auto accidents.

Those who fail to insist that their children wear safety devices while in a car are guilty of a far more permissiveness that can only be described as sheer indifference to

the welfare of their offspring. I implore you as safety educators to lead a crusade to persuade parents to get the proper restraining devices and make their children wear them.

As we enter these autumn months, we become aware that on any given day, somewhere in the United States, a group of individuals is meeting on the substance of the White House Conference on Children and Youth. If not a youth conference task force, then a children's conference forum. If not a state governor's commission on children and youth, then a mayor's committee on youth potential. Or possibly a lobbying effort in a state legislature. The Kentucky Committee on Children has proposed 16 bills to its state legislature and has seen 10 of them enacted into law. That's a 62 per cent record of success in the cause of a better world for children and youth in Kentucky—and we haven't even had the national conference yet!

The news from Kentucky is important to us and has become a kind of symbol of what might be. It is our hope that the Kentucky experience becomes the rule and not the exception when the White House Conference is over. We hope that all this activity, all this vast expenditure of human energy, will crystallize into solid ideas and then be turned to action. We build this complicated machine—the conference—only to break it down again after just a few days' running; we may discard the conference, but not its results.

At every step of the way, we must consider planning for post-conference action. We have not dedicated our work to the production of yet another un-tried report. If the Conference on Children resolves that a child advocate is a good idea in the juvenile court system, then it must be possible to keep going, to maintain the momentum of that idea, to put into effect a plan of action whereby a child advocate system may actually become reality. And if the Youth Conference says that special programs, adequately financed, must be directed to the problems of rural youth, then the agenda must call next for the development of those programs, their embodiment in law, and the money voted by Congress or state legislatures to make them go.

There is ample precedent for our believing that this should be our goal. In the past, the White House Conference on Children and Youth did produce new law and new opportunity: the establishment of the Children's Bureau; the drafting of the Mother's Pension Plan, forerunner of today's aid to families of dependent children; the Sheppard-Towner Act, which became the maternal and child health sections of the Social Security Act. Ideas such as "Head Start" and "Peace Corps" have been thrashed out at these conferences, although not under those names. The list is quite creditable, we hope to add significantly to it following the 1970-71 White House Conference on Children and Youth.

Through this century, the White House conference has been part of the democratic process. Whitehead equated "process" with life, a changing, developmental, unfolding, responsive experience. The democratic process is just that. It is not definitive, nor does it pretend to be. To become part of that process is to plunge into a living experience that has a general direction, holds some general promise, but is not pinned in by a tyranny of preconceived ideas.

To speak optimistically of becoming part of a non-definitive process is not a "cop-out." No White House conference has ever sealed, once and for all, a set of conclusions upon a given set of questions. But we do think that a conference called by the President of the United States should pulse with life and creative energy. As some of our young staff would say, "It should have good vibes." It should run swift and deep with the process of our social and political experience. Its every event—forum or task force meeting, film festival, site visit, dialogue—should have an excitement and a meaning worthy of the entire process. To quote Whitehead again, "Process... involves the notion of a creative activity belonging to the very essence of each occasion."

We aspire to that grand notion and hope not to be disappointed. We wish to provide the occasions in which our most creative citizens—young and old—may assemble and do good work for America's young.

A White House Conference on Children and Youth is not a hardware exhibition. After a certain point, the handy methods of quantifying and measuring prove to be inadequate.

As I discovered to my delight at the Irvine campus in August, 120 people—the full complement of all Youth Conference task force members—add up to much more than just 120 people. They equal a generation, nothing less.

They and the hundreds of others involved in our national events, plus the many thousands working at state and local levels, all have become agents of change, actors in the main process of our society: growth, life, well-being for all.

The construction of a White House conference is no simple matter. A conference devoted to children and youth is complex by any standard. However, I think it a tradition of such conferences stretching back some 60 years did not exist, then this would be the

very time to invent one. Instead of avoiding our great national questions, Americans have the excellent habit of asking them and holding on until a good answer comes forth.

That's the kind of enterprise we are engaged in today. I am enthusiastic. My enthusiasm may be clouding my vision. Maybe so, but in such moments of doubt, I think it is good to recall the words of President Theodore Roosevelt, that wonderful, robust optimist who started this process back in 1909. The president said, "It is hard to fail; but it is worse never to have tried to succeed."

We are trying, and I am confident we will succeed with an excellent White House Conference on Children and Youth.

THE RESPONSIBILITY OF THE SCHOOL TO TEACH SAFETY EDUCATION

By DANIEL DEMAURO
Safety Coordinator, Broward County Schools, Broward County, Fla.

History has revealed that the home apparently has not been able to do the job adequately of educating boys and girls in the area of accident prevention.

If we look at the statistics from last year's *Accident Facts* we will notice that youngsters from one to four years of age were involved in 5,074 accidental incidents which were fatal. In the next category, which is the beginning of school age—five through ten—7,847 boys and girls were involved in fatal accidents. This is a ten year span and the number is approximately 2,500 higher than a five year span when the child, theoretically, was under the complete guidance, supervision, control, and instruction of the parent. This itself indicates that even on a one-to-one ratio—or a one-to-two ratio—parents still are unable to reach their children educationally in order to prevent incidents which apparently are causing physical harm and even death. Therefore, it is only natural that the school systems throughout this nation who have the personnel who are qualified and capable of instructing the boys and girls in the day to day activities of life assume the role of safety education.

Let us look at history and relate this to the motor vehicle. Many years ago, when Junior was first learning to drive the Model A Ford, Dad usually put Junior behind the wheel, out in the cornfield, sat beside him, showed him how to shift the gears and said, "Okay, Junior, drive." This was the way that many individuals learned to drive a motor vehicle. We know, each year since the conception of the motor vehicle, the number of motor vehicle collisions, injuries, and fatalities has risen steadily, indicating something was wrong.

Within the past decade, legislation has been adopted throughout the nation which requires school systems to provide Driver Education and Traffic Safety Education for boys and girls prior to receiving their full operators license. Elective officials, locally and nationally, recognized that the school system was the only way to reach the boys and girls of this age and can teach them the proper way to handle a motor vehicle in today's society. There have been many studies in the area of Driver Education in recent years. The majority of the studies have revealed that the boys and girls who have successfully

completed the Driver Education course had less collisions, less traffic citations, and are far superior drivers to the youngsters who were not involved in Driver Education. This again, backs up the theory that the schools do have the responsibility of teaching Safety Education as well as Traffic Safety Education because the teachers are trained; they can do the job, and they have done the job in the past.

I am sure you have all heard the story about the little boy who was spotted by the police going around, around, and around the block carrying with him a handkerchief with a couple of peanut butter sandwiches in it. The police officer said, "Sonny, I have noticed you going around, around, and around the block—what seem to be the problem?" The boy responded, "I am running away from home—but I am afraid to cross the street." Again, this story is indicative of the lack of safety education at the home level. It is not because parents are not concerned for their children—it is strictly the fact that they are not trained to properly educate the children in the areas of accident prevention and personal safety; therefore, they use the "Don't" method, which is simply, don't cross the street, don't pick up the knife, don't ride your bike, etc., etc., rather than as a good educator would do; that is, teach the child respect and the proper procedure.

Without doubt, everybody who is involved in the supervision phase of safety education or accident prevention has been approached by various and sundry organizations such as PTA or local civic clubs who are very much concerned about safety, and most of them want to do something so, of course, their first statement is, "Let's have a safety slogan contest," or, "Let's have a safety essay contest." Usually when you ask the purpose for this they respond by saying, "This is the way to make the children safety conscious. If they think about slogans they will be aware of problems and will learn by this method." The same thing is true about a safety essay contest. They feel the way to make the children conscious of safety is to have a contest. Obviously, anybody who has done research or any sincere work in the field of accident prevention knows that a contest, especially a slogan contest or an essay contest, is not worth the time and effort and the energy to even write the

rules; but due to a lack of understanding of the educational process, many people feel that this is the way to do it. Again, the school personnel are qualified, trained, and do know the proper procedures. They have in the past and are continuing—day by day—to incorporate accident prevention techniques into the entire school curriculum.

In discussing problems in the field of accident prevention with safety officials throughout the nation, it has been determined that it is unanimous that the biggest problem in the field of accident prevention is the poor example set by the parents, and, of course, youngsters will mimic their parents in most cases. I am sure that you all have experienced situations in which parents have set a poor example for the youngsters which the youngsters followed, and later resulted in personal injury. One, specifically, that I am referring to here is the situation where dad drives his motor vehicle 45 miles an hour in a 35 mile an hour zone, continuously, day in and day out; or 70 miles an hour on a highway where the posted speed is 60 miles an hour, and jests about the speed limit by saying "Oh, don't worry about it, Sonny; the police never give you a citation if you are five or ten miles over the speed limit." This is what I am referring to—that is the attitude of many, many parents. If you stop and analyze the situation then you can understand why so many youngsters disrespect the posted signs and signals. It is strictly a carry-over from home training.

To emphasize this, I would like to tell a story that happened to us in Fort Lauderdale several years ago. The police officer and I presented a program to an elementary school in which we emphasized pedestrian safety and the utilization of mid-block pedestrian signals. We really thought that we had done a great job—you get a feeling when the audience is with you, and this is the feeling that we had after the program was over. The officer and I were patting each other on the back saying what a great job we had done, we really reached them, and we were feeling pretty smart. That very afternoon, I was walking downtown and I noticed a lady with a child coming out of a parking lot where apparently they had just parked their motor vehicle. The lady had the youngster by the hand and they started to cross the street right out in front of traffic. The

little boy said, "Mommie, we are supposed to cross down where the light is," and the mother gives the youngster a jerk on the arm: "Come on, Sonny." The little boy said, "We had a police officer and a man at school this morning, and they told us how to do it and I want to do it that way." The mother gave the youngster another jerk on the arm and said, "Let's go." They get right smack out in the middle of the street, and the little boy turns around and recognizes me. "Mommie, mommie, there is the man that told us how to cross." With that, the mother gave the child one more jerk of the arm and dragged him all the way across the street. This is exactly what I am referring to when I say that the example that is set by the parents is what is causing many of the problems today.

Most parents do not realize what they are doing; they violate good safety practices, they fail to realize carry-over value as far as the youngsters are concerned. It is not because they are not interested or sincere, it is strictly that they do not understand. School people understand this, school people notice, school people can do the job of safety education and should assume more of this responsibility and educate children in all facets of day to day living.

Let's look at the decline of accidents in the industrial arts and the vocational institutions in our nation. You will find that for the past two decades the number of injuries has decreased steadily, and the number of

boys and girls enrolled in the program has increased steadily. There are several reasons for this decrease in injuries. Number one is, of course, better equipment; but also, the instructors have demanded that the equipment be properly guarded, they have established the proper procedures in educating the youngsters in the use of equipment, and they have prepared the youngsters to operate the equipment in a safe efficient manner. They are concerned about the safety of the youngsters but, furthermore, they understand that if a youngster is involved in an industrial incident using power tools or equipment, not only is there a personal injury—conceivably a liability suit—but more than that, there is a potential loss of a livelihood to the youngster, since most of the youngsters involved in Industrial/Vocational Education are preparing to enter one of the trades for a livelihood.

Of course, the carry-over value from the training in the schools has been one of the prime factors in the decline of industrial accidents. This type of training could not be accomplished in the home, and it was not accomplished in industry until recent years.

The schools can educate the boys and girls in day to day living, and they have the responsibility to educate boys and girls in day to day living. Furthermore, they should continue with this responsibility and expand it wherever there is a need, in order to preserve our nation's greatest resource— young people.

DEBATE

By Dr. Milton R. Litterst, Second Vice President, National PTA
(Second Affirmative Speaker)

RESOLVED: That the Community Should Rely on the Schools for Teaching All Areas of Safety Education.

We of the affirmative believe that it would be fair to assume that the home and the school would be the two primary institutions which could have major roles in providing safety education to children and youth. Our contention, however, is that the community should rely on the school for teaching all areas of safety education. I submit the following observations and facts in support of this position.

both in safety education content and in the artful ability of causing desired learning to take place on the part of the student.

A great risk is involved when the community depends on parents to teach safety education to their children. Too many parents live by the old saying, "Do as I say—not as I do." In the field of safety education, this could result in serious injury or outright death for many children. The inconsistency between what parents teach and what they do in the matter of safety education is a serious handicap. Most parents are much more prone to take liberties of inconsistency with their children than are teachers likely to do so with their students. This is one of the main differences between the lay approach to teaching safety education and the professional approach. Then, too, there are those parents (and there are more of them than we would like to admit) who say, "Let the school teach them safety. That is why I send my child to school. That is why I pay my school taxes, so that I can be relieved of having to teach my own child. Why should I be doing something that the schools should be doing?" In some cases this is pure rationalization on their part, but in the huge majority of cases parents are quite willing to accept the fact that safety education, along with all other subjects, should be taught in the schools. In fact, some parents are obviously eager to accept this position with respect to safety education.

Dispar as it may seem, there is an extremely high percentage of children today who do not come from much of a family at all. In many homes, especially in the inner city, children come from broken homes, fatherless homes, or even from homes where there is no real mother or father.

According to the U.S. Bureau of the Census, Statistical Abstract of the United States, 1967, there were 25 divorces for every 103 marriages in the United States for 1966. From the same reference for 1969, we find that there were 318,100 live illegitimate births (and by the way these are the recorded ones only) making up nine per cent of all live births in the United States during 1967.

According to Sula Wolf, in her book entitled *Children Under Stress*, published in 1969, more than one child in eight of school age is from a broken home resulting from the death of one or both of his parents, the

separation of his parents, or because of his parents being divorced. From the *U.S. News*, August 5, 1968, we learn that one in ten children are raised in fatherless homes.

What would happen to all of these children with respect to their safety education if the community depended on their parents to teach them? The answer, obviously, is that there would be very little if any safety education taking place under these circumstances.

It is in the school where the child is involved in a comprehensive educational program of physical education, recreation, athletics, safety patrol, health, fire drills, family living, and safe living, that safety education can be integrated into the total learning experience. It is in the school where safety education becomes meaningful, applicable, and useful in a child's everyday learning experience.

In the area of driver education the student is under the guidance of trained specialists who systematically, step by step, develop in the student the ability to drive safely, to be aware of the dangers of unsafe driving and to develop in the student an ability for defensive driving. All of these approaches in driver education contribute to safer driving. The average parent is neither technically well enough informed in driver education or able to establish the needed psychological rapport with his teenage son or daughter so that maximum success in proper and safe driving will be assured.

In the school, audio visual instructional materials including films, film strips, and educational TV which illustrate safe behavior, good habits, and procedures for living safely are available to the student as supplementary information. These materials are either very limited or non-existent in the average home. We all know that audio-visual instructional materials add greatly to the learning experience and to the retention of information so learned.

The schools, rather than the home or any other institution, are in a much more advantageous position to coordinate and utilize safety information available from community, state and national resources such as the local traffic safety department; the National Safety Council; under the Green Cross, the Red Cross, and the Junior Red Cross in the area of water safety in particular; the Boy Scouts and Girl Scouts of America; the

local fire department; the medical societies; The Automotive Safety Foundation; the departments of public health; the National Safety Commission; the PIA; and so on. It is in the schools, primarily, that students have the advantage of able teachers with the assistance of teaching aids and teaching materials. In addition, in the schools safety education programs of many other excellent safety minded organizations are coordinated and integrated into the total educational safety education program. In fact, they, too, depend upon the school, in many instances, to distribute, disseminate, present, and teach their materials in and through safety education programs within the schools.

Furthermore, school systems have excellent adult educational programs so that any person wishing to extend his education, including safety education, may do so simply by enrolling in the adult program.

For the most part, however, psychologists tell us that the early training of the child is most important and that what he learns early in life has a basically direct influence on him then and throughout his adult life. It is for this reason, consequently, that the early safety education of the child becomes all inclusively relevant and so obviously important. This is why it is so understandably natural for society to turn to the school for all areas of safety education.

In summary, in speaking in the affirmative in the resolve that the community should rely on the schools for teaching all areas of Safety Education, we of the affirmative believe that:

1. Parents are either uninformed, unable, or unwilling, to teach safety education to their children as it should be taught.
2. Many children come from homes where one or both real parents do not even exist.
3. At best, in a minority of homes where there might be some ability and some interest on the part of the parents, such safety

education would be somewhat incidental in nature, it would lack much needed continuity, and would be somewhat antiquated.

4. Parents become emotionally involved in teaching many aspects of safety education and would, therefore, be inclined to lose rapport with their children during crucially important times of instruction.

5. Parents in many instances are poor examples of safe living as they do not always practice what they preach when it comes to safety.

6. Many parents deliberately take the attitude that it is the responsibility and obligation of the schools to teach safety education.

7. Effective and meaningful safety education curricula in the schools have been developed by experts in the field through study and careful research.

8. Safety education in the schools is taught by teachers trained in the skills of how learning takes place and, in many instances, by teachers especially trained in safety education and driver education.

9. In the schools, visual-aids, instructional materials, teaching aids and special equipment are at hand to assist the teacher in his safety education instructional endeavors.

10. Safety education in the schools can be integrated with all other subjects of the curriculum in a meaningful manner.

11. It is in the schools where safety education information and materials made available by local, state and national organizations, both public and private, can be coordinated most effectively in a total, comprehensive safety education program.

Therefore, because of the many limitations existing within the family and the home, and because safety education can and is being effectively taught in the schools, we of the affirmative submit that the community should rely on the school, and not the home, for teaching all areas of safety education.

SAFETY EDUCATION: ADMINISTRATION — IMPLEMENTATION — EVALUATION

By DONALD GEHRMANN
Consultant, Traffic Safety Education, Department of Public Instruction, Madison, Wis.

Safety education is considered a basic part of the education program and is taught as the foundation for conserving human and material resources. It contributes to characteristics of responsibility, respect, and cooperation that are vital for a satisfying, efficient, and productive life. Safety education in this context is synonymous with citizenship education.

The physical protection of every student is the legal and inherent responsibility of every school. Safety education offers excellent opportunity for the cultivation of good judgment. In teaching the students to live as safely as possible amid many hazards, safety is recognized as an imperative part of their school experiences. Through a continuing unified school-community effort, deaths, injuries, and economic loss through needless accidents can be reduced.

Administration and Organization

The School Board. The safety education program, as well as all other phases of a total school program, must have its foundation in the policy-making body of the school, namely the school board. Policy statements are imperative as they give direction and legal status to all phases of an operating school district. It is the responsibility of the school administrator to carry out the policy; therefore, policies for the safety program must emanate from the board, and the leadership for implementation must come from the school administrator's office. This does not preclude the necessity for the district administrator and his advisors to develop and assist the board in the adoption of policy.

A model school policy that may be adapted to your local school district program is available from the National Safety Council.

The District Administrator. Within each local school district, the chief school administrator is responsible for the entire safety education program. Only through his leadership can an effective safety education program evolve, endure, and progress.

The Safety Coordinator. The district administrator should delegate authority and

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responsibility to a staff person designated to coordinate the safety education program for all schools in the system. An appropriate title would be safety coordinator. The coordinator must be directly responsible to the district administrator.

The major responsibilities of the safety coordinator are:

1. Advise district administrator on matters of policy, physical conditions of facilities and grounds, accident records, and safety activities.
2. Promote and coordinate safety activities.
3. Provide written and audio-visual instructional materials.
4. Provide liaison between community agencies and the school.

The Principal. The safety of all pupils and personnel in each school is the responsibility of the principal. The principal and the safety coordinator must plan, with the instructional and custodial staff, definite safety precautions against natural and potential hazards within the school premises.

Positive instructional planning must be included to insure that safety education is provided as an integral part of the instructional program. Safety education should be integrated within existing curriculum areas and not taught as a separate subject.

The Teacher. The classroom teacher is the key to effective education for safe living. To achieve the maximum effect, every teacher must consider safety as an integral part of the teaching task. Moreover, the content of safety instruction provided by individual teachers must be a part of a carefully developed plan so that essential components of the total body of knowledge may be covered at appropriate times during the school experience of students.

Implementation

1. Establishment of school policy.
2. Active support and leadership.
3. Appointment of the coordinator.
4. Establishment of the safety council or advisory committee composed of teachers,

students, and administrators as might be indicated in the local school situation. This committee, with representation from each school, is the primary planning and implementing organization for the school district.

5. Incorporated in comprehensive school safety curriculums are programs relative to child molestation, safety patrol, bus rider safety instruction, the Helping Hand, natural and manmade hazards, driver education, safest way home, bomb scare procedures, pedestrian safety, bicycle safety, accident reporting, and playground safety, to mention a few.

It is essential to understand that safety programs will evolve over a period of years, with new segments being developed annually. The number of activities that will be included will increase as the program grows.

6. Consultant services and instructional materials are available from state departments of public instruction where consultants have been appointed, police departments, the National Safety Council, insurance companies, the American Automobile Association, and local community organizations.

Evolution

A survey requesting information in regard to what is presently being taught in all class-

rooms (K-12) can provide a basis from which to evaluate existing instruction and will also provide a basis for the development and expansion of the program.

A criteria for the evaluation of safety programs has been accepted by the North Central Association and is available upon request from the Chicago office of the North Central Association. The criteria not only provides for evaluation but also provides for effective guidelines in the development of a safety education program.

Accident reporting is one of the basic components of a safety program. The utilization of an accident reporting system is indispensable for securing data essential to curriculum planning, efficient implementation, and future evaluation.

Specific application of accident reports:

1. Protection of school personnel from imprudent publicity.
2. Protection from liability suits developing from student injury cases.
3. Advice for modification of school plant structure, facilities, grounds, and equipment.
4. Basis for curriculum changes.
5. Creates awareness in teachers and administrators of accident causation.
6. Produces consciousness of possible action for future accident prevention.

THE RISKY BUSINESS OF SCHOOLS

The Gordon C. Graham Memorial Lecture

By GEORGE M. BETTERLEY
Managing Partner, Betterley Associates, Worcester, Mass.

You and I take risks every day of our lives. Whenever we invest in stocks, buy a house, choose a wife, conceive a child, cross a street, or go to sleep at night, we take risks. Most risks we take because we think life will be happier. But many risks, like fire, an automobile accident, flood, or sickness, we take not knowing when or whether they will ever happen.

This is the kind of risk we are concerned with here, "Pure" risk means:

1. There is uncertainty of loss (when, where, how much).
2. There is a fortuitous cause (unplanned, accidental happening).
3. Our objective is nonspeculative (no chance of gain, a nonbusiness risk).

Next year, Chicago celebrates a 100th anniversary, but I doubt it is one to call for much celebration. The summer of 1871 in the Windy City had been excessively dry. Thousands of stores and residences were

vital tinderboxes, since two-thirds of the city's buildings were of wood construction. On the night of October 8 a strong veering wind was blowing. Somewhere, near the lumberyard district on the West Side of the city, a few sparks went astray and touched off one of the most disastrous fires in the nation's history. This terrifying fire, finally tamed by a heavy rain, destroyed 17,450 homes, left 100,000 people homeless, and claimed 250 lives.

How did it really start?

Some stories would have us believe that a milk cow owned by a Mrs. O'Leary of DeKoven Street had kicked over a kerosene lamp and touched off the inferno. But nobody really knows for sure how the Great Chicago Fire started. It's a mystery that probably never will be solved.

There is no mystery, however, about how fires in general get started. With the exception of arson and lightning, most can be blamed upon a condition or cause involving carelessness.

Educational institutions today face more risks than ever before. Certainly fire is one of them. The number of school fires has increased from 3,000 in 1960 to 7,900 in 1969. That's an average of 40 fires each school day last year! But fire isn't the only risk; others which occur too frequently are: arson, theft, vandalism, student accidents, and explosion.

Last year thefts from kitchens, classrooms, and equipment closets of the Washington, D. C. schools accounted for \$350,000, almost twice the \$178,000 prior year loss figure.

You all know the problem of vandalism. The U. S. Office of Education places the total among the country's public schools at an estimated \$100 million. The Baltimore school system made a nationwide survey for the 1967-68 school year, and here are figures they uncovered for some leading cities: New York City—\$2,717,000; Los Angeles—\$940,000; Baltimore—\$717,000; Tampa—\$683,000; Boston—\$35,000; Washington, D. C.—\$410,000; Milwaukee—\$407,000; Newark—\$346,000; Oakland—\$309,000; Kansas City, Mo.—\$254,000; Cincinnati—\$203,000.

Why are schools a "risky business"? There are some especially cogent reasons:

1. Unrest—not just among students, but also that associated with general civil disorders where school property is swept up in the path of major destruction.
2. Less discipline. Call it "moral decay" if you wish, but the permissiveness, affluency, and restlessness of the now generation has somehow promoted less respect for property of others.
3. Loss of immunity. The hue and cry of today's consumerism is sue—sue—sue! When Johnny, your little "consumer," is injured in the schoolyard, his parents are far more likely today to use the faculty, the administration, the school board, or anyone else they think they can hold responsible. All of this

is occurring at a time when the traditional haven of governmental immunity is being eroded in one state after another.

4. Larger values. Regional schools, comprehensive schools, consolidated schools, and campus-style schools create a concentration of high property values subject to the same tornado, falling aircraft, fire, or flood.

5. Sophisticated equipment. The science labs and vocational training shops are using an increasingly complex array of equipment, materials, and techniques which present hazards to the unwary student or teacher.

6. Tight money. Generally speaking, those responsible for school construction have been reluctant to spend money for risk protection beyond that required by law. A notable example is the unwillingness to invest in sprinkler systems; yet the National Fire Protective Association states that there is no record of a fire fatality ever having occurred in a sprinklered school building.

You all remember well the tragic story of the 1959 fire in Our Lady of Angels School, in Chicago. Ninety-two students and three teachers died; 76 more students were burned or crippled. While the damage to the building was only about \$100,000, total payments to parents of the dead and injured came to \$3,200,000.

Two years later, almost to the day, a fire occurred in St. Joseph's School, in Kingston, New York. The building was almost identical to the one in Chicago—a dry wood floor on wood joists, situated at the base of an open wood stairway, and over a paper-filled basement storage room connected by an open door to the boiler room. It was a setting for horror, but when the first fire trucks rolled up, 421 pupils and teachers were completing an orderly evacuation. There were no injuries. The fire was out, extinguished by two sprinkler heads. The sprinkler system, with an internal alarm and an alarm connected to fire department headquarters, had been installed after the Chicago fire.

Your schools are in a risky business, and no matter which way you turn, it's going to cost you money. You are in a financial squeeze—that's the major problem I'm concerned about. You look to insurance for an answer, and find it costs you more. You look to insurance for an answer, and find the market dwindling. You look to insurance for an answer, and find you have to assume more of the loss through high deductibles.

You look to your own resources, and find yourself in a bind because your income and expense figures don't put you in a very comfortable position to pay for improved protection, higher insurance costs, and uninsured losses.

To illustrate the problem of rising insurance costs and higher deductibles, consider these figures on six major universities, comparing their current property insurance programs against previous ones:

	Annual Property Insurance Costs	
	Old	New
Northwestern	Premium \$ 21,000 Deductible \$ 1,000	Premium \$ 85,000 Deductible \$ 50,000
Colorado	29,000 1,000	96,000 100,000
Southern Illinois	33,000 1,000	342,000 1,000
NYU	62,000 1,000	166,000 100,000
California	70,000 250,000	344,000 1,000,000
Stanford	200,000 25,000	650,000 250,000

A number of insurance companies, some of them among the largest property insurers in the country, are refusing to write any more school business. When Southern Illinois University last spring invited 32 companies to bid, they received only three bids, the lowest being 10 times the premium they had paid the previous year. Kansas State University asked 148 companies to bid against the university's own specifications. Not a single bid was received! It was necessary for them to revise their requirements and negotiate a deductible policy. Schools in New Brunswick, New Jersey, were closed for two days last year while officials scurried around trying to replace liability insurance which the underwriters had cancelled.

What is the solution to this problem of rising losses and shrinking protection? There are really only two things you can do:

1. Control the degree of risk, i.e., both the cause and the effect of loss.
2. Control the costs of protecting those risks.

The ways and means to accomplish this control of risk, the principles and concepts involved, the entire discipline, we refer to as "risk management." Risk management is a business function, like cash management, personnel management, sales management, etc. I like to define it as "the function of protecting assets against loss through the systematic analysis and treatment of risk."

As a discipline of thought, study, research, and practice, risk management is relatively new, but growing. Many business, institutional, and governmental organizations are working hard to make it a viable management responsibility. But there is a long way to go, especially within educational institutions, which have been somewhat slower to develop business-like techniques.

Risk management encompasses four key elements:

1. Identification of risk. What occurrences can take place to cause us loss; where can they happen; what property and people will be affected?
2. Evaluation of risk. What price tag can be put on the risks; that is, what is the dollar exposure, both in terms of severity and frequency?
3. Selection of risk treatment. What is the best way to treat the risk? Using the E-A-T formula, can we eliminate the risk. Assume it, or should we transfer it to an insurance company? A lot of analysis and experience enters into this selection process, but ultimately the right answer must meet the test of economic feasibility.
4. Administration. Negotiation and procurement of insurance, claims handling, loss prevention, and education.

Note the reference to loss prevention and education. They were mentioned last for convenience, not because of low priority. No risk management program can succeed unless proper attention is given to the prevention of loss and the education of all those involved with risk. Remember that the first technique considered for the treatment of risk is to eliminate it, either partially or wholly, but in some way reduce it.

The National Safety Council and the National Safety Congress exist for the enhancement of accident prevention and safety education. Their aim is to control loss to person

and property. Control of loss is also the aim of risk management. If safety management and risk management have similar objectives, then let's put the best ideas, energies, and expertise of both together so that our schools can better cope with their risky business. Here are some suggestions:

1. Provide greater cooperation at the local level (school, district, or campus) between those officials responsible for insurance and risk management, and those responsible for safety. Business managers have to anticipate what will happen in order to arrange proper insurance. Safety people do the same, with the hope of preventing the happening. They should collaborate in their risk analysis efforts.

Insurance companies offer loss prevention services, but often only the squeaky wheel gets the grease. Not only should safety people use such services, they also can advise the insurance administrator as to what he should ask for when negotiating with insurers.

A choice to insure or not insure a risk is somewhat analogous to the "make or buy" decision which a manufacturing company must resolve. A risk manager cannot decide to self-insure unless he knows he has the capability to control losses through in-house accident prevention and safety education efforts.

2. Cooperate with the insurance industry in seeking a better understanding of the real risks inherent in the school business. I agree with many buyers of insurance who feel the insurers have over-reacted to the publicity, fears, and debate associated with student disorders. For years, schools have been considered a favorable class of business by property and liability underwriters. Now they are outcasts. Insurance companies blame school administrators for ineptness in dealing with student issues and failing to push for adequate protection.

3. Learn more about risk management and the avenues open for joint efforts with your safety groups, through such organizations as the American Society of Insurance Management, Inc., the only national society whose membership is restricted to risk managers, and the Insurance Division of the American Management Association.

4. Increase the level of support given to expenditures of capital funds for improved security and fire protection of school prop-

erty as a two-pronged effort to reduce loss of life and property and to maintain an adequate catastrophic insurance market for the large catastrophe.

5. Re-examine safety education from the standpoint of whether it is reaching the right person in the right manner. Vandalism is an horrendous problem and won't be solved simply by teaching Johnny to respect other people's property. "Vandalism is a pretty good index of poor school and community relationships," says Dr. John Martin, of Fordham University. In a report on school violence in 110 districts, the Dodd Subcommittee observed: "In almost every case of vandalism... former students who were dropouts are involved."

Perhaps safety education, in its broadest sense, needs to touch more parents than children, more administrators than teachers.

Disruptions at college campuses seem to get the most publicity; yet in a report published last year the National Association of Secondary School Principals found in a random survey of 1,026 senior and junior high schools, 59 per cent had experienced some form of student protest.

6. Look critically at the myriad of reports and statistics being kept in the interest of accident prevention and safety education. Do they really tell us what we need to know? It has always disturbed me that workmen's compensation carriers categorize the cause of accidents by such labels as "struck by falling object" or "fell over tripping hazard," when the real cause may have been an emotional, psychological, or managerial problem. It would seem to me that there is tremendous opportunity in the future for more involvement of the behavioral sciences in safety and risk management.

It's 1970, and a new decade of school administration lies ahead. It is a risky business! The need for accident prevention, loss control, and risk awareness has never been greater. Losses are climbing, insurance is dwindling, and the increasing financial impact comes at a time when dollars for school are becoming harder to get. Safety supervisors, risk managers, insurance underwriters, and school administrators must join hands in finding new ways to take "risk" out of the school business. Goethe said, "Fools and sensible men are equally innocuous. It is in the half-fool and the half-wise that the danger lies." Let us not be halfway!

A TREND IN EDUCATION IN THE 70's

By ADLAI E. STEVENSON, III
State Treasurer, State of Illinois, Springfield, Ill.

In the last century we have seen fight after fight to improve the life of the common man. The efforts early in this century to enact responsible child labor laws were opposed as infringements on the freedom of industry and management. The social security laws of the 1930's were opposed as socialistic. Minimum wage laws are opposed as uneconomic. Our regulatory agencies have been opposed as unnecessary constraints upon industry. Today, efforts to increase the influence of consumers are opposed as wastes of time.

Every one of these fights has eventually improved and bettered the life of the ordinary American. And every one of them has been bitterly opposed by the voices of the past, by the special interests, by the status quo.

The fight for safety goes on. The battle is still not won. It's a struggle to guarantee every working American a safe place to work; a struggle to insure that products sold in the market place do not injure or disable the American men and women who buy them; a struggle for safer transportation, safer cars traveling on safer highways.

The principles involved are simple ones. No American should have to work under dangerous conditions. No American should be exposed in the market place to dangerous products. No American should have to drive in unsafe automobiles or on unsafe roads.

I propose Federal action on all three fronts: job safety, product safety, and traffic safety.

Every year 14,500 workers are killed on the job—about 52 deaths every working day. Every year 2.5 million workers are disabled in job accidents. And every year seven million workers are injured in some way.

In Chicago alone there are an estimated 331,000 workers employed under conditions that represent an immediate risk to their health and welfare. That's one-third of Chicago's plant work force. In Chicago 64,000 workers are exposed to dangerously high levels of noise. And 73 per cent of Chicago's workers are in plants with questionable

sanitation facilities. These conditions are intolerable. No American should have to earn his living in a plant where he fears for his life.

But the problems of safety are wider than this: 20 million Americans are injured each year in accidents related to consumer products. The number of people injured in the home is four times as great as the number injured on the highways.

Each year 7,000 American children under 15 die in home accidents—a toll higher than that taken by leukemia in the same age bracket. Over two per cent of the hospital admissions for acute care in the United States are for product injuries. This equals the annual number of hospital beds we construct each year—at a cost of \$600 million.

Even these figures aren't a true measure of the problems of safety in American life. We all know the automobile safety statistics. Each year 56,000 Americans die in automobile accidents. Each year, two million Americans are injured in automobile accidents. And year after year, automobile accidents cost us \$12 billion. It's time we attacked these problems.

In a well managed economy, the average American can find a job, he can support his family, he can buy a car, he can purchase products that make his life easier and more pleasant. He should be able to find a safe job.

There is much that we can do. The Industrial Safety Act of 1970 is before Congress now. It authorizes the Secretary of Labor to establish and enforce standards of safety. It empowers the Secretary to close plants if imminent danger is present.

The Industrial Safety Act of 1970 is important to the welfare of the American working man. When this bill is next considered by the Senate, I want to register my support—as a United States Senator—for the American working man. Then we can go on to do something about product safety.

United States government authority in the area of product safety is less comprehensive and less extensive than in England, Canada, West Germany, or Japan. Federal authority to curb hazards in consumer products is virtually non-existent. No Federal law provides meaningful penalties for manufacturers who knowingly produce and market hazardous goods. What little Federal authority does exist is spread over many agencies.

There is no injury data center which could collect, evaluate, and make available product safety data. Such an agency could continue the valuable work of the National Product Safety Commission. When this Commission was established in 1967 it was given the task of identifying hazardous commodities, of determining the effectiveness of industry rules and federal, state, and local laws, and of proposing ways to make these laws more effective. This Commission's 1970 report was a landmark in consumer protection. But we must now go on to establish a permanent agency which can provide the consumer with continuing protection against unsafe products.

We can give the appropriate cabinet officer the authority to set standards for product safety, and we can establish an information clearinghouse to collect data on product safety.

Let me turn now to traffic safety.

Through the years, the National Safety Council has been instrumental in the establishment and improvement of licensing and inspection programs. It has made a major contribution to the enactment of better traffic laws and the enforcement of those laws. These efforts must continue.

But we need to do much more. Vehicle safety standards help protect passengers when an accident occurs. Federal standards must continue to require design changes which make the automobile a safer vehicle.

In addition to safe vehicles, we need safer roads. Our safest system of roads is the interstate highway system. In rural areas, the fatal accident rate on interstate highways is less than half that for other rural roads.

In urban areas, the safety margin is even greater.

Because of the controversy surrounding urban portions of the interstate system, a huge surplus of \$2.2 billion has built up in the highway trust fund. These funds should not lie idle. They should be used to accelerate the work on the system. Given the history of sharply rising road construction costs, this step would be an economy measure as well as a safety measure. The longer we wait, the more it will cost us to build a system of safe interstate roads.

In addition, we must greatly intensify the research effort aimed at safer highways. We must increase Federal support for research projects in such areas as safe entry onto freeways and better control of passing and overtaking. We have the know how to get these projects into an advanced development state in three years at a cost of \$30 million, or less than the amount spent on one C-5A. At the current rate of Federal support, it will take 30 years and thousands of traffic deaths to reach that stage.

Out of every Federal research dollar, 90 cents goes to military and space programs. We cannot say we have reordered our priorities until this imbalance is corrected. If we can afford \$37 billion to send men to the moon, we can afford \$30 million for highway safety research.

Safety is one of those issues that isn't very profitable, politically—politicians consider it a boring issue. But it's terribly important to men and women and their families who work in unsafe plants, or who buy unsafe products, or who suffer in avoidable traffic accidents. And it's an issue we can do something about.

Government can investigate, can set standards, and can provide penalties. Government can make unsafe conditions and unsafe products unprofitable for the employers and manufacturers.

America is blessed with unprecedented resources of money, manpower, and technology. We can use those resources to narrow the gap between what is and what ought to be if we have the will and the leadership.

DEVELOPMENT OF THE UNIVERSITY OF ARIZONA'S SAFETY CENTER

By DR. WILLIAM H. KING
Dir., Safety Center, University of Arizona, Tucson, Arizona

The focal point for Safety Center developments at the University of Arizona in Tucson is the proposed McKale Memorial Center. Construction for this \$8½ million complex is scheduled to begin in November, with completion slated for September, 1972. Included in the McKale Center are two designated health and safety education classrooms with adjoining office space, a conference room, library study room, psychological equipment storage and testing area, and a driver simulator classroom with a 15 unit capacity.

Federal funding for the total of three classrooms, adjoining facilities, and equipment has been applied for and approved under Titles I, II, and III of P. L. 89-10. The proposed McKale Memorial Center will also serve numerous campus and community needs in addition to its basic functions in athletics, health, accident prevention, physical education, and recreation.

Another proposed facility located one mile from the McKale Center consists of a driver training site and slat test area. Not only is teacher training included in the driving range proposal, but also duplicate use of the facilities is foreseen by the Arizona Transportation and Traffic Institute. Studies of pavement surfaces, frictional characteristics, and braking efficiency are included in the traffic and highway engineering plans for this site.

Collaboration with other colleges of the university, such as Engineering and the College of Business Administration, is an essential feature of the Safety Center concept. Today, students electing an undergraduate minor in Safety Education can include specific basic courses from Traffic Engineering, Mining Engineering, Law Enforcement and Traffic Administration. Students from the College of Business Administration are also electing the basic teacher-preparation courses in Traffic Safety Education and Accident Prevention.

In addition to curriculum cooperation by colleges of the university, the Division of

Continuing Education and the summer sessions annually offer Traffic and Safety Education classes, both on the campus and at the Tucson Police Academy. Classes in Safety Education are being limited to approximately 30 students because of individualized instruction involving psychological testing equipment and dual controlled training cars. For the past six years, we have not been able to accommodate all students desiring to enroll in the Traffic and Safety Education courses. The future Safety Center facilities coupled with consistent student demand will lead to an expanded program within the next three years.

One additional service type curriculum which is especially worthy of mention at the University of Arizona is called the "Traffic Survival School." This is also administered by the Division of Continuing Education. The traffic survival school for Pima County, Tucson, started in October 1969, and it is an integral part of the governor's highway safety program. The survival schools in the Tucson area reached a record high registration with 390 students enrolling during the month of September, 1970. The majority of enrollees are traffic law violators with a choice of attending and completing the four different survival sessions or having their driver's license revoked. Relatively few of those completing the survival course have returned to the violation list a second time.

The programs that have now been briefly mentioned in the areas of education, engineering, enforcement, and traffic survival describe the developing concept of a Safety Center at the University of Arizona, Tucson. This basic effort toward university and community cooperation in accident prevention received initial guidance from Jack Green, National Safety Council, and Dr. James Aaron, Southern Illinois University. Acting in a consultant capacity, they visited the University of Arizona in December, 1969. They met with key faculty and staff representatives in the areas already mentioned and also had the opportunity to examine

our existing facilities and equipment. Their advice, guidance, and suggestions have been carefully studied and several major points made in their critique will be implemented within the next three years.

At this time, you might well ask: "What do you think will actually happen in Safety Center developments at the University of Arizona?" I predict that the program will be largely traffic safety oriented. Driver training and education, traffic engineering, law enforcement, and traffic survival will continue to be the significant part of the curriculum. The communities in Southern Arizona will be mainly served by our efforts because of their close proximity. Teacher certification standards in driver edu-

cation and training will not be typical of the national trend toward specialization.

The reasoning behind this last prediction is due to the fact that southern Arizona and the entire state is made up largely of small rural type communities. By comparison, the states in the northeast, midwest, and California demand what I call "urban standards." Arizona, on the other hand, will have to continue to meet the needs of what basically is a rural type of environment. We have accident problems similar to other states. There are, however, many distinct variances due mainly to climate, topography, population patterns, and employment pursuits.

NATIONAL HIGHWAY SAFETY BUREAU MANPOWER DEVELOPMENT PROGRAM

By WILLIAM E. TARRANTS
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If the tool of crashes, injuries, and fatalities on the nation's highways is to be appreciably reduced, it is clear that a sizeable work force must be created to take on the task of implementing the provisions of the highway safety legislation of 1966 and of developing, implementing, enforcing, and evaluating the effectiveness of the National Highway Safety Program standards and the Federal motor vehicle safety standards which grew out of this legislation. As priority programs having high payoff potential are identified, there is a concurrent need to identify manpower development components of these programs in order to assure the availability of adequate numbers of qualified people to perform the tasks necessary for their implementation. To meet these needs, a major manpower development program has been initiated by the National Highway Safety Bureau.

NHSB ORGANIZATION

The National Highway Safety Bureau has a director and two deputy directors, one for technology and one for programs. In addition, there are five associate directors,

each responsible for a major program or operational area. These include the associate directors for planning and programming, motor vehicle programs, research and development (Research Institute), traffic safety programs, and administration. The director of the Bureau reports directly to the Secretary of Transportation.

The Research Institute headed by the associate director for research and development, consists of the offices of experimental safety vehicle programs, accident investigation and data analysis, and safety research. The manpower development programs conducted by the Bureau are administered by a division located in the Office of Safety Research.

The Manpower Development Division recommends national policies and priorities for the development of motor vehicle and traffic safety manpower, and plans and conducts an approved program to improve the quality and increase the quantity of manpower needed to develop, implement, enforce, and evaluate motor vehicle safety performance standards and highway safety program standards at national, state, and local levels.

Three general classes of manpower are required for the implementation of highway and motor vehicle safety programs. These include professional, technical and service, and research personnel. Programs conducted by the Manpower Development Division support these three personnel classes.

The professional manpower functions within the division defines the dimensions of the professional manpower problem and conducts or sponsors programs designed to increase the supply, improve the skill and knowledge levels, and enhance the development of management and professional personnel required to implement highway and motor vehicle safety programs. This includes such professional and managerial personnel as automotive engineers, driver education teachers, and highway safety program managers.

The research manpower function within the division develops and administers a program of financial support and technical assistance for the education and training of highway safety research manpower, including interdisciplinary predoctoral education programs.

The technical manpower function within the division is responsible for developing the manpower base to ensure an adequate supply of qualified technical and service personnel to operate state and local highway safety programs, and to support motor vehicle safety programs. Examples of the types of individuals with whom this functional area of the division is concerned are automobile repair and inspection personnel, ambulance drivers and attendants, and police traffic services specialists. Numerically, most of the highway safety training requirement is in the technical manpower area.

The Manpower Development Division functions primarily in a mission support role for the associate directors for traffic safety programs, motor vehicle programs, and research and development by identifying manpower requirements generated by new NHTSB programs and by new standards, identifying manpower quality and skill levels, developing manpower training programs to meet user requirements, and evaluating effectiveness of manpower training programs.

In determining and meeting highway safety manpower requirements task requirements are identified; numbers and types of

manpower required are identified; manpower policies and priorities are developed and recommended; and plans for meeting the nation's requirement for trained highway safety manpower are developed. Training resources are identified and evaluated; training resources are developed to accommodate the unmet training requirement; training programs are conducted or sponsored and, finally, program effectiveness is evaluated.

We early set out to identify the task requirements of the job that needed to be done. Here, our terms of reference were Federal legislation, the highway safety program standards and the motor vehicle safety performance standards which grew out of this legislation, and the staffing requirements within the Bureau itself.

We then identified the numbers and types of manpower required to perform these tasks and prepared forecasts of these requirements for a ten year period. This was accomplished by using "state-of-the-art" reports, surveys of manpower requirements and resources, and forecasts of manpower requirements and resources based on reports from the states. A nationwide safety manpower study completed in 1968 provided a partial base for assessing highway safety manpower requirements and for developing a training plan to assist in meeting these requirements. The study provided data on manpower requirements by standard area by state for 1968 and projected these data through 1977. The study also provided information on manpower resources, training capacity, and plans to assist the states in staffing their highway safety programs. This initial study was limited to manpower requirements of state governments.

A total of thirty-six generalized job titles were identified in this study as requiring technical knowledge uniquely relevant to one or more highway safety standards areas and for which specialized formal training is required. Each of the job classifications listed was described and the types of education and work experience recommended for each was identified.

Each state indicated the number of individuals in each of the job categories who are actually working in support of highway safety program standards and also estimated its manpower requirements annually through

1977. The data in this study concentrated on state level employees.

Additional estimates of personnel requirements were obtained during a study conducted by the Stanford Research Institute, which examined various alternatives for meeting the nation's need for adequate numbers of trained manpower. According to the SRI study, the total Federal, state, and local estimates for safety manpower reach 972,000 by 1978.

A study conducted by the National Association of Counties, based on personal interviewing with local officials involved in the implementation of the highway safety standards, indicates that 1,103,243 full-time equivalent personnel are now working in support of highway safety program standards in counties, municipalities, townships, and school districts. The report estimates that the maximum realistic and justifiable manpower requirement for these government levels will reach 2,310,350 full-time equivalent personnel in 1978. The report also identifies job titles and provides job descriptions for local highway safety personnel. Job titles are arranged by highway safety program standards, and separate manpower requirements are presented for each job title. A total of 11 generalized job titles and descriptions were compiled from field research data. Our preliminary information indicates that five standard areas will, as a group, account for approximately 90 per cent of the total manpower requirement in 1978. These include traffic courts; emergency medical services; highway design, construction, and maintenance; police traffic services; and school bus safety. The report also contains a section on program staffing which relates the current manpower status and percentage of time devoted to highway safety by employees engaged in these activities to the selected communities arranged according to population. The report concludes by presenting a set of guidelines designed to enable state officials to survey local jurisdictions to determine current and future manpower requirements. Copies of the final report for this project should be available within the next two months.

Information on the general manpower requirements of the nation is obtained from reports of other Federal agencies such as the Bureau of the Census, the U.S. Department of Labor, and the U.S. Office of Education, as well as from NHTSB sponsored studies.

Organizations outside of government, such as various professional associations, the Highway Users Federation for Safety and Mobility, and the National Safety Council, also provide valuable information. With information obtained from these and other studies and sources, we are in a position to plan and implement manpower recruitment, development, and training strategies to meet highway and motor vehicle safety personnel requirements.

Once the numbers and types of manpower required have been identified, the next step is to develop and recommend national manpower policies and priorities. These recommendations are based on analyses of the numbers and types of manpower required, manpower availability, position vacancies, and Bureau program priorities.

Once determined, manpower policies and priorities are communicated to other Federal departments and agencies having manpower functions, and to quasi-public and private organizations. We have identified key individuals within and outside of government, and through them we are attempting to affect the allocation of their manpower development resources to support highway and motor vehicle safety manpower goals. Some examples of this activity include our coordination with:

1. *Department of Defense.* This department has a program, entitled "Program Transition," through which it seeks to make the skills and interests of the servicemen returning to civilian life with civilian job opportunities. This year, for example, an estimated 900,000 servicemen will return to civilian life, many with skills which can be adapted to highway safety manpower related requirements, e.g., medical aide men trained to provide emergency medical services, and military police who have been trained in traffic control, crash investigation, and other highway safety related skills.

2. *Office of Economic Opportunity.* The National Highway Safety Bureau is working with this office to study ways and means of meeting selected safety manpower requirements throughout the systematic and selective re-training of the socially disad-

vented or those out of work for other reasons.

3. *U.S. Office of Education.* Several manpower development and training acts are implemented through the Office of Education. We are effecting coordination with this agency with regard to projects funded under the Vocational Education Act, the National Defense Education Act, the National Research Act, and other similar legislation. We are also participating in a joint HEW-DOJ Task Force on automobile mechanic training.

In addition to these Federal agencies, we are working with several non-government organizations such as the National Safety Council, the American Vocational Association, the Highway User's Federation for Safety and Mobility, the Independent Garage Owners of America, the National Automobile Dealers Association, and the American Association of Junior Colleges.

Through contacts with these and other groups, we are able to assist these groups in their program planning, to exchange ideas, and to seek assistance in the planning and implementation of Bureau policies, priorities and programs.

The next step in the Bureau's manpower development program is that of developing plans and programs for meeting the Nation's highway safety manpower requirements. Our goals represent ultimate aspirations in highway safety manpower development and are based on the kind of national posture in highway safety that the Bureau can realistically expect to achieve.

In order to come to grips with the question of how manpower improvements are to be sought, we obtain information on: (1) the numbers and performance capabilities of safety manpower required within each state to support a specific standard at various operational levels; (2) the number of such qualified personnel available; and (3) the number of personnel remaining to be trained. This information segregates to produce manpower training goals as follows: The highway safety program standards, motor vehicle safety performance standards, and other Bureau programs and activities define certain functions to be performed. These functions, in turn, lead to the identification of skill requirements; educational and experience qualifications; manpower requirements;

manpower available; training needs by state, occupational classification, and level of training; training resource requirements; training resources available; training resource deficiencies; and, ultimately, to the prescription of manpower training goals.

This example relates only to the development of manpower to support the implementation of highway safety program standards within the states. Similar procedures are used to establish manpower development goals to support the implementation of motor vehicle safety performance standards and to provide the specialized staff required by the Bureau itself.

Having established manpower training goals, the next step is to identify numbers and types of training resources available throughout the nation for safety manpower development. Here we are concerned with both the identification of training resources and the assessment of training resource adequacy. There is also a need to focus attention on the training required in support of the various high priority program areas defined by the Bureau, such as the alcohol countermeasures program.

With highway safety manpower requirements and skill levels determined and many of the training resources identified, we then concern ourselves with training resource development or the "tooling up" phase. This includes the development or acquisition of training facilities, materials, and instructors. We have studied various alternatives for meeting highway safety manpower training requirements. Among these alternatives are a National Highway Safety Academy modeled after the Federal Aviation Administration Academy, the continued use of existing training facilities of high quality, and a series of university-based training centers in various regions of the nation.

We have concluded that the interests of the nation can best be served by promoting the use of existing training facilities with the states for the education and training of highway and motor vehicle safety manpower. In addition to these actions, we are active in efforts to influence the nation's total training system to be more responsive to the requirement for adequate numbers of trained highway safety manpower. An important element in the "tooling up" process is to make certain that we avoid duplication

of effort among the many organizations and institutions active in highway safety training.

Our approach to the development of training resources and materials is to develop and implement programs based on process projects. In our plan for program development by process projects, a project consists of one of the several developmental phases involving many occupations rather than one. Survey data on the ambulance attendant and auto mechanic occupations are expected to be received in the near future. Our inventory of national training resources has been completed by the Bureau for all of these occupations except ambulance attendant, the latter inventory being included in our future plans.

An FY70 project will provide complete descriptions of the various safety manpower occupations for recruitment purposes. The results of this project which is now being conducted by the Highway Users Federation will be available for use by guidance counselors, students, employers, and instructors.

As shown in the multi-colored curriculum guide bar, we have completed the preparation of curriculum materials for the emergency medical technician, and we are now in the process of preparing similar materials for the driver license examiner, breath examiner (or chemical alcohol tester), accident investigator, traffic police, traffic court judge, and automobile mechanic. In FY71 we plan to conduct pilot courses.

The operational phase of these programs, leading to the preparation of specialists for service within the states, will be supported by Section 402 funds or by funds from other sources. Our own future plans call for the analysis and evaluation of program effectiveness. The strong and weak features of the programs as measured by our analysis and evaluation of instructors, trainees, and course content, are fed back into the system in a re-cycling process repeated at regular intervals. Other changes outside of the training program (e.g., legislation, new technology, and job market changes) are also identified and incorporated into the re-cycling process.

A model is used in all course and curriculum development projects for the various safety occupations. The model consists of three phases: Phase I—establishing require-

ments; Phase II—developing the program; and Phase III—validating the program.

In Phase I we identify training need, collect job data, define task elements, identifying training requirements, formulate performance objectives (including terminal skills and knowledge), and determine student selection requirements.

In Phase II, we define instructional objectives, define behavioral objectives, select instructional strategy, select instructional media, develop instructional materials, and define effectiveness criteria.

Finally, in Phase III, the validation phase, we start with our defined effectiveness criteria, then develop proficiency measures, conduct a pilot program using a representative sample of students for whom the program is designed, conduct the initial evaluation, revise instructional materials, conduct the training program, conduct a follow-up evaluation, and periodically up-date the program and re-cycle the process as required.

The next step in meeting safety manpower requirements is to conduct or sponsor needed training programs. The Bureau has conducted, sponsored or developed training programs in several areas. Course guides are being developed for several additional occupational areas. I will comment briefly on a few of these training efforts.

1. *Training Support for Emergency Medical Service Personnel.* To assist the states in the emergency medical services area, guidelines for a basic training program for "Emergency Medical Technicians—Ambulance" have been developed. These materials are now available for use by the states and by other interested individuals and groups. The materials were designed as a first step in an extended program to increase the competence and professionalism of all ambulance personnel, estimated to number about 160,000 in the United States.

2. *Highway Collision Investigation.* To date sixteen medical-engineering accident investigation groups have been trained and are functioning at university centers throughout the United States. These teams are trained in deep-probe research in vehicle crash and injury causation, starting with detailed on-the-scene procedures and continuing with intensive follow-up investigation techniques. The findings of these teams have provided

the basis for several Bureau standards and have advanced the frontiers of knowledge with regard to how and why people die on the highway. Four additional teams are scheduled to be trained this coming year.

3. Training in Highway Safety Research. We are now providing support to two universities for the preparation of scientists and engineers for careers in highway safety and motor vehicle safety research. In another effort to stimulate the interest of the university graduate student population in conducting research in highway safety related areas where significant gaps in information are believed to exist, we prepared and distributed a publication entitled *Suggested Topics for University Graduate Theses and Dissertations in Highway Safety and Related Fields*.

Bureau training activities to date have focused on the support of those programs which are believed to offer the greatest promise of payoff in terms of death and injury reduction. In addition, we have emphasized foundation building programs and short courses designed to train highway safety program management personnel at state level to improve their ability to allocate resources to high priority highway safety programs and program elements.

As of September 30, 1969, a total of 134,353 persons had received training in the functional program areas in highway safety through the use of matching Federal-State funds appropriated under Section 402 of the Highway Safety Act of 1966.

We have recently developed a computer program and coded all Section 402 training course data which have been submitted by the states on the HS-1 Form from the be-

ginning of the Act up to June 30, 1970, the end of Fiscal Year 1970. We plan to issue a report describing all items of interest relating to these programs, such as the number of people trained by occupation, the program cost, the level of training (pre-employment, in-service, or up-grade), the name of the training agency, the course description, and the course length. The initial report will be completed within the next few weeks. We plan to publish a quarterly report on the status of highway safety training in the states.

The final step in the Bureau's manpower development program is the evaluation of training program effectiveness. We are too "young" as yet to have implemented our plan fully or to have received the type of feedback necessary to permit substantive adjustments to the program. Ultimately, however, we will be able to evaluate the performance of the individual in the classroom and in the laboratory as he is trained as well as during his subsequent performance on the job. We will also be able to evaluate the level of efficiency of the entire Bureau manpower development and training plan and program.

This completes the sequence of events in our program plan. In summary, we identify task requirements, identify numbers and types of manpower required, recommend national manpower policies and priorities, develop plans for meeting the nation's manpower requirements, identify numbers and types of training resources, develop training resources to accommodate unmet needs, conduct or sponsor training programs, and evaluate program effectiveness. We then repeat the cycle, beginning with the identification of new requirements.

THE DEVELOPMENT OF DRIVER EDUCATION OBJECTIVES THROUGH AN ANALYSIS OF THE DRIVING TASK

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No one needs to be reminded of the controversy that has raged for the past several decades over the role of driver education in public schools. Specifically, does it have an enduring impact on the safety and efficiency of people who have received it as they operate their vehicles on the public highways? It is regrettable, most objective authorities will agree, that conclusive judgment on this issue is no closer at the present time than when the controversy began.

A set of studies recently sponsored by the National Highway Safety Bureau (NHSB) were almost unanimous in concluding that, before we become concerned with the long-term effectiveness of driver education as reflected in accidents and violations, we should see whether present programs achieve the specific instructional objectives that have been set. Are students taught what we want them to know; does the instruction enable them to do what we want them to do? This, after all, is the way other educational programs are evaluated.

Any set of instructional objectives used to evaluate an educational program should, logically, guide the development of the program from the outset. It was this recognized need for a set of acceptable driver education objectives that led to the study being reported. The goal was to develop a set of instructional objectives for driver education courses based on a comprehensive and detailed analysis of the driver's tasks. The study has two phases. The first, completed recently, was the analysis of the driver's tasks.¹ The second phase, scheduled for completion in early 1971,² will attempt to develop a set of instructional objectives from the results of the task analysis. In this paper, we will describe the task analysis, which consisted of three activities: (1) the analysis proper, the reduction of the driver's tasks into their component behaviors, (2) a criticality evaluation, an attempt to assess

the importance of each behavior to safe and efficient driving, and (3) the development of task descriptions, preparation of a booklet containing the results of the task analysis and a criticality evaluation.

Task Analysis

The HUMPRO analysis is by no means the first analysis of the driving task to be performed. There have been many. However, most have been concerned primarily with the processes that mediate between the driver's sensory inputs—the sights, sounds, and feel of the road—and his outputs, that is, the responses by which he controls the vehicle. Many analyses have provided highly detailed descriptions or models of mediating processes, often in highly precise mathematical terms. These descriptions have often permitted highly accurate predictions of the driver's responses to particular constellations of highway variables. However, the driver educator, if he is to prepare students to respond appropriately to the various highway situations they will encounter, must ultimately know what those specific situations and responses are.

One of the oldest ways of identifying the specific behaviors—situation and response—imposed upon an individual is to observe him. However, the extremely varied nature of driving behavior makes direct observation unfeasible. It would be almost impossible to set up an observational scheme that would guarantee that even a majority of the driver's behaviors would be observed within a reasonable period. It is likely that most of the time would be spent witnessing a restricted number of highly repetitive behaviors.

An alternative to observing people behave is having them report on their behaviors through questionnaires or interviews. Again, the extremely varied nature of driving behavior becomes an obstacle. To expect a driver to recall everything he has had to do

is unrealistic. Moreover, if the individual administering the interview or questionnaire is himself a driver, it is doubtful that the results of his efforts would prove very enlightening to him.

The approach ultimately selected was analytic rather than empirical. Instead of examining the driver's actual behavior, an analysis was made of the larger system of which the driver is a part in order to identify the specific behavioral requirements imposed upon him. The system, which for lack of a better label we can call the "highway transportation system," consists of the driver, the vehicle he drives, the roadway over which they travel, the traffic they encounter, and the natural environment in which it all takes place. It is this system that creates the situations to which the driver must respond.

The specific "system analytic" approach involved four steps—(1) identifying those characteristics of the system that were capable of creating behavioral requirements, (2) identifying the specific behaviors they required, (3) organizing behaviors into an acquirable structure, and (4) analyzing the behaviors into their specific elements.

Identifying System Characteristics

Each of the five components of the highway transportation system was examined to identify those specific characteristics capable of giving rise to situations to which a driver must respond. For the driver, this meant physical and mental characteristics, either of a permanent or transient nature, that influence the way in which he must behave. For example, a driver who is fatigued must engage in certain behaviors that are unnecessary when he is fresh and alert. The vehicle's controls and displays clearly influence the responses required of the driver. Moreover, the vehicle is capable of generating behavioral requirements of its own, as, for example, the behavior required to keep it in safe operating condition. The roadway, through its variation in vertical and horizontal alignment, lane markings, and various traffic control devices is an obvious source of behavioral requirements. This is true also of the traffic the driver encounters. Finally, the natural environment with its variation in temperature, weather conditions, and general illumination, is a strong determinant of driver behavior.

The identification of behaviorally relevant system characteristics was greatly supported by an intensive review of traffic literature, including such things as driver education texts, accident statistics, critical incident reports, engineering studies, behavioral research studies, and operations analyses. The result of this effort was a list of close to 1,000 specific characteristics of the highway transportation system capable of giving rise to situations to which the driver must respond.

Identifying Behaviors

Having identified behaviorally relevant system characteristics, the next step was to study each characteristic to determine the nature of the situations that could arise and establish the appropriate responses. In many, if not most cases, situations and responses were readily apparent. Few people need to be told the behavioral implications of a traffic light, lane marking, or windshield wiper. However, other characteristics such as a blowout, loss of brake pressure, or an oncoming car traveling in the same lane, are not so well-known, and recourse to existing literature was necessary.

Frequently, system characteristics in combination with one another will require behaviors over and above what each characteristic alone requires. Examples of such "interacting" characteristics are snow on a hill, meeting an oncoming car at night, or following another car when extremely fatigued. The only way to identify such behaviors was to examine system characteristics in pairs. With close to a half-million such pairs, some simplification was required. We examined combinations of characteristics at the level of major categories—there were 40 such categories—to determine which combinations were likely to create additional behaviorally relevant situations. The internal components of an automobile, for example, did not seem likely to interact with the characteristics of the driver.

The number of interacting characteristics is not limited to two. For example, the behavior involved in driving up a snow-covered hill will vary depending on the presence or absence of other traffic. This meant examining combinations of three characteristics, with the same simplification described earlier. This process could have been contin-

ued to any number of characteristics in combination. However, as the number of characteristics increased, the number of combinations giving rise to additional unique behaviors decreased sharply. Beyond four characteristics, the situations became too specific, too infrequently occurring, to warrant serious consideration.

Organizing Behaviors

The result of the analysis of system characteristics was a list of over 1,000 specific driving behaviors. In order to make the list usable, behaviors were grouped into tasks, that is, behaviors that were either directed toward a particular outcome (e.g., passing, parking) or that dealt with the same general situation (e.g., night driving, responding to road surface instructions). On-road tasks were grouped into three categories: (1) basic control tasks—those relating to control of the vehicle; (2) general driving tasks—those that occur any time the car is being driven; and (3) situational tasks—those representing responses to specific situations encountered, further subdivided according to the system characteristics that define the system. Off-road tasks were grouped into three areas—pre-trip, maintenance, and legal responsibilities.

Analyzing the Behaviors

After all the driving behaviors had been organized for the tasks, it was necessary to continue the analytic process in order to identify the specific behavioral elements involved. A behavioral element included a description of the specific response, the physical objects toward which the responses were directed, and any cues that initiated, guided, or terminated the behavior. The attempt was made to be as specific as possible. For example, "checks traffic behind" would not be sufficiently behavioral. "Looks in the rear-view mirror and observes cars behind" is more precise. Similarly, terms such as "hazards" or "traffic pattern" were not considered precise enough to serve as cues. Even the term "car ahead" would be too broad if it were the tail lights of the car to which a driver was to respond.

Wherever quantitative standards of performance could be validly established, they were included. Unfortunately, such standards are difficult to obtain in driving owing to the dependence of such standards upon the

specific situation involved. For example, the driver's maximum acceptable delay in responding to an amber light at an intersection would depend, among other things, upon his speed, his distance from the light, and the anticipated duration of the amber cycle.

Criticality Evaluation

The result of the task analysis was a set of specific driving behaviors, numbering approximately 1,700, grouped into a hierarchy of tasks, subtasks, and so on. The next major step in the analytic phase of the project was to evaluate the criticality of each behavior. Such an evaluation is needed to help driver educators establish realistic priorities when developing instructional objectives.

It was immediately apparent that any evaluation of behavior criticality would have to be judgmental. The relationship between each specific driving behavior and the overall needs of the transportation system are far too complex and data bearing upon the relationships are far too sparse to offer any hope of establishing precise, quantitative expressions of criticality. The goal of the evaluation process therefore became one of obtaining judgments that would provide the closest possible estimate of the true criticality of each behavior. The evaluation process involved (1) the collection of empirical data to be used in guiding judges, (2) the selection of an evaluation method that would produce reliable results, (3) the administration of the evaluation, and (4) the analysis of results.

Collection of Criticality Data

Of course, the judgment of any person concerning the criticality of driving behavior is, to a great extent, a function of his own individual experience. This experience, no matter how expert a person may be, is bound to be somewhat limited. One way to improve judgments of criticality was to provide each evaluator with all the information that could be obtained concerning the relationship of specific behaviors to the needs of the highway transportation system. Such information included data bearing on the system consequences of behaviors; for example, accident statistics, data on human performance and error, and data concerning the frequency with which the various behaviors are acquired.

One of the most valuable forms of critically data is that which describes behavioral antecedents of accidents. Unfortunately, little of such information is available. However, highly detailed descriptions of actual accidents are on file at the National Highway Safety Bureau and at Cornell Aeronautical Research Laboratories. The project staff examined 1,000 of these reports to identify behaviors in three categories: (1) preventive—behaviors that might have prevented an accident situation from arising; (2) defensive—behaviors that might have enabled the driver to avoid being placed in an accident situation; and (3) evasive—behaviors that might have allowed an individual to escape an impending accident. The results of this study, supplemented by information gathered from the U.S. Army, were added to the inventory of critically data.

Selecting an Evaluation Method

Two questions arose in selecting an evaluation method: whether to have judges rate or rank the behavior, and what sort of rating or ranking to use. In a small pilot examination, different approaches were compared. The results favored the ranking-process, but a problem with this approach was that each judge could rank only a limited number of behaviors at a time—25 was believed to be a maximum. The question was how to interlock the rankings so that an estimate of each behavior's relative position within the entire population of 1,500* behaviors could be obtained. The decision was made, again aided by the pilot study, to compile groups of 25 behaviors drawn at random from the total population of behaviors. Each behavior would be ranked five times in five different groups of behaviors. The assumption was that the mean of the five rankings would provide a reasonable approximation to the relative position of the behavior in the total population.

Administering the Evaluation

The evaluation was performed by 100 highway safety specialists representing the areas of driver education, enforcement, licensing, traffic safety programs, and fleet safety. Each evaluator received three ran-

domly drawn groups of 25 behaviors and a set of directions and a booklet of task descriptions that contained the results of the task analysis along with the information bearing on task criticality described earlier. All but seven of the evaluators returned completed rankings. The only consequence of the missing rankings was that some behaviors were ranked four rather than five times.

Preparing Indices of Criticality

An index of criticality was obtained for each behavior by averaging the four or five rankings assigned to that behavior. Before averaging, ranks were transformed to normalized scores with the mean of zero and a standard deviation of 10. Resulting criticality scores ranged from -20 for a 25th-ranked behavior to +20 for a first-ranked behavior.

To determine the degree of agreement among the evaluators, an analysis of variance was performed on the 1,500 criticality indices, using as an error term the variation among judges evaluating the same behavior. The differences among means were highly significant. An inter-class correlation of .82 indicates a high degree of agreement among the judges.

Preparation of Task Descriptions

The final step in the task analysis program was the preparation of task descriptions containing: (1) the behavior descriptions resulting from the task analysis, (2) the criticality indices resulting from the evaluation process, and (3) various items of supporting information gathered through the literature review, including the criticality data furnished to the task evaluators.

The various elements in the task description appear at the left center of the left page. Each behavioral element is assigned a code number that appears at the far left. The results of the criticality evaluation are displayed along the right-hand margin as a number representing the mean criticality value, scores ranging from -20 to +20. In addition, a graphic display ("x's") of the same information is placed to the right of the numbers; the greater the number of "x's" the more critical is the behavior. Where several behaviors in a sequence have the same level of criticality, the numerical and graphic display are provided only once.

The right-hand page of the task description contains various items of information related to those behavioral elements whose code numbers are indicated along the left margin. These elements were also indicated by the appearance of an asterisk (*) following the behavior description. The nature of the information provided is indicated by the placement of the "x" in a column at the left. The abbreviations are as follows:

PI—Performance Information. Information which describes characteristic driver performance.
PL—Performance Limits. Information which describes limits of driver capability.

The task descriptions developed from the effort described should be viewed as a begin-

ning. If the tasks imposed on the driver do not change over time, our understanding of them will certainly do so. To accommodate extensions and revisions of the task analysis, the task descriptions have been entered on a tape-operated typewriter. It is our hope that this facility for rapid and economical updating of the task analysis will be fully utilized in the future.

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STUDENT UNREST IN THE SCHOOLS

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Student unrest is many things to many people. For some it does represent the temperament of the Spock generation; for others it does encompass capricious and irresponsible outbursts of bored children spawned in affluence; and in the eyes of some worried and perplexed Americans it has its connection with SDS as the chief accessory.

Those of us who are associated with these young people note a high degree of correlation between the degree of student restlessness and the enormity of the gap between the high ideals of American heritage, so long and so well espoused by our public schools, and the ugly realities of life as expressed daily through the TV tube revealing race prejudice, slums, exposures of graft and fraud, poverty, pollution, and other sicknesses of our time. For then America's dream, the sublime hope for mankind, must become a reality now.

A few short years ago, the majority of high school students were very much like the majority of the adult population—apathetic. Today in our high schools the majority of students has become more vocal in their concerns for solutions to these problems.

The problems bothering our youth today are not necessarily new problems. Why has the student unrest manifested itself now, in 1970? Never before have so many been exposed to so much and so rapid changes in our society. Remember Red Queen's advice to Alice: "You have to do a lot of running to stay in the same place." Our schools and the other institutions that serve us all have been moving forward—but even a rapid pace has kept us pretty much where we have always been. Yet the pace felt by today's students has been swift enough to increase the hysteria, mental depression, and even suicides (which are alarmingly evident), as the young person sees himself overwhelmed by rapid changes in every aspect of life.

Our high schools become larger, governments become increasingly centralized and more bureaucratic, and more and more of our daily activities and routines are taken over by computers and machines. The home and the church, long important allies of the school, have shown signs of becoming less capable of coping with the rapid changes taking place. For most young people the school along with mass media has become

the major socializing influence on their young and perplexed lives.

As the world about our young people becomes increasingly complex and the degree of change more radical, they feel the necessity of resorting to the use of drugs and alcohol with the intense pursuit of leisure time activities. Inevitably this leads to all sorts of crime, violence on the streets, continued tensions between the races, and increased destruction and deterioration to our environment. Add to these the continuing prospect of imminent international conflict.

It is within this setting of a real world that the high school must utilize all the sources and resources at its disposal. It must develop a kind of educational experience which will endeavor to close the gap of idealism on the one hand and the realities of everyday life on the other.

I am convinced that our present young people are highly idealistic. They envision a better world, free from racial injustice, war, poverty, and crime. They lack the maturity and the sustaining power necessary to realize this high goal. Is this not then one of the school's primary goals—to go beyond the point of mere acquisition of information and knowledge and to see the development of wise persons with the ability to utilize all of the sources in a mature and discriminatory manner?

The school, perhaps more than any other institution, must, as John Gardner has so aptly expressed it, "... engage itself and its constituents in the continued process of self renewal and, hopefully, necessary change."

Within this process it will become important for the student to become a self-directed learner, to develop a full array of thinking and problem solving skills, and to develop a value system to get to know himself and others. The school should provide for him the vehicle which enables him to participate actively in the solution of problems with his school and his immediate community. With the development of a mature wisdom this active participation can be expanded to the community of the states and eventually the world itself.

As these skills of social development become an integral part of the educational program for all American youth, he must be afforded the opportunity to engage in mean-

ingful and rewarding work in the services for others. He must be taught that the processes of majority rule, rationality, and liberty are the only effective ways of bringing about needed change. For at this point the schools must accept its greatest challenge—through practice, experience, and devotion to imbue our young with the devotion to the worth and workability of democracy. The schools must more than ever before teach the students the ways of freedom—if liberty and justice are indeed to prevail. Within this total process, he must learn to protest constructively; he must learn how rules and laws he opposes can be changed; and he must understand the absolute necessity of laws and limits if he is to enjoy the benefits of that free society. All of these developmental processes must be fostered within the framework of a school structured and designed to uphold the very principles it teaches.

Nothing I have been saying should be construed to mean that the school is the sole agency in our society responsible for educating our youth. The home, church, youth organizations, and countless other institutions have a very important involvement. Since the public school is the one institution where most of our youth gather for large blocks of time, it is incumbent upon the school to exercise a leadership role in coordinating its efforts with all other segments of society which have some interest in youth.

I have talked about the need for change. What are some of the ways in which schools are moving from a kind of passive, spoon-feeding, education program to one which is action student oriented?

1. Educational experiences will be provided that pay more attention to effective and ethical value oriented aspects of the curriculum along with the cognitive.

2. The courses are varying lengths—hours instead of semesters—and cutting across all discipline areas, involving staff with varying skills to engage in meaningful dialogue in areas of specific student interest, such as pollution, conflict, drugs, war and peace etc.

3. Much of the skill learning will be done independently, and the walls of the school will be extended to include the community about it. Teachers' skills will be supplemented with talent available outside the school.

4. Students will be given more opportunity to participate with staff in the formulation of educational goals and objectives. They will accept more and more responsibility for their own education.

5. Part of the student's high school education will be a kind of work experience which enables him to spend a portion of his time in field work outside the school. This would include various kinds of social endeavors geared to enable him to develop a sense of mature responsibility to the problems of the real world about him.

Schools are for ideas. If we intend to

STUDENT UNREST — SCHOOL SAFETY

By ALLEN SCHWARTZ
Chairman, School Law Council, Illinois State Bar Ass'n, Chicago, Ill.

Justice Oliver Wendell Holmes sat on the Supreme Court until he was 90 years old. One day in his later years, he was traveling on a train along the East coast. The conductor asked him for his ticket. The justice fumbled in one pocket and then the other. The conductor, seeing his confusion, kindly said, "Mr. Justice, that's all right. I know you have a ticket." Justice Holmes looked up and said, "Sir, you don't understand my problem—without my ticket, I don't know where I am going." Perhaps many of you feel that the Supreme Court does not know where it is going. Certainly, many of the old guide posts have been torn down and the route of public education has been blurred. I would like to discuss here three areas of change—free speech, symbolic and actual; labor relations; and teacher discharge.

First, a preamble. Law is a subject of which most people have a smattering of knowledge. But a little knowledge is a dangerous thing. If it is true that no lawyer can truly know the law, we at best can be familiar with some aspects of the "seamless web." How much more is it true that a layman's understanding grabbed at a school law course or derived from an article written by a professor of education can reveal anything but the barest outline of the problem? I caution you that in handling legal problems you are dealing with dynamic that can explode. Justice Wyzanski once said, "Plain

bridge the gap between what we say and what we do, we must begin in the school. We must restore in our youth the faith that democracy with reason and justice can prevail. The school must then become truly a model institution where ideas are learned, considered, and discussed. The student and the public have a right to know what it is the school does stand for. The school has a corresponding responsibility to use all of its resources to enable the next generation to begin its task in making the world a better, safer, and healthier place for all of us to live together in peace and harmony—and it must have its beginning now in the school.

words are often a trap for those not skilled in jurisprudence." Reading the statute or a case does not always convey a true meaning. The overlay on words, the history of the language, the nuances of the phrasing are subtle traps to the uninitiated. Be sensitive to the law, but do not be too proud to seek counsel.

Symbolic Free Speech—Hair

A principal who ventured into the morass of the law was Richard Thurston, a Massachusetts educator. He was the principal of a high school that had some long-haired students. Principal Thurston thought he had the authority to suspend a student who was wearing a Beanie haircut. He did this without the benefit of a school regulation (which would not have made a difference any way).

Roger Richards was suspended, and Mr. Thurston became the defendant in a law suit entitled *Richards v. Thurston, et al.* The student asserted a constitutional right to wear his hair at any length. He said that he wanted "to express in his own way his preference to wear whatever hair style comports with his personality and his search for his own identity." The court agreed that the student had the right and reinstated him. The unkindest cut of all came when the court said of the principal, that he acted out of "... personal prejudice, responding to the conventions of the first half of the 20th

century and the views of his contemporaries."

The leading Illinois case on hair is *Breen v. Kehl*, 415 F. 2d 1034 (7th Cir. 1969). In that case a high school boy violated a regulation of the board which said: "Hair should be . . . worn so it does not hang below the collar line in the back, over the ears on the sides and must be above the eyebrows . . . long sideburns are out." The court held that "the right to wear one's hair at any length or in any desired manner is an ingredient of personal freedom protected by the United States Constitution . . . to limit or curtail this or any other fundamental right, the state has a substantial burden of justification. . . ." This means that the regulation is justified if . . . it furthers an important . . . government interest . . . unrelated to the suppression of free expression." The board failed to show justification upon the grounds it chose; (1) distraction from the school program; (2) long hair students had lower grades than short hair students.

There have been some recent cases which have upheld the hair regulation: *Singh v. Stepping*, F-3073 (S.D. Ill. filed August 12, 1970) and *Latinsgton v. Oswego Board of Education*, (D.Ill. filed June 9, 1970). In those cases, the boards proved justification for the regulation based on distraction. Judge Robert D. Morgan, who denied the right of a student to contest a hair regulation, in *Singh v. Stepping* said, "With so many real problems to be solved it certainly borders on the ridiculous for anyone . . . to occupy much of his or her time with litigation over fractions of inches of a teenager's rapidly growing hair." I concur with his words, but say that they should be applied to the school boards, principals, or administrators who wish to litigate over long hair. I think that you are wasting your time and the board's money. You should get onto the more serious issues of education; be more concerned with what is going on in students' minds, not what is on top of their heads.

The latest decision in these cases was handed down on August 10, 1970, in *Cyren v. Clowser*. Here, a principal suspended a student with long hair. The court said, "Despite the rationalization offered by the defendants, we believe that their action in excluding the plaintiff resulted primarily from a distaste for persons like the plaintiff who do not conform to society's norms as

perceived by defendants." Long hair can be regulated, but it must be done carefully and the question to be answered is, is it worth it?

Free Speech

In *Pickering v. Board of Education of T.H.S. No. 205*, 391 U.S. 563 (1967), a high school teacher wrote a letter to the local newspaper criticizing the school board and superintendent's handling of a bond issue. The state court, holding that his actions were disrespectful to the board and incited misunderstanding in the district, upheld the teacher's discharge. The United States Supreme Court reversed the holding and held that the teacher's criticism was free speech protected by the First Amendment. It encouraged the criticism as the necessary free and open debate vital to a well-informed public. *McLaughlin v. Tienk*, 398 F. 2d 287 (7th Cir. 1969) said that non-tenure teachers engaged in union activities may not be discharged because of such conduct. Thus, it appears that free speech for teachers is equal to that of private employees. These two cases may be considered as part of a trilogy, the third case being *Scoville v. Bd. of Ed. of Joliet Twp., Ill.* In this case, two high school students wrote and printed a campus publication called "Grass High." It contained fourteen pages, including poetry, essays, movie reviews, and an editorial about the Dean of Boys. The editorial criticized the Dean by suggesting that he had a "sick mind" because of a statement he had made on discipline. The editors were expelled from school on the grounds of gross disobedience and misconduct. The Court of Appeals reversed the decision of the district court dismissing the students' law suit. It said that the publication was protected by the First Amendment, and that the school had to show substantial justification for infringing on the students' rights of free speech. Justification would mean forecasting a substantial disruption of or material interference with school activities or intrusion into the lives of others. The court instructed the district court to balance the private interest of the student to free expression against the state's interest in furthering the public school system in deciding if the school's forecast of disruption was justified. The court also indicated (in a footnote) that the tolerable limit on student expression would be narrower in a high school than in a college or university.

WE CAN HELP YOU — THE PTA

By LILLIAN GILLILAND
Sunset Elementary School, Oklahoma City, Okla.

Desirable experiences in safety in the elementary school are extremely important, since they form the foundation of a life time of safe living.

Children and youth are the nation's most valuable assets. They are wholesome and eager; they possess vigor, and they are adventurous. They are ingenious and mischievous. Most of all they have faith and trust in adults whenever and wherever their safety is involved. This fact places a tremendous responsibility upon all of us to provide opportunities for education in safe living.

The safety of our children is of vital concern to all of us. As adults, PTA, school people, we must make every effort to help a child feel safe and secure. We must help him build confidence in himself, retain his innate curiosity, develop interests, and not permit his desire to learn to be handicapped by fear. To assist the children in feeling secure, self-confident, and fearless of learning, we must have these traits within ourselves. Children are extremely sensitive human beings who know our thoughts and feelings more than we suspect, and they are not fooled by words.

In the community, the total cultural setting of the child exerts its influence. Safety is a major concern of the community. The community has a definite interest in the total education of the child. The safe environment of the child is vital.

The PTA in any school, regardless of size, can and must play a vital role in the safety of the children. A large school system is indeed intelligent if it utilizes the assets of the parents. The most important role is the education and safety of the children.

Every school building or PTA unit should have a PTA chairman. This person, working with the school personnel and the parents, is invaluable in his or her services. The chairman, with principal, teachers, and interested parents in any given community

can discuss problems that they have and how best other community agencies can assist. The PTA safety chairman is a liaison person between the school and the total organization. In larger cities, where there are a number of schools in a specific school district, these chairmen will meet with the PTA safety chairman who has been elected by the Council of PTA. This would probably be on a monthly basis.

The council PTA chairman will work with the Director of Safety if there is one, or with the designated staff that is assigned to work in the area of safety.

A definite program must be worked out. They usually meet at the designated school prior to the opening of school, regarding a Back to School Safety Campaign. Posters, speakers, bumper stickers, and bulletins to parents on the opening day of school are used. The TV and radio media are used. Other groups are called in: Safety Council, traffic engineers, police, firemen, civic groups, etc.

The monthly program for the PTA Safety Council usually follows the areas of safety the schools are stressing during the month of September (traffic and pedestrian, etc).

In a local school, for example, a bicycle clinic is conducted. The teachers do the teaching of the children. On a specified date of the clinic, each class involved will have approximately four to six parents. They are given instructions on how to assist in the clinic; for example, the skill test, about eight mothers; road test, six; inspection of bicycles, two or three mothers.

Additional parents are held in reserve to assist or relieve some parents. We find that this one program is valuable in educating the parent in their child's safety riding the bike on the streets.

Parents want to be involved. If we are to have the type of program children are entitled to, we must have involved parents. Use the PTA in your community.

UTILIZING COMMUNITY RESOURCES

By RAY KETCHMARK
Safety Officer, University of Illinois at Chicago Circle, Chicago, Ill.

Speaking from the safety standpoint, there could possibly be an excuse for not making desired physical changes to education buildings and installations, primarily due to finances. However, there is no excuse for permitting unsafe practices and unsafe conditions.

I am afraid I would not make a good professional witness on behalf of the Establishment in a negligence suit if in the findings there was a history of permissive unsafe practices and/or correctable conditions. It is hard for me to understand why, short of not knowing, unsafe practices are permitted and dangerous conditions tolerated.

There is a legal and humanitarian need to assume more responsibility for the safety of the children, staff, and school. The knowledge to accept this responsibility can come from obtaining help—help like that given to over 600 schools in the Chicago metropolitan area by members of the Greater Chicago chapter of the American Society of Safety Engineers, at no cost to the schools.

The American Society of Safety Engineers, with over 90 chapters, has done a great deal of work in this field. Part of the society objectives states: "... and to conduct, assist, or support educational activities." Further quotations are, "Our society recognizes a responsibility to the public in general, created by our tax-exempt status. In addition, there is a moral and humanitarian status. In addition, there is a moral and humanitarian need to use our professional knowledge when this knowledge is either needed or requested."

The society further recognizes that its members will be called upon to assist public institutions, volunteer organizations, and others in the development of accident-pre-

vention standards, programs, and processes, as well as the occasional review of the effect of these programs in visits to various locations.

Unfortunately, you will find some limitations on the sources of help today, even to elementary, educational, or other institutions, even though the services are free. This is due to adverse decisions in liability suits. The limitations do not eliminate help, they merely put the program on a more formal procedure. Generally, here are the steps involved when you want help from ASSE:

1. Request must come from you in writing.
2. You will be asked to complete a harmless agreement.
3. The highest available member of administration will be asked to accommodate the committee.
4. Information will be imparted to personnel involved to enable them to recognize and follow up on situations for eventual controls.
5. Inspections will be used as guidelines for a continuous program.
6. You will receive a confirmation of the visit, which will state it was made in response to a written request. It will also state that the visit cannot guarantee that all accident-producing conditions or situations have been identified and that the visit does not constitute replacement of your own day-to-day efforts.

There are several ways to approach ASSE for help. You may know a member, there may be an industrial plan in your community with a safety engineer on the staff, an insurance representative, or a direct communication to ASSE headquarters in Park Ridge, Illinois. In all cases you will get responses to your request.

NEW SAFETY EDUCATION MATERIALS

By DEAN CHILDS
Mgr., Safety Programs, American Automobile Assn., Washington, D. C.

Motor-vehicle accidents are the leading cause of deaths for children 5-14 years of age; even greater than those resulting from cancer and other congenital malformations. Of the 4,000 youngsters 5-14 killed annually in motor-vehicle accidents, some 1,500 are pedestrians. Generally, only fatal accidents are given attention in the headlines, but injury accidents actually indicate the seriousness of the problem. Each year 50,000 children are injured in pedestrian accidents. Youngsters, ages 5-14, are involved annually in nearly as many pedestrian accidents as all other age groups combined.

The tremendous growth in motor-vehicle registration, miles driven, and all aspects of motor-vehicle travel indicates a danger potential that must be given a great deal of consideration in today's safety education programs. However, it is not my purpose to disregard equally disabling accidents resulting from fire, firearms, poison, or falls.

With the establishment of the National Highway Safety Bureau, the Federal government has shown its concern for traffic safety. One of the program standards intended to serve as a guide for states and municipalities in developing effective safety programs deals specifically with pedestrian safety. However, the strength of the new Federal program lies in the allocation of funds to implement the national highway safety program standards as well as to augment research in various areas of traffic safety.

Most of the Federal money allocated for pedestrian safety thus far is being used for such practical projects as development of traffic safety education curricula and "Safety Town" training centers.

New emphasis is given to alcohol and drug education in elementary schools. The following quote is taken from the new Alcohol Safety Countermeasures Program of the National Highway Safety Bureau under Public School Education Program: "An even more significant impact may be obtainable through primary school safety education programs. To date, very little safety

education is provided in primary schools. What is provided is not well integrated but is rather in scattered, unorganized segments. The National Highway Safety Bureau has been working together with the National Education Association and the U. S. Office of Education to plan and develop an integrated primary and secondary school safety program which would deal with all areas of safety, with a major focus being on drinking and driving. In this program it may be possible to achieve some impact upon parental drinking through the children. In any case, it may be possible to condition attitudes about drinking and driving prior to the time that drinking and/or driving becomes a problem at the high school level. The materials developed in these two areas would be distributed to public and private schools through the facilities of the Office of Education, the National Education Association, and the American Driver Training and Safety Education Association. If good, integrated and meaningful material can be developed, it should be possible to implement effective primary education programs in most communities in the United States."

The American Automobile Association has developed and continues to develop an extensive and wide array of safety education materials. The materials that would qualify under the heading, "New Safety Education Materials," consist of posters, teacher's guides, safety stories, and safety drawing sheets.

Actually, these integrated safety education materials have been available from AAA clubs for many years. However, each year, new posters illustrating ten safety practices serve as the basis for the new material. From thousands of designs submitted by students throughout the country in the annual AAA School Traffic Safety Poster Contest, ten winning posters are selected each year for reproduction. Nearly 4½ million of these posters are distributed by AAA clubs each year. Educators have found that an imaginative interpretation of

a safety rule by one child often sparks the imagination of other children.

Tied in with the colorful monthly posters, three traffic safety guides suggest methods of teaching safety, ways of integrating safety instruction with other subjects, and safety activities for the classroom, playground, and school community.

Three graded teaching aids covering primary (K-3), upper elementary (4-6), and junior high (7-9) are written by educators who have had wide experience in the field. Each guide includes three sections: (1) facts for the teacher; (2) things to do; and (3) contact with parents or related audiovisual materials.

My Own Safety Story. This is a series of ten short traffic safety stories for use in kindergarten through the third grade. Under a reproduction of the monthly poster, a safety jingle is printed. A large blank space is provided on the back of each sheet where the child can draw his own interpretation of the safety message. *My Own Safety Story* provides pupil participation through encouraging children to think about the traffic safety lesson and then to make their own safety picture. This sheet is then taken home by the child so his parents can read the "Message to Parents" printed beneath the space for the drawing. In this way, the series serves a dual purpose of reaching both the child and his parents.

Otto the Auto. Through this series of ten whimsical stories, children are introduced to traffic safety principles as well as helped to understand their responsibilities in traffic. The adventures of Otto, the animated safety car, and his friends are brightly illustrated and written to appeal to the active imagination of children in the primary grades. The stories are designed to be read by the teacher to the class.

All of these materials are made available to schools at no charge by AAA clubs as a civic contribution to assist schools in their efforts to safeguard children from traffic accidents. Because of this gratis arrangement, the amount or availability of all of these items varies from club to club.

As a supplement to the AAA *Otto the Auto* safety stories, the AAA Foundation for Traffic Safety makes available ten *Otto the Auto* animated color films. These 4½ minute 16mm films for primary pupils are

available in sets of three and four or individually.

These films are not new. In fact, they are ten years old. However, the films have been most successful and continue to be very popular. Due to the animated cartoon concept, they are as new today as when they were released. The popularity and value of these ten films is responsible for the Foundation's decision to produce four brand new *Otto the Auto* films. These short (4-6½ minute) films are scheduled for release in December, 1970.

Each film is a single concept production that stresses some pedestrian safety rule significant to kindergarten through third graders, the group for which these films are being made.

The new *Otto* films will not replace the original 10 *Otto* films but will, instead, supplement those older films. Each of these older *Otto* films covers one of the basic pedestrian rules, such as "Cross Only at Corners," "Keep From Between Parked Cars," and "Look All Ways Before Crossing."

Each of the new *Otto* films covers a somewhat more sophisticated safety concept but one that even the youngest pedestrian had better know to keep out of trouble.

The new films are as follows:

1. *A Surprise for Otto.* This film asks the question, "Does the green light always mean go?" The answer, as the kids in the film learn, is, of course, "No." The film points out that even though the light is green, you do not go unless you first check for cars that might be running the red light or that might be turning across the crosswalk. Also, you do not start out on a late green. And you do not walk on a green if an adjacent sign reads "Don't Walk." And, finally, you do not walk on a green arrow but should, instead, wait for the "full green."
2. *Otto Goes Ice Skating.* This film warns kids not to assume that a driver is going to spot them just because they are in plain sight. The driver might be looking through a dirty windshield or into a low sun, or he just might be looking elsewhere.
3. *Horseplay.* In this film, viewers see the hazards of "horsing around" on sidewalks when cars are nearby. A distinction is made between ordinary play and horseplay.

4. *The Secret of the Pushbuttons.* This film explains to viewers that just because the signal light does not turn to green (or "Walk") immediately after a pedestrian pushes a button, one should not jump to the conclusion that the "button is broken." The film explains why the light will, at one time, change almost immediately, yet another time keep the pedestrian waiting for a long time.

These new *Otto* films have much more animation than do the original ten and are, generally, much more elaborate productions. They are all in color and have been cleared for TV.

All orders—whether for loan, preview, or purchase prints—should be sent to your local AAA club, which will forward to the AAA Foundation purchase orders and, in some instances, preview print requests from prospective purchasers. The Foundation does not operate a film loan library. Such prints must be obtained locally. The cost will be similar to the \$13 per title charge for the original films. The buyer pays only print cost, which is determined largely by film length. Production costs are absorbed by the AAA Foundation.

In addition to the four new *Otto* films, the Foundation has also produced "The Talking Car." This award winning film released in late 1969, is also intended for children in primary grades. It is 10½ minutes in length and available in color only.

The School Health Education Study, an educational organization located in Washington, D. C., has developed a comprehensive health curriculum designed to spark classroom discussion in vital areas of health education. The curriculum phase of the project extends from grades K through 12 and is based on a conceptual approach to health education which was accepted as the most feasible approach after a tryout period in four major school districts.

The program is a breakthrough in new and practical major curriculum materials. It organizes the more than 40 topics of Health Education into 10 easily manageable concepts. The materials are all designed for four progression levels for grades K through 12, and are flexible and adaptable to varying community situations.

Concept number four, titled "The Potential for hazards and accidents exists, what-

ever the environment," which is still in the development stage, can certainly be classified as safety education.

The curriculum materials for the School Health Education Program are:

1. The basic document, *Health Education: A Conceptual Approach to Curriculum Design K-12*. This book contains the theory and background needed to understand the purposes of the program.
2. Teaching-learning guides. There are four of these guides for each of the 10 concepts; one for each progression level. An overview, outlines, description of learning opportunities, and evaluation activities are contained in the guides.
3. Teacher-student resources. Comprehensive bibliographies accompany each teaching-learning guide. There is one teacher-student resource book for each of the 10 concepts.
4. Prepared color transparencies. A set of color transparencies is provided for each behavioral objective in the program. The instructional unit which accompanies each set contains background materials, a short bibliography, a focus on the attention of the materials and a teacher's presentation for every visual in the set. Each set of prepared transparencies contains 20 separate transparencies. (Some are overlays.)

All curriculum materials, which are written by nationally recognized authors, are available for purchase from 3M Visual Products, Educational Press, 3M Center, St. Paul, Minnesota, in various kinds of offering, depending on the needs of the purchaser. Concept number four materials will be ready in late December.

Most of you are aware of the excellent "I'm No Fool" Walt Disney 16mm safety films which are being used extensively by safety educators, police and fire departments, and community groups that have a stake in safety and accident prevention.

Now the Walt Disney Studio has produced a new set of five full-color sound and/or silent filmstrips adapted from those popular "I'm No Fool" animated motion pictures. Sound versions consist of up to 75 frames; silent versions, up to 46 frames. The silent filmstrips develop complete thoughts in full frames with easily readable captions. Each sound filmstrip is accompanied by its own 12", 33 1/3 RPM sound track record—(one

title per record). Cassettes are also available on an additional charge.

Sound tracks contain edited versions of the original Walt Disney motion picture sound track with full orchestration, sound effects, and the performance of a professional actor playing Jimmy Cricket. Projection time is between seven and eight minutes. Each record and cassette provides one sound track with audible signals and one with inaudible signals for manual or automatic projection.

Teacher-oriented study guides giving subject background information and suggested activities are provided with each filmstrip. The filmstrips cover: Bicycle Safety, Recreation Safety, Fire Safety, Pedestrian Safety, and Water Safety. The materials are available from Walt Disney Educational Materials Company, Department E, 800 Sonoma Avenue, Glendale, California.

The American Red Cross is currently completing a scientifically researched and programmed learning course in basic first aid. The course, which is titled "Basic First Aid," concentrates on skills critical to saving life and minimizing severity of injuries, but it also covers general first aid and accident prevention. The course consists of two primary components: (1) four self-instructional texts which are divided into 20 workbook lessons; and (2) five teacher-led practice sessions. In addition to the four illustrated and self-instructional texts, other materials used in this course are a teacher's manual, thirty-six illustrated instructional charts, completion certificate, individual record cards, and a master completion log.

With the self-instructional texts, each student is able to progress at his own rate. Each lesson relates to a specific topic, such as bleeding.

Basically, the same sequence is followed throughout the text; the student reads the cartoon illustrated text, responds to questions that are found on some of the pages, and compares his answer with the correct answer given on the reverse side of the page. If he answered incorrectly, he will cross it out and write down the correct answer before continuing. (The student can record his answers on a separate sheet so the text is left unmarked and can be used again and again.)

A brief set of summary questions follows completion of each of the 20 lessons. Answers to these questions are not contained in the students text; however, they are reproduced in the teacher's manual, which serves as a guideline for conducting the course.

Upon completion of the related text lessons, practice sessions are conducted for the following five areas: bleeding control; bandaging; artificial respiration; immobilization of broken bones; and rescue.

The guidelines for conducting the practice session are also provided in the teacher's manual. These practice sessions further establish the knowledge learned in the self-instructional text and also provide the opportunity for practical application under a teacher's guidance. Thirty-six 22" x 28" illustrated instructional charts supplement the five practice sessions to obtain the desired response by students.

Students successfully completing the four self-instructional texts and the five practice sessions may be issued a Basic First Aid completion certificate. Completion of these requirements can normally be done in less than ten classroom hours.

Because of the extensive research involved in the development of the course materials, prospective teachers of the Basic First Aid course need only a brief orientation, probably not more than three hours.

The fifth grade reading level was chosen as a lower limit for development of course materials. The course was not, however, set up specifically for ten-year-old children. Rather every attempt was made to present the information and instructions simply, but in a manner that would not be insulting, in tone, to adults. The research and development of the Basic First Aid course involved students ranging in age from 7 to 17, from throughout the United States, from a variety of socio-economic backgrounds and from all major ethnic groups. The research and time that has gone into this program is readily evident. The choice of words and language throughout the text is clear and easily understood by everybody, and the illustrations show the situation as the first aider would actually see it. An example would be the victim's face and mouth as seen by the first aider from a few inches away as he is about to give artificial respiration.

The materials for this program will be ready for use in January, 1971. However, the date the Red Cross is planning for a nationwide training program for its staff is not until February.

The value and importance of this program goes beyond the pupil, for it also trains the instructor or the school staff member in Basic First Aid.

Also, the officials at Red Cross Headquarters in Washington tell me that a drug supplement is on the drawing board.

"Your Safety Adventures" is a new filmstrip and sound presentation being produced by Professional Arts Incorporated, of San Mateo, California. The filmstrips will have a "pulsed" record or cassette. Thus, the picture portion is properly controlled by an automatic pulse on the sound portion.

There are four major presentations or adventures in this series, which are all designed to stimulate discussion in the primary age group: "Your Safety Adventures in Traffic," "Your Safety Adventures at School," "Your Safety Adventures at Home," "Your Safety Adventures at Play."

Each presentation or adventure is further broken down into four 15 minute episodes. The episodes for "Your Safety Adventures in Traffic" are: (1) "Things on Wheels and Folks on Foot" (This is the introductory episode in which the world of traffic is introduced); (2) "To Drive a Bike"; (3) "To Be a Pedestrian"; and (4) "To Be a Passenger."

The series will fit a variety of hardware, such as the DUKANE System, Singer, Visual Edcom, etc. The first "Adventure" or presentation (the one dealing with traffic) is expected to be completed by January 1, 1971 with cost in the area of \$60.

The Educational Aids Company of Long Beach, California, which produced the "Officer Bill" safety education material, has come out with a new and complete program for the prevention of drug abuse titled, "Users are Losers!" The program is designed primarily for an outside speaker, such as the police, to come into the classroom. However, you may find the materials useful for the upper elementary age group.

Backbone of the program is a 16 page, unique color cartoon booklet. A question format is used in which questions are asked

and answered and another question is asked back to the reader. He can then make up his own mind.

Other materials in the program are:

1. A *Fact Book* prepared for teachers which includes case histories, questionnaires, procedures for discussion, slang terms, authoritative responses, drug identification, etc.
2. Twelve colorful illustrations measuring 19 1/2" x 24 1/2" come in an easy-to-flip, self-standing easel binder with a large leatherette carrying case and serves as a drug lecture visual aid. A script for the speaker to follow is included.
3. An identification chart suitable for mounting on bulletin boards shows in actual size what the drugs look like, sources, street names, medical use, illustrated effects and behavior when abused, indications of drug abuse and what to look for.
4. A drug and narcotic display case features accurate facsimiles of commonly abused drugs and narcotics, plus the implements used to administer heroin.

The material was reviewed and critiqued by the State Department of Justice, physicians, pharmacists, psychologists, community mental health offices, and hundreds of juveniles throughout the state. This program and materials are available from Educational Aids of Long Beach, 4549 E. Anaheim Street, Long Beach, California.

Multimedia—Traffic Safety—K-6 is a new program being developed by the National Safety Curriculum Company of Deerfield, Ill. The program involves the time-distance teaching concept and concerns three specific curriculum areas: (1) The Pedestrian, (2) The Cyclist, and (3) The Passenger.

Each curriculum area is presented through the use of, a filmstrip with sound cartridge cassette, a teacher's guide, and color transparencies. The set of color transparencies for each curriculum area can stand by itself or be used with the filmstrip. There are approximately 20 transparencies per set plus overlays. The teacher's guide can be used with both the filmstrip and the transparencies or either one separately. The filmstrips with the sound cartridge cassette are also in color and contain approximately 150 frames per curriculum area. They are presented in a time-motion study at controlled intervals for the curriculum area. Also, the filmstrip and/

or the sound can be controlled by the teacher manually or remotely. The programmed film-strip ranges from 1½ to 8 minutes in length.

The flexibility of the filmstrip presentation is due to the capabilities of the Beseler 505 projector, which must be used for this filmstrip and sound cartridge arrangement. Although the cartridge can be adapted to other similar products, it is designed specifically for the Beseler 505, which is being used by numerous police agencies throughout the country. Preliminary contacts have indicated that the police will welcome the opportunity to cooperate with the schools and loan them their projectors.

The complete package will be ready for distribution around January 1. Cost will be approximately \$100 per curriculum area, or \$250 for all three curricula. The transparencies will be available separately with the teacher's guide.

"Stanley, The Friendly School Bus." This school bus safety program consists of a student creative drawing book, a companion teaching manual, and "Stanley," club membership cards, pins, and bicycle stickers. The program was developed by the Office of Pupil Transportation, New Jersey State Department of Education.

One of the last projects or publications of the National Commission on Safety Education of the N.E.A. was a booklet titled *Where The Learning Is*.

A group of Prince George's County, Maryland, teachers spent six months exploring methods for developing safe behavior in elementary school children by integrating safety education with other learning experiences, rather than merely presenting safety facts, rules, and information. This booklet describes the classroom safety experiences of these teachers in the area of social studies, science, language arts, mathematics, dramatics, and health. It is available for 50 cents through the N.E.A.

THE ILLINOIS DRIVER EDUCATION LAW

By JOHN W. LEWIS
Secretary of State of Illinois, Springfield, Ill.

A couple of years ago Illinois added an amendment to the driver licensing law which provides that no person under the age of 18 may be licensed to operate a motor vehicle in Illinois unless he has first successfully completed an approved driver education course.

This, we felt, would bring about full participation in the high school driver education program; because, as you know so well, every boy and girl wants to get that driver's license as soon as possible. We were also certain that our young citizens would become better and safer drivers if they were first given the benefit of driver education.

Shortly after the new law became effective some commercial driver training schools instigated court action, challenging both the driver education standards and the drivers license law. The case dragged on for many months; but, fortunately for high school driver education, a favorable decision was finally handed down. This established a legal landmark of major importance which has attracted considerable attention nationally. Had the verdict been in the other direction it would have been a foot in the door; and I strongly suspect that the door would soon have been kicked completely off the hinges.

Our law now defines the term "approved driver education course" and places upon the superintendent of public instruction the responsibility for such approval, as well as the duty of establishing driver education standards. The bone of contention is, of course, the word "approved," and that's what the court case was all about. The necessity for this safeguard is obvious to all. If you take out "approved," the provision has little force or effect, because the term "driver education course" could mean anything, including some of the scandalous cases which have been reported in the newspapers.

Our Illinois commercial driver training schools complained that the superintendent of public instruction and the secretary of state were trying to put them out of business; and a tremendous effort was made to

convince the court that we were conspiring to prevent a group of businessmen from exercising the right of free enterprise.

This was a misconception, unsupported by the facts in the case. Fortunately for highway safety, the court was able to see clearly throughout the presentation of voluminous testimony and exhibits; thereby preserving the integrity of the driver education program in Illinois.

The plaintiffs had attacked the constitutionality of two amendments to the drivers license law, contending there was no reasonable connection between statutory enactment and the health, safety, morals, and welfare of the people of the State of Illinois. In denying plaintiffs motion for an injunction, the court commented: "Now there can be no question from this record that the act, as far as everyone is concerned, treated all the same. In other words, there was no greater responsibility placed upon the commercial school driver teachers than there was upon the public school teachers or parochial school teachers." The court went on to say: "Now we get to the question of whether or not this legislation is reasonable, whether or not it imposed unreasonable restrictions upon lawful occupations. There is a case that I think is a good case to mention here because the reasoning is so good in it; that is a case that our Supreme Court had before it. 'If any subject can be conceived which required the exercise of the powers assumed by this ordinance for the safety of the public, it is the ascertainment of the qualifications and fitness of operators of automobiles and other motor vehicles driven through the streets of a city like Chicago. These ponderous vehicles, driven by powerful engines, are a menace to the public safety unless managed and driven by persons who are competent and qualified to operate them. They include not only the prudent and those considerate of the rights of others, but also the incompetent, the careless, reckless, and lawless. The great majority are prudent and careful, but it is only human nature that arbitrary power should beget arbitrary act, and the sym-

toms and conduct before and after ownership are frequently well marked." Thus spoke the court.

We are not trying to put the commercial training schools out of business. We do insist, however, that there be no double standard in highway safety. So far as I am concerned, we are not going to tolerate a situation in which there is both a right way and an easy way to get a driver's license in Illinois.

Under the provisions of our drivers license law, I have the responsibility for licensing commercial driver training schools and enforcing rules and regulations. The superintendent of Public Instruction is required to establish and enforce standards for an approved driver education course. Any licensed commercial school which wishes to provide the proper classroom facilities, hire qualified instructors, and offer a course which meets these standards will find us ready and willing to issue instruction permits and driver licenses to their students. Of course there is always a danger of winning the battle and losing the war; but I don't believe we have to worry too much, because we are finding that many of our high school students are demanding higher standards for driver education.

I recently had an opportunity to examine the final report of the 1970 Illinois Youth Traffic Safety Conference, and I was greatly impressed by both the enthusiasm and the sincere purpose of these fine young boys and girls. The theme of the 1970 conference was "involvement." It is both refreshing and encouraging to find that such involvement is directed towards traffic safety rather than certain other young peoples' activities which have been prominently displayed on the TV tubes lately.

I wish that the members of our house and senate could have heard the deliberations in committee as they discussed the various aspects of traffic safety and presented their ideas for improving the present situation. I was delighted to learn, however, that the recommendations will be submitted to our state legislators and to the governor's traffic safety coordinating committee. These young people are asking for tougher laws, stricter standards, and better enforcement. This should give great encouragement to driver education teachers, for I am sure that all

of you have similar high school student organizations in your own state.

Here's what they said about driver education: "We need a course in night driving. How are we going to learn to drive safely after dark if no one teaches us?" One-third of the practice driving should be scheduled for after dark.

"There should be more practice driving in heavy city traffic for students from both rural and urban areas."

"The course should be extended to cover a full semester . . . six hours of practice driving is not enough."

"There should be more coordination between classroom teaching and practice driving, more discussion of problems between teacher and student. Advanced courses should be made available."

"A motorcycle driving course should be offered, and stick shift instruction should be included."

The students also presented a proposal which might shake up the older generation considerably if it is adopted. They recommended that the successful completion of an approved driver education course be required before the first Illinois driver's license is issued to anybody, regardless of age. This might not be a bad idea. I understand that New York now has such a law.

Other recommendations pertain to traffic regulations and policemen. The boys and girls want tougher laws and better enforcement, but they also demand that such enforcement be fair and uniform. They think a teenager should not be treated any differently than an adult when a traffic law violation has been committed. They also suggest that it would be helpful to improve the image of the policeman insofar as teenagers are concerned, for they would like to see an attitude of co-operation instead of resentment.

I am bringing the comments of these high school students to your attention for three reasons: First, because they are driver education students and I believe the teachers should know what they are thinking and talking about. Secondly, I believe that we should broaden our perspective, because I think that traffic safety can be properly considered only in the light of its relationship to the total environment. For example,

a safe, responsible, law-abiding driver is also likely to be a good citizen in other respects.

The third reason is also fairly obvious—with all this wonderful support and encouragement from the students themselves, how can we who are responsible for driver education and driver licensing fail to stand up solidly against any attack which would weaken the effectiveness of the program? Furthermore, we must make a reasonable effort to upgrade the standards in accordance with their recommendations, insofar as may be practical.

It is especially fitting that high school students should be giving their attention to highway safety matters at this time, because we are fast approaching a critical situation in motor vehicle transportation. Unless certain problems can be resolved, their generation may live to see the day when there will be no more automobiles.

I recently read an article by a distinguished scientist who predicts that parts of North America will become uninhabitable within the next 30 years if we continue to pour carbon dioxide into the atmosphere at the present rate. This means, he goes on to say, that we will either have to clean up the internal-combustion motor vehicle or find some other means of travel.

Pollution and environment. We are hearing these two words more and more frequently. I have also learned that serious-minded high school and college students are becoming concerned with what is happening to this land in which they hope to make their future home; and that many of them are making their voices heard. This is the kind of protest which we can wholeheartedly support, and I wish them success in their efforts.

Since the automobile seems to be the worst offender, there is considerable pressure to either clean it up or get rid of it. If you think I'm joking, let me remind you that a bill was introduced in the California legislature last year to prohibit the operation of all internal-combustion motor vehicles after 1975. It passed the senate but was defeated in the house.

The way things are shaping up, it looks as though we shall soon see a struggle for survival between man and machine. Some

people say get rid of the automobile before it destroys us. Highway deaths and injuries in a single year exceed those of the Viet Nam war for the entire nine-year period; while continued pollution of the atmosphere will eventually kill everything.

But it's not as simple as that. If we were to lose the motor vehicle we would see a complete breakdown of the American way of life as we know it today. So what are we going to do about it?

For one thing, the automotive research engineers are working desperately to meet the deadlines which have been established by the Department of Transportation. Pollution problems, however, are not the whole story. We are manufacturing automobiles much faster than we are building roads, and we are also producing new cars faster than we are junking the old ones. Where are we going to put them all?

Since the younger generation of drivers is going to be faced with all these problems, perhaps they should start thinking about them now. This is the reason I believe traffic safety education should include the whole transportation picture.

Referring again to the young people's traffic safety conference, I am proud to be able to say that we have implemented one of their major recommendations: extension of the school traffic safety program to include the lower grades. I am speaking now of a new bicycle safety program which has been developed for introduction into the school system this semester, and to a new publication of the secretary of state's office—the first of its kind in America—a *Bicycle Rules of the Road*.

This booklet is a driver's manual for bicycle riders, designed especially for boys and girls in the elementary school grades. It also contains information of interest to older riders. A chapter for parents is included, informing them of their responsibilities and telling what they need to know when contemplating the purchase of a bicycle.

Traffic laws, highway signs, and traffic control signals apply to bicycles as well as to automobiles and safety rules will prevent accidents if they are carefully observed. Bicycle rules of the road illustrates and ex-

plains these things in a manner that will be understandable to the school children and their parents.

We are strongly convinced that traffic safety education should begin when a child gets his first set of wheels, whether they be a bicycle, tricycle, or a skate board. Today's young bike rider will become the teenage car driver of tomorrow, so the

habits and attitudes which are formed now will determine in a large way the manner in which an automobile will someday be handled. It is fairly certain that our young people will become better and safer drivers if they learn and follow the bicycle rules of the road. Driver education and driver licensing are two things which just have to go together.

THE ILLINOIS DRIVER EDUCATION LAW

By RAY PAGE
Supt. of Public Instruction, Springfield, Ill.

Last year the legality of the Illinois Driver Education Act was challenged in the Circuit Court of Cook County. The suit named as defendants the Secretary of State, the state's attorney of Cook County, and me as Illinois superintendent of public instruction. The plaintiffs in the case were North Shore Driving School, Inc., and the Illinois Professional Driver Education Association.

This suit was a class action on behalf of all commercial driving schools in Illinois. While the suit asked for an injunction against the defendants from enforcing the provisions of the Driver Education Act, it specifically attacked two sections of the statutes in the Motor Vehicle Act which relate to the licensing of drivers under the age of 18 and the requirements that such applicants complete an approved driver education course.

It was the contention of the plaintiff that the Driver Education Act is unconstitutional because of unreasonable exercise of police power in that it requires an individual, before he is allowed to teach a teenager behind-the-wheel driving, to have a college degree and be qualified to teach driver education. Furthermore, the failure of the legislature to include a savings clause, at least to those schools in good standing, would constitute a denial of equal protection of the laws. Hearings on the plaintiffs' motions started in April 1969 and were concluded at the end of the 47th session on February 5, 1970. The motion was denied. The denial was based on the law of Illinois and from the

evidence presented that the law is not a violation of the constitution of Illinois or the federal government, and is not unreasonable.

The fact that the decision was in favor of the state is not to be interpreted that commercial driving schools are prohibited from offering driver education to youths under 18 years of age. It simply means that the court upheld the right of the legislature to pass such laws and the right of the state superintendent of public instruction to determine the qualifying criteria for approved driver education courses, whether such courses are provided by public schools or private schools.

The Driver Education Act, in addition to the rules and regulations governing the Act, has been developed over a period of years and is based on experience, research, and psychological principles of learning. Therefore, if we are to maintain high standards, it is reasonable to assume that only a single standard is acceptable. Even though the standards for driver education are minimum, they should be strictly enforced and applicable to all schools. I believe we have been successful in Illinois with a single standard in that all approved driver education programs must meet the requirements of the Driver Education Act.

I have briefly mentioned the Illinois court case because many of the issues involved were directly concerned with the Illinois Driver Education Law. The office of the superintendent of public instruction has interpreted the driver education laws of Illi-

nois on the premise that driver education is an integral and proper part of the general educational program.

In teaching safe driving, the driver education teacher, in both the classroom instruction and laboratory instruction, teaches his students to know what to look for in the traffic situation which may be safe or unsafe for themselves and those around them. He gives the students the information necessary in helping them to arrive at the best judgment as to what to do in every traffic situation. Teaching them in such a way as to cause them to want to react according to their best judgment is equally important. As you can see, this process requires a high degree of decision-making.

The main objective of the office of the superintendent of public instruction is to achieve quality education for all boys and girls in Illinois. A quality driver education program does not happen by chance; it is an end product of continuous, careful, and cooperative planning by those involved in the program. The most effective programs are organized and administered in accordance with accepted psychological principles of learning. This means that the laboratory instruction must be integrated with the classroom instruction. It is the firm belief of driver education experts that the most effective learning occurs with the maximum coordination.

How can maximum coordination be accomplished? Probably the most important factor is the selection and assignment of teachers. Too often in the past, driver education was assigned as a secondary activity by teachers who were hired to do something else. Schools must be prepared to give both classroom and laboratory instruction and involve the teaching staff in the total program. Research indicates that behavior is a major factor in the traffic accident problem. Therefore, the driver education teacher, both in the class and in the car, must provide the conditions under which proper patterns can be developed and reinforced.

Another factor is sequence and time for structuring various learning experiences. For each of those mental or physical abilities which must be practiced if proficiency is to be acquired, there is a related body of knowledge which must be integrated for proper training to occur.

Many of our large school districts are now utilizing simulation and multiple-car methods because of the increasing number of students now requesting driver education and also because of added costs. Last year over 60,000 students received driver education in schools with these programs. Both of these methods, properly scheduled with classroom instruction and in-car instruction, can provide effective development of basic operational skills and enhance the value of driver education.

In summary, the laboratory experiences should be considered as a means for evaluating the total program of instruction. From this standpoint it is imperative that classroom and laboratory instruction be programmed as I have indicated. Although the Illinois law requires a minimum of 30 clock hours of classroom instruction and six hours of in-car instruction, the majority of our students receive instruction exceeding these requirements.

Driver education is no different than other educational programs; the success of the program is primarily dependent on the individual teacher. To be effective in the laboratory or the classroom, the driver education teacher should be able and broadly educated. Developing responsible behavioral patterns along with judgmental and decision-making abilities essential for safe and efficient driving is an imposing task for the most competent teacher. Mediocore teaching will not achieve these goals. Some of the more valid criticisms regarding the value of driver education can be due partly to ineffective programs.

Because teacher training programs in Illinois have been able to meet the demands of school programs, the availability of teachers qualified in driver education permits schools a higher degree of selectivity. There is little doubt that our teacher preparation programs are presently graduating teachers who are very well prepared in the total area of traffic accident prevention. Presently, we have over 3,000 qualified driver education teachers, of whom approximately 2,500 are teaching driver education. Each year our universities and colleges graduate over 300 qualified driver education teachers. In addition, many extension courses are offered throughout the state for those persons interested in becoming qualified.

Obviously, the Illinois court case will have national implications as well as implications within our own state. We believe this to be a landmark case for two reasons: First, it clearly differentiates between the public school standard course of instruction and the commercial school driver training course; Second, it sets the stage for a new era of driver education instruction which is based on a systems and task analysis approach rather than an accident causation approach.

It should be made very clear that the office of the superintendent of public instruction will make every attempt to upgrade the driver education program to the level required by the Highway Safety Act by expanding and improving existing programs. We will continue to make the complete program available without tuition to all eligible students in both public and private high schools in the state.

The new Illinois driver education curriculum to be shortly implemented recognizes that driving is primarily a mental and social task which requires a comprehensive program of instruction. By utilizing an interdisciplinary approach, this curriculum goes beyond the teaching of physical skills. With the help of Federal funds, we have been able to expand our staff. Future plans call for a comprehensive safety education program from kindergarten through the twelfth grade. To achieve this feat, we now have qualified personnel developing curriculum in the area of bicycle and pedestrian safety, adult driver education, motorcycle safety, handicapped, and school bus safety. Only last week our office instituted a statewide bicycle safety program in cooperation

with the office of the secretary of state. To the best of my knowledge, this is the first such program ever attempted. From the response thus far, we anticipate a most successful program. We feel that the value of such a program will establish a firm basis for the development of skills, knowledge, and judgments needed later when a student enrolls in an approved driver education course.

Our driver education staff is continually searching for ways to improve the instructional program as well as its organization and administration. Pilot programs in selected schools are currently developing instructional materials. At the same time, teachers are experiencing growth in knowledge regarding the total area of traffic accident prevention.

We have conducted a number of in-service training programs to upgrade the quality of instruction and meet the needs of students requesting driver education. Also, local schools are encouraged to conduct workshops within their own district and are given assistance from our staff in planning such training programs.

To conclude, a quality driver education program for youth is the responsibility of everyone involved in traffic safety. Each of you must provide the best leadership possible and accept nothing less than a program requiring high standards. I hope that what I have discussed here will in some way contribute to the success of instructional programs in your state. I have tried to stress the need for improved curricula, superior teacher preparation programs, and innovations in program development.

HIGH COST OF ACCIDENTS

By I. F. EDWARDS

Manager, School and Institutional Div., Kemper Insurance, Chicago, Ill.

Regular Rating

As the name implies, "regular" rating is more commonly used, so let's look at it first. In this method your premium is computed by first applying manual rates to your annual payroll. (Manual rates are state-regulated, and all insurance carriers must use the same rate.)

Let's assume you have a \$1,000,000 payroll

rate class. This is done by showing, on your policy, that your premium is a certain percentage of manual premium. This percentage figure is called an "experience modification," and will be above or below 100 per cent depending upon whether your company's loss history (called your "experience") has been better or worse than average in your field. The computation of your experience modification is also regulated in most states. Regardless of which insurance carrier writes your policy, the same modification must be applied.

Let's assume your firm's experience has been better than average and you have been assigned an experience modification of 90 per cent (meaning your good record entitles you to coverage at 10 per cent less than "manual"). Now we have: \$1,000,000 (payroll) x \$5.56 (manual rate) x 90% (exp. mod.) = \$50,000* premium. Insurance people call this your "standard premium," so let's use that term. So, your policy is issued at an estimated standard premium, based on expected payrolls for the coming year. After your policy expires, your true standard premium is computed, based on actual payrolls for the year.

Now, one further step takes place. This step is based on a bit of expense theory and deserves a short explanation. While most compensation premium dollars go to pay for claims, some of those dollars are used by the insurance companies to pay their operating expenses. Although these expenses increase with premium size, not all of them increase in direct proportion to premium size. (For example, the cost of underwriting a \$50,000 premium is not ten (10) times the cost of underwriting a policy with a \$5,000 premium. It does cost more, but not ten (10) times as much.). To reflect these economies in the writing of larger policies, the insurance carrier is required, at time of final audit, to apply a discount to each policy that has a final standard premium above \$1,000. The larger the premium, the greater the discount. A standard premium of \$50,000 in this example would entitle you to a "large-size" discount of \$6,942. Insurance people call this reduction "premium discount."

*The exact calculation comes to \$60,040; we've rounded off to \$50,000 to simplify our later computations.

your standard premium comes to \$50,000. Applying the formula, your premium is computed as follows:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$15,000) \times 1.028 = \$29,401$$

Let's review each part of this calculation: 23% of \$50,000=\$11,500. Under this part of the formula, you and the insurance carrier agreed that in computing your final premium an amount equal to 23 per cent of standard premium would be allowed the insurance company for its operating expenses (other than claim handling). In this case the actual amount is \$11,500. (Insurance people also call this the "basic" premium, probably because it is a basic premium requirement regardless of money for losses.)

Next, 114% of \$15,000=\$17,100. Under this part of the formula, you and the insurance carrier agreed that in computing your final premium, the charge for losses will be the sum of actual losses (100 per cent) plus a loading (14 per cent) for claim handling expense. With losses of \$15,000, this amounts to \$17,100. Insurance people call the 114 per cent your "loss conversion factor." The \$17,100 is called your "converted" losses; that is, losses converted to include claim handling costs.

Then, . . . x 1.028 (tax). This part of the formula reflects premium tax which the carrier is obligated to collect and remit to the state government. (Similar to a sales tax on merchandise). Our formula reflects a fairly typical premium tax rate of 2.8 per cent, although in some states it is as high as 18.2 per cent.

Putting all our calculations back together: (Basic Prem.) (Converted Losses) (Tax) 23% of \$50,000 + 114% of \$15,000 x 1.028 = \$28,690 x 1.028 = \$29,401

With actual losses of \$15,000, your recalculated or retro premium is \$29,401. Having already paid standard premium of \$50,000, you would be entitled to a return premium of \$20,599. Similarly, we can follow the premium computation under this formula if your annual losses were \$20,000:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$20,000) \times 1.028 = \$35,260$$

Or, if your annual losses were \$25,000:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$25,000) \times 1.028 = \$41,120$$

These examples illustrate the principal appeal of retro plans—the lower premiums that result when losses are less than average.

But what happens if your losses total \$40,000:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$40,000) \times 1.028 = \$38,699$$

Here we are looking at the other side of the retro coin. When losses are more than average, retro agreements require you to pay more than you would under regular rating. Regular rating, you remember, would cost you \$43,058. This is part of the price tag attached to retro. You save money when losses are low, but expose yourself to penalty premiums when losses are high. Here's where a good safety program pays off.

Let's see what happens if somehow your losses for the year totaled \$60,000. (Not exactly far-fetched, when you consider that in many states a single death claim can exceed \$20,000.)

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$60,000) \times 1.028 = \$82,137$$

Insurance companies recognize that for retrospective rating plans to be viable, they must contain some sort of premium limitation or maximum. One of the notes under our formula is:

Maximum Premium = 135% Std. Prem.

This note means that included in this retro agreement is a condition that, regardless of the result of the formula calculation, the maximum premium you are obligated to pay is 135 per cent of standard premium. The maximum premium payable is 135 per cent of \$50,000, or \$67,500. Therefore, with losses of \$60,000:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$60,000) \times 1.028 = \$67,500 \text{ (maximum)}$$

Your final premium then is not \$82,137, but \$67,500.

You will note this plan has a minimum premium also:

Min. Premium = 47% Standard Premium

This indicates that this particular retro agreement includes a condition that, regardless of the results of the final formula calculation, the premium charged will be at least \$23,500 (47 per cent of \$50,000).

Assume that after expiration you find that your annual losses were only \$5,000. Your premium calculation is:

$$(\$23\% \text{ of } \$50,000 + 114\% \text{ of } \$5,000) \times 1.028 = \$17,681$$

but you would be charged \$23,500 (minimum).

The maximum and the minimum feature, then, puts upper and lower limits on the fluctuations of the retro premium. The premium under the plan we have just discussed

can swing from a low of \$23,500 (47 per cent standard) to a high of \$67,500 (135 per cent standard).

You have now gone through the mechanics of using a given retro formula. If you're still with us, you deserve a break, but first let's judge the retro proposal we have been working with. Is this particular retro proposal a good buy for you?

Remembering that under regular rating you would pay \$43,058, you could say, "It's a good buy if my losses are low," and, "It's a poor buy if my losses are high." These statements obviously are true as far as they go. Later on, we'll see why such an oversimplification can be misleading.

You recall the example we discussed earlier has a possible premium swing from a low of \$23,500 (47 per cent of standard) to a high of \$67,500 (135 per cent standard). Depending on many factors, perhaps this is a good plan for your company. Let's assume, however, you are inclined to be a bit more conservative. You're just not willing to expose your company to a potential premium of \$67,500, especially when you know that regular rating would cost only \$43,058.

Express that sentiment to the insurance company, and the response could very well be something like: "O.K., we'll lower the maximum. How about a formula with a maximum of 112 per cent of standard?"

$$(30\% \text{ Std. Prem.} + 114\% \text{ Losses}) \times 1.028$$

(Tax) = Premium
(Standard premium — \$50,000; maximum premium — 112% standard; minimum premium — 47% standard.) Your next question would be: "Using this formula, what will my premium be at various levels of annual losses?"

To see more clearly the effect of lowering the maximum premium from 135 per cent of standard to 112 per cent of standard, let's place the premiums under the two formulas side by side:

	Premium	Premium
	Formula 1	Formula 2
	Max. 135%	Max. 112%
	Min. 47%	Min. 47%
With Losses of	Basic 23%	Basic 30%
\$15,000	\$29,401	\$32,999
20,000	35,260	38,858
25,000	41,120	44,718
40,000	58,699	56,000
60,000	67,500	56,000

You quickly notice that Formula 2, with the 112 per cent maximum, achieves your goal of reducing the potentially high premium. The price tag for that reduction is a higher premium (or less savings) when your losses are in the normal range. Stated another way, Formula 2 is a more conservative plan. You can't get hurt as much when misfortune strikes, nor can you benefit as much when things go well.

Looking at our two formulas again, you no doubt noticed that when we changed the maximum from 135 per cent of standard to 112 per cent of standard, the expense allowance for the insurance carrier changed from 23 per cent of standard (\$11,500) to 30 per cent of standard (\$15,000). It is the change in this expense allowance or basic premium that causes the differences in premium under the two formulas.

You might ask, "Why did the basic premium percentage change? Did the insurance company's operating costs go up when we lowered the maximum?" The answer is: One of the items included in that expense allowance did go up when we lowered the maximum premium. And here, we need to explore a bit of the theory of insurance.

Let's forget workmen's compensation a moment, and instead, consider an insurance company providing fire insurance on 1,000 identical houses. Assume that statistics and the laws of probability show us there will be a grand total of \$10,000 in fire damage to those homes each year. Disregarding its operating costs, and considering only claim dollars, the insurance company must charge each house-owner \$10 each year in order to have enough money to pay those fire damage claims. (\$10 each from 1,000 house-owners equals \$10,000.) That \$10 is the statistical and actuarial cost of the odds of loss applicable to each house per year.

Now, back to Retro. In Formula 1, the insurance company agreed to charge you no more than 135 per cent of standard (\$67,500) for your annual policy, regardless of what your total losses were. The insurance company, of course, must pay all your workmen's compensation claims—that's why you bought the policy. The maximum applies only to the premium calculation, not to loss payments. From the carrier's viewpoint, this is what happens should your losses be extremely high (assume losses of \$60,000):

Insurance company pays out—
Claims
Handling (14%)

\$60,000
8,400

Insurance company expenses—
23% standard

11,500

Taxes—2.8%

\$79,900
2,237

Total insurance company pay-out
You pay only the maximum

\$82,137
67,500

Difference

\$14,637

The insurance company goes in the red \$14,637 on your policy for that year.

The opposite takes place, from the insurance company's viewpoint, when your losses are extremely low and minimum premium comes into play. Assume losses of only \$5,000:

Insurance company pays out—
Claims
Handling (14%)

\$ 5,000
700

Insurance company expenses—
73% of standard

11,500
\$ 5,700

Taxes—2.8%

\$17,200
482

Total insurance company pay-out
You pay the minimum

\$17,682
21,500

"Gravy" to the insurance company

\$ 5,818

So when an insurance company agrees to a retro plan of premium calculation, it is faced with the possibility of: (1) going "in the red" if your losses are extremely high; or (2) collecting "gravy" premium if your losses are extremely low. Actuaries are able to calculate the odds of these results taking place and are able to express the cost of those odds as a percentage of standard premium.

In our example of houses insured for fire, we calculated the cost of odds at \$10 per house per year. In our retro plan, actuaries likewise calculate an actual dollar cost of odds of the unusually high or low losses, but because we want to end up with a simple

convenient formula they show that cost as a percentage of standard premium.

How?

Let's go back to our retro formula 1 (maximum 135 per cent, minimum 47 per cent). Let's analyze the 23 per cent standard premium that the insurer required for expense allowance (basic premium): That 23 per cent is ear-marked as follows: 15.4 per cent for what you and I readily think of as operating expenses (salaries, heat, light, rent, equipment, supplies, etc.); 7.6 per cent—the net of the actuarially computed cost of the odds of going in the red if losses are extremely high while collecting only the maximum, less actuarially computed credit value of the odds of the carrier collecting "gravy" premium via the minimum if losses are extremely low.

In Formula 2 (maximum 112 per cent, minimum 47 per cent), the expense allowance (basic premium) is 30 per cent, and that 30 per cent breaks down as follows: 15.4 per cent for what you and I readily think of as operating expenses (salaries, etc.); 14.6 per cent—the net of the actuarially computed cost of the odds of going in the red if losses are extremely high while collecting only the maximum, less actuarially computed credit value if the odds of collecting "gravy" premium via the minimum if losses are extremely low.

Now you may ask: "Why is the net 'odds' charge greater in Formula 2 than in Formula 1?"

The answer is that there is a greater likelihood of the insurance company going in the red when your maximum premium obligation is only \$56,000 (112 per cent) than when your maximum premium obligation is \$67,500 (135 per cent).

Stated another way, Formula 2 with its 112 per cent maximum is more conservative for you because it has a lower premium ceiling. While that low ceiling spells "conservative" for you, it spells "more risk" for the insurance company, because with a lower ceiling the insurer is more likely to be faced with collecting inadequate premium from you.

Let's go a step farther. What change do you think the insurance company will make in the formula if you agree to a higher minimum? The carrier might say to you,

"If you're agreeable to a higher minimum, how does this formula appeal to you?"

24% of std. + (114% of losses) x

1.028 (Tax) = Premium

Standard—\$50,000; maximum—112 per cent standard; minimum—65 per cent standard.

Let's put all three formula calculations side by side:

	Formula 1 Max. 135% Min. 47%	Formula 2 Max. 112% Min. 47%	Formula 3 Max. 112% Min. 55%
With losses of	Basic 28%	Basic 30%	Basic 24%
\$15,000	\$29,401	\$32,999	\$32,500
20,000	35,260	38,858	35,774
25,000	41,120	44,718	41,634
40,000	58,699	56,000	56,000
60,000	67,500	56,000	56,000

From the viewpoint of the insurance carrier, when you agreed to move from Formula 2 to Formula 3, that carrier was able to change its basic premium (expense allowance) from 30 per cent to 24 per cent.

That 24 per cent in Formula 3 breaks down thus: 15.4 per cent—what you and I readily think of as operating expense (salaries, etc.); 8.6 per cent—the net of the actuarially computed cost of the odds of the carrier going in the red if losses are extremely high while collecting only the maximum, less actuarially computed credit value of the odds of collecting "gravy" premium via the minimum if losses are extremely low.

In Formula 2 the net odds charge was 14.6 per cent. Why only 8.6 per cent in Formula 3?

3? Let's see what happens in Formula 3 when losses are extremely low, say \$5,000.

Carrier Pays—Claims

Handling (14%)

\$ 5,000
700

Carrier has expenses—24% std. 12,000

Taxes

\$17,700
496

You pay the Minimum

\$18,196
32,500

"Gravy" to carrier

\$14,304

The old minimum was 47 per cent (\$23,500). Formula 3 minimum is 65 per cent (\$32,500); thus, the potential "gravy" is greater—the actuarial value of that difference drives the net odds charge down from 14.6 per cent to 8.6 per cent.

By looking at our comparison of the three retro plans, you see that Formula 3 maintains the conservatism of the 112 per cent maximum and also manages to keep the premium cost down to near the Formula 1 levels when losses are in the \$20,000 and \$25,000 area.

Along about now you've probably come to the conclusion that whenever the percentages in the retro formula are changed to benefit you there is a "price tag" involved. And you're absolutely right!

NOISE AND WHAT TO DO ABOUT IT

By T. A. RICHARD, Ph.D. and E. J. OTTERSON, P.E.
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Although the detrimental effect on hearing due to excessive noise has been recognized since the beginning of the industrial revolution, quantitative standards for predicting hearing loss with correlated decibel levels were not available and generally implemented until the mid 1950's. Recently, standards have also evolved for environments such as outdoor neighborhood criteria, offices, telephone use, schools, etc. This paper will show: (1) the development of criteria and standards for evaluating noise; (2) the importance of regulatory requirements in reducing and controlling all sources of noise; (3) examples of administrative and engineering controls.

In 1951, Wisconsin statutes were amended to include compensation payable for occupational exposure to excessive noise as a result of the judicial decision, *Green Bay Drop Forge Co. vs. Ind. Comm.*¹ This type of compensation to the employee came into effect in Wisconsin and New York at about this time as a result of judicial interpreta-

tion. Since most statutes do not define the term "disability," the courts have taken the position to award compensation not for wage loss but for damages sustained by the employee arising out of and in the course of his employment. In fact, many awards are made even though the employee is at a higher wage than prior to his injury. However, several states require a period of six months away from the job for which the reported claim for occupational hearing loss was claimed.

These claims for compensation appear to be a logical outgrowth from changes in industry during and following World War II in which high speed, automated processes are cramped into limited factory space resulting in ever increasing noise levels. Until recently, prior planning was primarily focused on maximum production with little concern given for the working environment and its control of noise, air quality, and temperature. Schools and colleges are also experiencing higher levels of noise because of increased use of air conditioning compressors and units, computers, large central heating plants, maintenance equipment and many forms of research and experimental equipment.

Origins of Standards

In the interest of establishing standards for hazard limits in industrial noise, Kryter made an exhaustive survey of the literature in 1950 and speculated that the maximum safe intensity at which no denting effects will occur is probably in the neighborhood of 85 dB for "critical bands" of noise. Although Kryter's projection was eventually proven correct, it did not receive wide acceptance.

It's interesting to note that fourteen years later in 1964, when the American Academy of Ophthalmology and Otolaryngology (A.A.O.O.) published standards the levels were found to agree with Kryter's original thesis. During the intervening period between September 1953 and the advent of the above A.A.O.O. standard, this agency adopted the proposed standard of Hardy⁴ which provided additional correction in the octave bands at 4,000 cps or Hz and above. This standard involved a graphic interpretation and was more permissive in respect to high levels of industrial noise than the above mentioned A.A.O.O. standard. The A.A.O.O. standard

also appears to be the first widely accepted criteria for relating or correlating duration of exposure (hours per day) with decibel levels ranging from 85 to 120 dB. The primary drawback of these methods involved the concept of an octave-band analysis by skilled personnel which in turn necessitated the use of an expensive meter having capability for octave-band analysis.

A-Scale, A Simple Meaningful Noise Evaluation

Commencing in 1964, an Intersociety Committee⁵ was organized to establish a basis and develop noise guidelines. In November 1967 a meaningful and authoritative guide was published which provides that noise shall be measured by using either the A-scale of the sound level meter or by octave-band analysis (three-octave-bands 300-2,400 Hz).

Prior to publishing of these guidelines, Botsford⁶ had shown that the three-octave band method could be predicted or replaced by the more simple A-scale measurement. This relationship was also supported by data of this agency which found excellent correlation between the two methods.

Accordingly, the A-weighted sound level equals the more complex method of indexing noise and can satisfactorily predict hazardous levels. Moreover, the meters or instruments required are simple to use, comparatively low in cost, and surveys may be made by personnel having little special training.

The Magic Number

The advent of the A-scale concept resulted in an enigma for selecting the appropriate dBA level. These differences of opinion appeared to involve the interpretation of the Intersociety Committee's data. Although probably not significant, the incidence of impaired hearing increases for workers exposed for several years at 85 dBA. This base-point appeared to serve as the criteria for the 85 dBA standard adopted in the Walsh-Healy Federal Contracts Act in January 1969. Since many experts in this specialty felt the above data was not satisfactorily responsive until the incidence corresponded to the dBA work history, the succeeding Secretary set aside the above standard for more study. The primary standard, 90 dBA for an eight-hour workday, was subsequently adopted and published in the

Federal Register on May 20, 1969 and was jointly promulgated by U. S. Department of Labor and the Committee on Threshold Limit Values, American Conference of Governmental Industrial Hygienists. The standard ranges from 90-115 dBA and each five dB increment is accompanied by a progression which halves the permissible exposure time for the next higher increment.

Combining Exposures Within the Primary Standard. Where the daily noise exposure varies, their combined effect should be considered. This may be accomplished by adding fractional values for each respective dBA or more easily and rapidly by use of graphic and tabular interpretation.

Non-Industrial Standards. Recently⁷ quantitative criteria or standards have evolved for environments such as neighborhood annoyance levels, office noise, schools, auditoriums, traffic and many other areas. It is disturbing if one considers that approximately 20 years elapsed between Kryter's² proposal for industrial standards and their adoption into rules or regulations governing industry. The time lapse for implementation of regulatory standards for non-industrial environments remains a point of anxiety for the public.

Regulations. The State of New York adopted rules in 1961 which state that, if the noise level in certain octave-bands was exceeded, a noise control program was advisable.

The 1962 revision of the Wisconsin Industrial Commission's *General Orders on Safety* contains an order (Ind 182 Personal Ear Protection . . . Noise) which in brief states that employees exposed to sound levels in excess of 100 dBC for the major portion of their working day shall be provided with properly fitting ear protectors. This rule was intended to identify reasonable levels at which ear protection is required but not necessarily to establish the level at which hearing loss may result. The adoption of these specific rules and development of simple standards for noise has markedly stimulated the demand for noise surveys and subsequent corrective measures. This is supported by records of this agency which indicates that the noise activity portion of our industrial hygiene program has risen from a few requests per year to approximately 40 to date in 1970. This activity

received further emphasis by incorporation of noise standards and mandatory corrective measures into the 1969 Federal Contracts Act which in turn has demonstrated dramatically the universal range of the problem and ever increasing interest in administrative and engineering methods of reducing exposure.

It is interesting to note that the Noise Measurement Techniques criteria of the National Machine Tool Builders Association, prepared in 1970, was a direct outgrowth of Federal noise regulation and anticipated regulation by the states. This criteria or publication has the objective of incorporating noise reduction as a design parameter in machine tool building. Accordingly, the adoption of specific noise regulations is an important phase in a corrective program and has proven to be the most effective means of motivating administrative and engineering noise control measures.

It is important to point out that Wisconsin's noise regulation or other safety and health rules may not be enforced for protection of students and pupils because of the peculiarity of the existing law. This law, which admittedly defies logic, is further explained in a Wisconsin Attorney General's opinion dated Aug. 15, 1966.⁸ However, these regulations are generally utilized since teachers and the public are afforded the safeguards of the safety and health codes.

Wisconsin's New Noise Code. During the past three months a new noise code or safety rule has been drafted by a committee representing industry, labor, and government. During October, 1970, several public hearings were held throughout the state in which all interested persons, organizations, etc., have been invited to comment on the draft. The present draft of these rules calls for feasible administrative or engineering controls where workers are exposed to levels exceeding A.C.G.I.H. standards. Although many groups representing diverse interests appeared at these hearings, no objections were made in regard to the requirement or principle of administrative or engineering controls. The use of personnel ear protection is considered a "last resort" method of control.

An additional feature of the code is the requirement that the employer must provide evidence that the employee is not exceeding

time limits when exposed to levels exceeding 90 dBA. Primary criticism of the proposed code involved the aspect that more detail be given to explaining details of an effective hearing conservation program.

Engineering Controls. The subject of noise control is best approached by use of examples of proven or feasible controls. One of the most practical ways of reducing levels is by including a noise specification in purchase requisitions. A recent reference¹ indicates that heavy equipment used for excavating and hauling were purchased with noise specifications and were found to perform within 90 dBA criteria without incurring excessive cost. The manufacturer is in the best position to modify or develop controls for noise abatement.

One of the simplest methods of controlling noise involves the use of enclosures. Either the worker or the process may be isolated by this technique. We have recently recommended control of exposure from a coal-railroad car shaker by placing the worker in a small booth or room during the shaling period. Because some of these shakers produce levels as high or higher than 130 dB, the use of some types of plugs or muffs may not provide sufficient attenuation or reduction. In wood working plants, good results have been obtained by enclosing shapers or planers in cabinets held together with snap fasteners to provide maintenance access. Shock is fed through slots in the cabinet.

Several references and examples are given in the *Industrial Noise Manual*.¹⁰ For personnel charged with environmental control and safety programs, current aspects and developments of noise evaluation and control may be followed in monthly publications cited in references 6, 7, and 11.

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COLLEGE CAMPUS SAFETY PROGRAMS

By HARRY HATCHER
State Safety Coordinator, Wisconsin

No one has the right, legally or morally, to design, manufacture, sell, buy, or require the use of any building, facility, equipment, material, product, or process that is hazardous to the user or to the public. Yet, around the clock, every three seconds, someone sustains a disabling injury; every five minutes someone meets a painful death.

The prevention of accidents has become "big business." This is rightfully so when one considers that each year 120,000 people are killed in accidents, with 108 million dis-

abling injuries at a cost of more than \$21 billion. That's big business!

With losses of this magnitude year after year, it is quite understandable that accident prevention has gradually changed from the somewhat simple techniques used 25 to 30 years ago to become the technical specialty it is today. In the highly mechanized world in which we now live, with high-speed equipment, toxic vapors, radioactive materials, and other environmental factors, any one of which can readily result in serious

injury or death, there is no place for the guess work of yesterday.

Unknowningly and unwittingly, members of management responsible for the design and construction of facilities have at times forced unsafe working conditions on the employees. We have a state law, our Safe-Place-to-Work statute, that reads in part: "Every employer shall provide a safe place to work and shall provide safe work for the employees. . . ." That is our intention.

Once management thoroughly concentrates on high potential situation hazard control, many booby-traps can be eliminated. The real job before management, design engineers, and safety engineers is to face the fact that everything must be designed to be as compatible as possible with the already superbly designed component of the machine-facility environment system—the employee. We must design equipment, tools, facilities, machines, and work environment so they are intelligent-proof.

We can and should include in a safety program all the elements of motivation, communication, habit forming, physical requirements, attitudes, and skills. The key principles needed to build a safety program are: personal protection, machine protection, and maintenance, environmental control, safety education, supervision and control, records (reports, inspections, investigations, analyses).

Those aren't just words. Here's a brief look at what we've done in Wisconsin in four years.

Personal protection. Seven thousand employees with prescription safety glasses; 3,000 will have safety shoes within a few

months. Many others use hard hats, gloves, aprons, leg guards, and immunization against bee stings and poison ivy. Now we are installing rollers on tractors. We no longer use carbon tetrachloride (even for defatting bird and animal skins) nor the Vapona pesticide strips.

Machine protection. We have covered hundreds of machines, written new specs for new equipment, and written standards for contractors who build new facilities.

Environmental control. Dusts, noise, fumes, vapors, insecticides, germicides, and light all get attention.

Safety education: 18,000 have had Defensive Driving; 3,000 one-hour safety courses; 1,200 supervisors courses (eight hours); 100 management courses (two hours). Employees get 30 or 40 safety memos a year, 14,000 safety posters, and a column in the *News-letter* once a month.

Supervision and Control. These are spelled out in all the safety education courses and written into union contracts and civil service rules.

Records. There are 4,000 accidents reported each year—2,100 compensable—with all the inspections, investigations, and analyses that make the difference. The difference is: in 1966 our frequency was 9.5, it is now 8.00 (that's two fewer accidents every four days). The severity rate was cut in half from 659 to 362. Lost days per disabling injury were cut in half, from 81 to 45, with a conservative saving of \$280,000 a year.

You can do it, too, if you have management with perspective, imagination, and the compassion and business sense to save you money and manpower.

WHAT DOES AN ADMINISTRATOR EXPECT FROM DRIVER EDUCATION?

By DR. JAMES DUFFY
Principal, Glenbrook North High School, Northbrook, Ill.

Does the administrator look at Driver Education differently? Maybe it is only through the eyes of the Driver Education teacher that administrators seem to look at it differently. Might it not be some kind of complex which causes Driver Education to

perceive itself as the unwanted or least cherished subject in the curriculum? How did this complex develop? Historically speaking, Driver Education is a new subject in our curriculum. There are many who can remember the time when

Driver Education was not part of the school curriculum, whereas there are few other subjects taught in the school today that were not taught in some form or other when you went to school. So, even though it has been around for many years now, relatively speaking it is still a new subject. Furthermore, within its lifetime it has had a rather interesting growth. It came into the schools in much the same way that several other subjects have. Whenever a problem arises in this country, everyone thinks the best way to solve it is to add it to the school curriculum. There is nothing new about this. This practice continues even today as evidenced one year ago in Illinois by the new state law regarding consumer education. People in this country have always saved their consciences when faced with problems, by passing laws requiring that the schools add a course to aid people in avoiding these problems.

This is the way Driver Education started. It was something forced upon educators. The educators acted accordingly. Driver Education was added to the curriculum all right, but it took the form of the "poor stepbrother." It was squeezed in as a unit in physical education or civics or biology or in any of a variety of places where it could be squeezed in, and I am sure that some who taught in those early days of Driver Education could tell some interesting stories about the kind of significance it had in the school. The teachers were usually unqualified and, unfortunately, more often not interested. None of these situations made for a very good course, but the law was being fulfilled—maybe not the intent of the law but at least the letter of the law.

What did this do, this kind of situation? It forced those who were fighting for the cause of Driver Education to begin a struggle—a struggle to gain identity and a struggle to gain significance. As they struggled they improved the education of their teachers, and they improved the resources and materials with which they taught. Driver Education began to find a place of its own in the daily schedule and, more important, found support.

Interestingly enough, it had to go outside the school to gain this support. It turned to the business world, and for very practical, economic reasons the business world responded and willingly gave it support. I am speak-

ing specifically of those insurance companies who recognized that if a student were given a good Driver Education program the chances of accidents would be lessened, and this would be economically beneficial to them. Business had money. They also had the power to influence others who had money, so the support began to come not only directly from business but also from the state and federal governments. The "poor little stepbrother" who came in through the back door suddenly became rich. Like so many who start out poor, this new wealth caused it to act like what is commonly called the "new rich," and just as it works for all people, it discovered that all of the money in the world could not buy it the status which it desired. Again, just as is done by so many who are seeking status, Driver Education felt that the only way left to do it was to imitate those who were considered to have this status. It started to imitate its academic brothers and sisters, believing that this would bring status to Driver Education. It was thought that if students were given a great deal of homework and term papers and difficult examinations and lower grades that these things would give status. After all, that's the way it was believed that the academics got it, so that must be the way to do it.

As an administrator looking at Driver Education I say, "Put those things in the past." You see, a review of the history of Driver Education reveals the answer to the question "Why would an administrator look at Driver Education any differently than he would look at any other subject?" I don't think he does. It's just that the Driver Education teacher thinks he does.

The reason the Driver Education teacher is concerned about how the administrator looks at it is because he is still, even after he thinks his subject has gained status, asking, "Am I as good as my academic brothers and sisters, or am I still the 'poor little stepbrother'?" Poor you are not; stepbrother you should not and must not be, but I don't think that imitation is the way to get you what you want. You are Driver Education teachers because you believe in it, because you believe that you can provide an education which should improve automobile drivers. Driver Education does have a place of its own in the curriculum. We are living in an era when everyone is concerned about rele-

vancy. We educators are being forced to review our curriculum and ask the question, "Is it relevant to today's world?" What, may I ask you, could possibly be more relevant than Driver Education? I don't know the percentage of high school graduates who become drivers, but I know that it is extremely high—far higher than the percentage of students who become historians, mathematicians, writers, linguists, or scientists. That is what relevancy is all about. So you are teaching a subject which is relevant even to the point of protecting our very own lives. You are responsible for educating students to do well something which we know that almost all of them are going to do. Your job is to see that they do it right. So you have a relevant subject; you have a dedication to your subject. Now, what can we do about it to make sure that it is significant, that it can stand on its own merits, and that it doesn't have to be a poor imitation of something else?

If I had to label myself in any way, I would call myself a Behaviorist. I am one of those individuals in this country today who is firmly committed to the philosophy of the behaviorist that states most clearly that any worthwhile learning which takes place in our schools should be able to be measured through observable student behavior. The implementation of this philosophy is being conducted in a variety of ways, all of which are basically aimed toward the same goal. That is, the student is being told in specific behavioral and performance terms what it is he is to achieve, the methods by which he can achieve it, and the means by which he can demonstrate to the teacher that he has achieved it.

With this philosophy in mind, I ask each of you to ask yourselves very simply, "What should a student who leaves my class be able to do that he could not do before he entered the course?" I am not going to try to answer that question because I am not a Driver Education teacher, but you should be able to answer that question and answer it well. You should be able to tell anyone exactly what skills, what knowledge, what learning processes your students should be able to achieve as a result of being in your course. I am speaking of performance-type objectives. Don't show me a course with a lot of grand-sounding goals and purposes unless you have specified what it is that the stu-

dents are to achieve. After you have specified just what it is the student is to do, you must next specify in what activities the student can engage in order to achieve these objectives. Be sure that these activities will lead the student directly to the achievement of the objective. In other words, I am not interested in seeing a list of homework assignments, and I am certainly not interested in seeing a term paper assignment or a long reading, outline, or question and answer type of assignment unless you can tell me how these activities are going to lead the student toward achievement of your specified performance objectives. Put the focus where it belongs, not on the amount of work a student must do but rather upon the amount of learning that the student must achieve. Don't feel bad if your students don't have homework or if they don't have to spend hours going through Readers' Guides or encyclopedias in order to accomplish a term paper as they might be doing in another class, but do feel bad if your students are not achieving your objectives. You are not in the business of trying to teach students how to write, how to do research, or how to outline. You are in the business of teaching the students how to drive correctly. Let someone else try to fulfill those other objectives; those aren't yours.

This is not an easy task that I am suggesting to you and don't tell me this is what you have always been doing, because I don't think that you have. I am sure that you had your course goals, and I am sure that you have had what you consider course objectives, but did you have all of the very specific performances which a student must achieve in your class clearly spelled out for both the students and yourself? Did you have all of the activities and resources which would best lead your students toward the achievement of these performance objectives directly spelled out, and, finally, did you require the student to engage in only those activities and to use only those resources which would lead them toward the achievement of these objectives? I repeat this because I want to make it clear that the important thing is that the student learns, that he achieves your objectives, and that he is engaged in learning activities and uses many resources only for the sake of achieving objectives.

What are these resources I am talking about? There are a variety of them. There are those that are known best since they are the ones we have been using the longest and most commonly, such as text books and other kinds of books and pamphlets. There are teacher presentations. There are small group discussions. There are films, film strips, tapes—both audio and visual—and in your field there are automobiles and simulators. A variety of resources which students can use to achieve your objectives are and must be made available. But the important thing again is not the use of resources but the achievement of the objectives. Students are not taking the courses from you in order to learn to read or to look at filmstrips or films. Certainly you should help them to do these things, but only if the end purpose is the achievement of objectives which are related to the goals of Driver Education. Finally, the student should be able to demonstrate to you, at whatever level of mastery you expect, that he has achieved your objectives, and he should not proceed to the next objective until he has achieved each objective to his minimum expected level of performance. If he is not achieving at his level of performance, then it is time for you to review the resources and activities which you provided for your student to see if they are, in fact, appropriate means by which that student could achieve his objectives.

As each student proceeds through your performance objectives, each step of the way should be leading him toward that final goal which will allow that student to demonstrate that he is able to do, when he leaves that class, whatever it was you said he should be able to do. You have a ready-made course for this. You should not have any difficulty at all specifying what kinds of performances the students who leave your classroom should have achieved. You will no longer be stating what students have to cover in a Driver Education class, but you will be stating what students will achieve in your class and they should not leave that class until they have achieved it. This can be accomplished if, throughout the course, students are allowed to move at their own rate of speed and allowed to use only those resources and engage in those activities which will lead them to the achievement of each of the performance objectives. Don't be concerned with how long the course is,

how many weeks you need to cover given material. Concern yourself only about what the students achieve in your class, and when I say achieve I don't mean accomplish, because we are then talking about the amount of work completed. We are now talking about the amount of learning that takes place. If you restructure your course in this manner, I guarantee you that Driver Education will have an honorable place in the curriculum without having to imitate the so-called academics.

Go back to your schools, sit down, and do the following:

1. Review the purpose of your course. I am sure you all have them somewhere in your desk drawer or in a curriculum guide. Make sure they actually are purposes of Driver Education—in other words, that they are uniquely your own purposes and not so general that they could be borrowed and used as the purposes for one or more other courses. If they aren't, you had better rewrite them, using any kind of terminology you desire. These purposes don't have to be written in behavioral terms. You can use nice sounding words such as understanding, appreciation and knowing. Just state your course purposes.

2. Take these purposes and translate them into course objectives which must be written in behavioral terms. In other words, every objective must be written with action verbs stating exactly what observable behavior the student will perform.

3. Break these course objectives into smaller, specific kinds of objectives which will help the students to learn how to achieve the course objectives. These also should be written in very specific behavioral language which tells you and the student exactly what that student is going to do.

4. Develop the best kinds of resources—written, oral, audio, or visual—which the student can utilize in order to be able to do whatever it is you said he must do.

5. Provide all of the means by which the student can use these resources and engage in the activities related to the resources in order that with your help and your direction he may select the most appropriate resources and activities which will help him to best achieve the objectives. At this point you have written what is called a contract, or the student's learning package.

6. The student demonstrates to you his achievement of the objectives at the level of performance that you expect from him. Finally, be sure that the student doesn't proceed to his next objective until he has indeed fulfilled step 6. Then you will know that he has mastered the learning even if it means he may have to go back over step 5 several times with different resources and different activities.

This isn't as easy a task as it may sound. I know there are many Driver Education teachers who are already doing this. I have seen in Illinois the State Curriculum Guide which uses this very same language and which asks Driver Education teachers to become Behaviorists, to adopt the performance philosophy. It is hard work, but the end result is worth it because you will now be focusing only on student learning and his mastery of that learning. This is hard work, but it can be done, but please don't say that it can only be done with the behind-the-wheel phase of Driver Education, because this isn't true. It can be done in any phase of any subject. If you accomplish this you will have gone a long way toward the achievement of your particular goal—enhancing your own image.

There is another place in which your image can be enhanced. Be honest with yourselves. Remember that these performance objectives are actually your statement, as a professional expert in your field as to the best way possible for the students to achieve your course purposes. Remember those course purposes in Step 1? I said they don't have to be stated in behavioral terms, and they don't have to be stated in terms of something that is measurable and observable. There is a reason for this. In your field I would suspect that the purposes have a great deal to do with student driving habits after he leaves your classroom. You are not going to be able to measure that because you are not going to be with him when he is driving after he leaves you. That is why course purposes can't be stated in measurable terms. So your objectives are actually your professional statements of what the student must achieve while he is in your class which you

believe best lead him toward the fulfillment of the course purposes. If these purposes aren't fulfilled, be honest and admit it. This is very important for your own professional image.

In social studies, one of the goals has always been to make the students become good citizens. We know that not everyone who comes through a social studies course is a good citizen. In English classes, one of the course purposes is to have students be able to communicate well all of their lives. We know that not everyone who leaves an English course is skilled in the communication arts. So, if you read of some research which suggests that your purposes aren't always being fulfilled, don't say this isn't true; don't argue with the research data. Accept it; study it, and then recognize that some of your professional expertise regarding some of the performance objectives was wrong. That is why we have research in education—so we know where we are failing to fulfill our purposes in order that we may continue to strive to improve our education so that we may fulfill our purposes. If we did not need improvement in education, there would not be jobs for people like me, so let's not knock the research or try to cover it up if it indicates that we are not achieving our purposes. Let's go back and redo our objectives and continue to strive toward the best possible educational program.

Finally, stand tall and be proud of what you are doing, but don't build your pride on sand. You have to have a firm foundation. What I have suggested I believe will give you a firm foundation—your own—not someone else's, not copied from another subject, but your own.

So, Driver Education teachers, how does an administrator view your subject? This administrator looks at it as a subject which is very relevant, and has a very rightful place in the curriculum. Now you just stop pretending that you are something other than what you are and recognize your course for what it does and for what it must do and build a firm foundation, and I guarantee you that you will never have to feel like the "poor stepbrother" again.

OUR SCHOOL BUILDINGS OF TOMORROW

By ROBERT L. VARNES
Vice Pres., Welton, Becket, & Associates, Chicago, Ill.

A revolution is taking place in our elementary and secondary schools, a quiet, constructive revolution, one that is infiltrating and reshaping the space of education as much as the technique of education. It is a revolution of open-mindedness that is ultimately expressing itself in better educated children and young adults. This revolution is knocking down the walls and barriers to effective and responsive learning. It is destroying the cellular thinking associated with the traditional division of teaching space.

Perhaps revolution is too drastic a term. Maybe "change" would be more comforting. Nonetheless, whatever you term the developments that are shaking and altering prevailing concepts of education, equipment, and teaching technique, the fact still remains that a movement away from the traditional is taking place. Pity the teacher, the student, the administrator who does not keep up with the technology of education. Pity him still more if he fails to understand how these changes are affecting the safety of both himself and those around him.

In this discussion I would like to briefly describe what constitutes this revolution and the direction in which it is heading. I will illustrate it through the use of actual buildings, either recently completed or in construction. From there we will take a closer look at how these changes affect student-staff safety and what we might expect in the future.

To give you an idea of where the motive forces for change have started, let me cite a recent study by Stanford University. Their findings indicated that ten years ago, when the open planned schools, the architectural concept relating to new educational technologies, was in its infancy, the leading advocate and most influential individual for its implementation was the superintendent of schools. The second most influential person was the architect. School principals, teachers, board members, parents, etc. followed in order.

This is a rather exciting notion! Two highly motivated, skilled professionals, one

a non-educator, influencing and bringing about an educational innovation. Each, based solely on their profession and their vantage points, realizing that the building, the basic structure of the educational environment, is ill-suited for up-to-date programming techniques and methods of instruction. And, if the environment is inadequate, so must be the techniques and methods taking place within that environment and ultimately, therefore, the formal instruction of those who practice there.

The idea caught on, took hold, and with it the architect's degree of influence slipped. More principals, teachers, and board members are up there fighting for the new programs with architects in a supporting role for an even broader base of educational professionals.

What is this change you say? What is this revolution, so ardently advocated by members of at least two professions? What are we talking about?

This change concerns more student participation in the education experience, more individualized instruction, more food to satisfy the hunger for learning, and more thrill from the powers of knowledge. The changes involve a re-dedication of effort and a concept for the student to actively acquire an education, actively seek information and perspective. Emphasizing these attitudes is the change in the shape and arrangement of the learning facilities.

The schools that most of us attended were designed with classrooms spaced along a locker-lined corridor. Once seated with 25 to 40 other students, the teacher rode herd on us, spoon fed us with distilled information, and sought a median of achievement around which the entire semester's effort was geared. Discipline was important, but so was melody. The kids with "A's" were freaks as much as those who flunked.

It was a curriculum geared to the unimaginative student. It encouraged memorization more than understanding and inquiry. It mattered little if one student was a slow learner or another had a reading deficiency;

all were treated with equality. Today, that has changed somewhat with special programs to help the lower levels of learning and to a certain extent, with special programs for the "gifted," the "super-bright." There is still that vast group whose place within the remainder of students is considered average, to whom the degree of "averageness" is unimportant.

Fortunately, we stand at the threshold of educational technology's future and have not yet been swept under by it.

Today, as I have said, the thrust is toward involving the student with learning at his best pace, to let him take responsibility for his education. The classroom failed. It was rigged against student involvement and participation. It distorted "average" and became a cell dividing students into groups too large for meaningful participation, and certainly too large for individualized instruction or discussion groups.

Today, to redirect the emphasis where it belongs toward the student, we have found there are four distinct situations for the learning experience within the formal confines of the school, for the presentation of subject matter. They are:

1. Space for large groups, 50, 75, and up, where information is the traditional one-way street: a film presentation, lecture, demonstration, testing, vocational training, or group production.
 2. Classes for approximately 25, still in the traditional cellular form, where learning is somewhat give and take and participatory but, nonetheless, is teacher dominated.
 3. Areas where small groups of five to 12 students discuss a subject in seminar fashion. Unlike a classroom, everyone participates, everyone learns from one another.
 4. Finally, the solitary unit or location where a student can pursue assigned work or an area of special interest.
- To accommodate all these requirements, we found that classrooms—the cell—have to be abandoned; the interior arrangement of space opened up for more flexible distribution of space according to needs established for the student. (Unfortunately, time does not permit a detailed explanation of the dollar economies that will be achieved through this process that goes hand-in-hand with economy of education.)

The first step, for architects, is understanding the educational specifications and requirements of the particular school and then translating them into architectural criteria. As an example, we at Welton Becket and Associates have as a client a small rural district, large in area, short on money, in a condemned building. The district must have a new, 800-student senior high school. The old one exists as a traditional building, much like those I described, with typical subjects and typical teachers to teach them. No one is displeased with either.

But this is to be a new senior high school! The superintendent of schools (remember him from the Stanford study) feels that this is an opportunity to get his district into the mainstream of educational developments, to upgrade the quality of education in his community with the tools to compete in an ever changing world.

Scheduling will be change from the traditional 55-minute, seven-period day to modular scheduling of 20-minute blocks. Modular scheduling, incidentally, consists of breaking all academic, physical education, study, and social time into 20 minute segments. The student pre-establishes his needs and co-ordinates them with those of the school system. If a class or particular unit of instruction takes four modules, he sets aside that amount of time, either for one day or over many days. All schedules are then analyzed and co-ordinated through a time-shared computer system. The concept of modular scheduling is both new and infinitely more complex than this brief definition.

Concomitantly with the flexibility of scheduling, the superintendent wanted to have a completely integrated curriculum, one where departments with similar requirements share facilities and space. Thus, English and Social Science pods will be adjacent and share resource center materials and storage. Mathematics and Science similarly will be in proximity with each other.

In the open plan, the class space ceases to function as the domain of a teacher, the territorial imperative, if you will, of one individual. The space is open to other classes at other times of the day. The space is separated by visual barriers—chalkboards, and/or casework—and since it is open,

housing many different groups pursuing different areas of interest, the space is also capable of unlimited modifications for dividing space. As the programs change, so does the configuration of the space that serves the program.

Teacher preparation areas within the departments are provided for staff work and counseling of individual students. Records for teachers are also stored in these preparation areas.

Now, if we are opening our class spaces we must have a way to treat these areas for sound and audio/visual devices. Acoustical treatment is taken care of through the use of sound absorbing ceiling tiles and carpeted floors (easy to clean and maintain carpeting, simulating the informality of the home, makes it easier for students to sit on the floor as the need arises). Portable furniture and audio/visual devices, easy to set up and take down, can be arranged to focus attention to the appropriate area.

Even the outside walls are changing. Open planning concepts are forcing us to realize that vast expanses of glass are inefficient, that they waste valuable space that might otherwise be used for chalkboards and instructional materials. From the aesthetic standpoint, when one reduces four permanent walls to one outside wall, the resulting space and light treatment must be used more wisely. The windows serve a more important function of adding light and reference to the outside, a framed view of the exterior.

The curious thing about the class space we have just created is that it stimulates everyone's imagination, not just the student, but the entire faculty and staff of the school. Just think, where the teacher before presided over his or her own domain with four rigid walls, we are now giving him the opportunity to redesign his teaching areas. Teachers shape the environment to suit the peculiarities of their subject matter and approach. The arrangement—an arm's-length movement—stimulates an imaginative use of teaching space.

For this small rural school, there are two important aspects that dictate the interrelationship of departmental pods: these are the placement of the social and academic hearts of the school.

First, the academic heart. Symbolically,

this is represented by the library or, as we say today, the instructional materials center—IMC. This is more than an exercise in semantics. All instructional materials, ranging from books to audio/visual equipment and closed-circuit television, are located in this general area.

The library was intentionally placed in the nerve-center or heart of the academic area to make its facilities more accessible; to give it, by placement, the most important location. Its use is encouraged. It is the place for independent study and research, it is a place active and alive with inquiry. No more do we see the legendary "Marian, the Librarian" guarding the books and quieting people. Books are out in the open where students can get them, can use them. In the instructional materials center, students may be discussing a research project while a library science class is operating in another corner, and others still are studying at carrels. Students flow in and out, getting books, cassettes, film strips, or copies of articles. Difficult to control? Yes. Noisy? Not necessarily so.

But the purpose of the space is student use, and the superintendent of schools has eliminated the over protective librarian image and substituted an atmosphere of use. It works.

With the library the heart of the academic life, there remains the social heart of the school. Social interaction has come to be recognized as an important process of child development, especially with students learning and being influenced by their peers. To establish an area for the student, we place the Commons at the most likely social focal point of the school. This is the point where the majority of entrances converge, at or near the cafeteria. It is the access point to the administrative and academic wings of the school. It is a space for food service, a large instructional area, a dance floor, or meeting place for groups.

But this area must go beyond the traditional, dehumanizing long rows of tables placed unimaginatively like you might expect to find them in a military chow hall or in a prison. Conceptually, we must cease to view the cafeteria as unpleasant. How about a space where the students eat, socialize, react to an environment that fosters interaction, an area that resembles a cafe?

So far I've been talking about one small high school and its attempt towards humanizing the educational program and the building that houses that program. Although the application may vary from small school to large school, from rural to urban, from suburban to inner-city, the concern for personalizing and humanizing the educational atmosphere is still the same.

To give you an idea of how they vary, let's briefly look at some other examples: West Bend, Wisconsin, a 2,500 student school with modular scheduling, designed as a school within a school, two academic wings of 1,250 students each. Here we are breaking up a large high school into two, each with its own academic building and football-baseball-basketball teams and personality to encourage greater student participation. It is working. The facilities they share in common are art, home economics, industrial arts, field house, and auditorium.

Elgin, Illinois, another 2,500 student school designed also for modular scheduling and currently under construction. It will provide an academic structure not unlike that of a university. English, social science, math, science, and business education are clearly defined departments with resource centers and staff centers. Like West Bend, the large, super-market library was avoided; each department has its own resource center.

Janesville, Wisconsin. These elementary schools are also open-planned. Students, especially, at this school, are enthusiastic about their surroundings. Groups can be subdivided without hurt feelings, teachers cooperate in lesson planning, discipline problems appear less frequently. When staff and students alike are enthusiastic, almost any program will succeed.

So there you have the school of tomorrow as it is taking shape today, schools that are more student oriented, flexibly planned for changes in education. How does this affect us, you and I as architect and staff, students and safety planners, how does all of this affect our safety programs?

Since the criteria for planning schools today has changed, or is at best in a state of flux, building officials and fire marshals have had to apply the "spirit of the law" rather than the "letter of the law." Those who insist on adhering to letter of the code

—and there are many—active only to stifle progress. In the State of Illinois, the governing authority for issuing school building permits is the county superintendent of schools. The governing code is the Life and Safety Code enacted by the state legislature. Working closely with the Cook County office, architects—myself included—have been able to work out some of the Life-Safety problems as it applies to open planned schools.

The code is based on Life-Safety principles, not necessarily property protection and certainly not at the expense of Life-Safety, and is a guide line for architects and engineers. It is based on the following principles: prevention, early detection, rapid evacuation, confinement, and enforcement.

Certainly, prevention should be considered the front line in the battle for fire safety. Suitable fire resistant building and furnishing materials must be selected. As for the schools of tomorrow, new and different use of materials such as carpets and plastics will require testing and evaluating.

Early detection through the use of heat and smoke detectors will alert teachers to evacuate the building. Open planned spaces with their variety of furniture and partition arrangement may require more exitways—not less—than conventionally planned schools.

The problem of confinement is also different, perhaps even more critical, for open spaces. The student population is larger (not on a square foot basis) and probably dispersed in various groups through out that space. However, open spaces do provide continuous supervision. No longer is a class unsupervised when the teacher leaves unexpectedly, there are other teachers in that space with visual control over other groups. The law requires that areas containing a kitchen, mechanical equipment, or requiring the use of flammable materials must be separated from all class spaces and exitways by fire-rated partitions. Such sound requirements for building today are not likely to change in the future. The present requirements for exiting and limiting the size of class space may change.

The enforcement of the Life-Safety Code in Illinois is in the hands of an educator: the county superintendent of schools. With new and newer school building types devel-

oping, he applies the spirit of the code (often exceeding its basic requirements thru an extensive use of early detection devices) with a view towards prevention and safe evacuation of students and staff.

Our open planned schools of today are rapidly becoming the schools of tomorrow. Such schools are solving and creating problems, both for safety administrators and educators. We ask only that you embrace this change and contribute to an exciting adventure—the future.

NEW APPROACHES TO SAFETY EDUCATION

By ROBERT MERRIMAN
Supervisor of Safety, Public Schools, Ft. Atkinson, Wis.

Our concerns relate to new approaches to safety education, which I like to think of as supplemental activities to the approaches that are now being used.

Although all of us have firm ideas regarding the composition of good programs, we represent only a fraction of the school districts that are in real need for safety education.

Our problem then is how to obtain interested personnel at the local school level and how to support them in terms of personal education, organization, and implementation.

In Wisconsin "Cooperation" is the name of the game. This, in our case, involved local schools, the State Department of Public Schools Instruction, the Wisconsin School Safety Coordinators Association, and The National Safety Council. This is not a large scale operation, but each contributed a necessary part.

At the suggestion of the State Superintendent of Public Instruction, 375 safety coordinators were appointed by local superintendents in local schools. Obviously we had 375 people appointed who, for the most part, did not know what to do. They were coordinators in name only. The first problem then was to educate and motivate these people. The Wisconsin School Safety Coordinators Association was formed. At three annual meetings or workshops we have tried to provide material and have discussed ways and means of establishing programs. In the interim between meetings,

consultants from DPI visits the coordinators and assists them. A continual communication is maintained in this way. In the case of accident reporting, pilot programs were conducted for a year and the results were made available to all schools.

To further promote safety education locally and nationally, a committee from the Coordinator Association, with the help of the National Safety Council, the DPI, and the North Central Association, developed the Evaluative Guideline. This has been approved by the North Central Association, and they distribute them to schools for use in evaluation and as a guideline for developing local programs. They are available nationally by request from the North Central area office in Chicago.

A third approach to the promotion of safety in schools is a cooperative venture between a local school system, the State Department of Public Instruction, and the Allstate Insurance Company, in which a film was produced outlining organization, administration, and operation of a comprehensive program. Funding and publishing was provided by Allstate. Supervision was provided by the State Department and the local school coordinators.

The film was made during the course of the year of activities as they occurred in the local school. Pictures were taken candidly; none were staged. The film, record, and brochures are designed for use free of charge for anyone who wishes to use it for setting up programs, and are available nationally from Allstate.

VICTOR, THE WISE WALKER

By HELEN TULLIS
Assistant Coordinator, Pedestrian Safety,
State Department of Education, Baltimore, Md.

When I first became involved in safety education, I asked myself, "How can we reach children?" The logical answer would seem to be "Begin with the child," but as I got more deeply into it, I began to feel that parents and safety educators were going in opposite directions. Therefore, it seems to me that it is with the parents that the safety educator should begin. It is going to be very difficult because I don't believe we can do this through the channels we now have. It will be necessary to find new, unusual ways of reaching parents.

The parent and the safety educator must look at the world from the child's point of view in order to be able to reach him. We must look at the world through the child's lack of experience: how does he cope with the physical world around him because of his size, his muscular coordination? How does the child really see? Does he see what we see when he looks at a signal or at a sign? Does he understand our meaning as we mean for him to see it? Do our symbols mean the same thing to a child as they mean to us?

Children must learn the important concepts of space, quantity, number, movement, time, timing before they can understand some of our safety suggestions and the reasons behind them.

As safety educators, we must go where our public is. Our goal should not be to try to make them (the public) over, but to exert a sincere effort to reach them wherever they are, both physically and on their educational level. We safety educators may learn some practices and techniques of the visiting nurses and the home teacher who have had entree into the homes of our citizens for many years. We must remember that the way to reach a child is to reach him through his adults—his teachers and his parents.

I've found that an asset in talking to children is having a special interest—something to make safety live for children. My

greatest teaching aid is my guide dog, Victor. Victor really is a safe pedestrian. He has been instructed to be one at the Guide Dogs for the Blind, Inc., in San Rafael, California. (Mrs. Tullis is blind. She and Victor demonstrated some aspects of Victor's work as a guide dog and "wise walker" as they used to do before school children.—Ed.).

The first step is to lay out a pedestrian problem: Victor is seated on the left side of Mrs. Tullis. She takes a step forward, draws a toe from left to right and says to Victor, "This is the curb, Victor; now watch it. This is the curb." Then she points to the left and the right and still speaking to Victor for the children's benefit says, "Now, there's a car parked on our left, and the driver coming from the left cannot see us and you cannot see the driver. There is another car parked on our right and you cannot see the car that is coming from the right, nor can that driver see us." Then she steps back a few steps and, holding Victor's harness and pointing straight ahead, says, "Victor, forward!" The dog takes a step or two, but just before reaching the designated "curb" he steps sharply to the right in front of her blocking her from movement.

The underlying lesson to be learned by children is that if Victor, who is merely a dog can be taught to be a safe pedestrian and to practice safe walking habits each time, all the time, then certainly children can become safe pedestrians too.

Mrs. Tullis is preparing a booklet for children about the work of a guide dog called "Follow Victor, the Wise Walker." Instructional television spots are also in the works for elementary school children, using Victor the Wise Walker. The booklet is currently being revised and should be available soon from the Maryland State Department of Education.

"Victor is such a good symbol for children, because he really isn't a symbol," Mrs. Tullis said. "Victor really is a good pedestrian."

PEDESTRIAN AND BICYCLE SAFETY PROGRAM

By DONALD LA FOND
Superior, Pedestrian and Bicycle Safety,
Office of the Superintendent of Public Instruction, Springfield, Ill.

This project proposes the development of a coordinated and comprehensive statewide program of pedestrian and bicycle safety in the elementary and junior high school systems of Illinois. The project is proposed as part of the total state highway safety plan for the purpose of developing and implementing traffic safety in Illinois.

The overall objectives of this program include the identification of major traffic safety concepts that are desirable and need to be stressed in the elementary curriculum. These concepts parallel those sought in the whole realm of traffic safety and manifested particularly in safe driving. The pedestrian and bicycle safety program endeavors to present these concepts on a continuum from kindergarten through grade six in depth and scope appropriate for age level comprehension. It is recognized that traffic concepts should be the same for all ages, but that the level of presentation must coincide with the development capabilities of the child. This project attempts to develop a detailed program of instruction that will include relevant learning activities and allow continuous emphasis and instillation of the established safety concepts commensurate with interests and levels of comprehension. This program also illustrates methods of integrating this safety curriculum with other courses of study.

Assessment of Present Needs

School visitations were conducted on a selected basis throughout the regions of the state. Based on interviews with elementary teachers and administrators, as well as university personnel from various regions of the state, the following was indicated:

There are few teacher units for safety education available today. The few schools that have safety education programs implement them as an extra and separate program from the regular curriculum. Few teachers have the time or background to develop safety units. Safety could be better taught if it were integrated into other subjects or activities to dramatize its relevancy

to children. Most available programs today are low in conceptual development and narrow in comprehension. Most teachers recognize the need for safety education at the elementary level but find it difficult to implement.

Assessment of Literature Available

A survey of all fifty states was conducted to ascertain possible existing accomplishments. Only five states have produced any materials for elementary safety education and these were in the form of curriculum guidelines and state recommendations. No other state has developed materials that would be practical for teacher use. All states expressed an interest and need for materials as proposed by the Illinois project and asked to be kept informed of its progress. Only two other states are embarking on plans similar to Illinois.

A survey of publishing companies and professional organizations was conducted to acquire and assess present available literature. While there were a number of pamphlets, booklets, and materials available, much of the content was redundant, rather sketchy, and loosely organized. Other than articles from the National Safety Council publication, *School Safety*, and publications from the American Auto Association, there is little material available for teacher use which stressed integration of safety with other courses of study. However, it is felt that some of the acquired materials would be an asset to the development of teacher resource units.

Development of Rules of the Road for Bicyclists

The Office of the Superintendent of Public Instruction has cooperated with the Office of the Secretary of State in writing a *Rules of the Road for Bicyclists*. The majority of the booklets will be distributed to the schools through the Office of the Superintendent of Public Instruction as part of its Safety Education Program.

Description, Elementary Traffic Safety, Resource Units

Seven basic levels of units have been developed to provide instruction for kindergarten to sixth grade. Each unit is developed around identified specific traffic safety concepts and is in kit form for teacher use. Each of the seven levels include the following areas of study:

1. Pedestrian Safety: safe route to and from school; street crossing; traffic laws and signs and signals; safety patrols and crossing guards.
2. Bicycle Safety: traffic laws, riding in the street with other traffic; left and right

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turns; safe operation techniques; child and parent responsibilities.

3. School Bus Safety: exiting and entering; school bus passenger safety; emergency procedures.
4. Auto Safety: auto passenger safety; exiting and entering.
5. Playground and In-School Pedestrian Safety: rules and regulations; fire and emergency drills; movement to and from classes; activities and projects.

Dominant themes or strands of knowledge have been established, expanded, reinforced, and applied throughout the units at the various graded levels.

TOTAL SAFETY PROGRAMMING

By GEORGE MATHIS
Director, Safety Education,
Office of the Superintendent of Public Instruction, Springfield, Ill.

Back in the late 1940's and early 1950's, we in the Safety Education Department of the Illinois Office of the Superintendent of Public Instruction in developing a comprehensive traffic safety program, kindergarten through adult, were strongly influenced by two documents in particular. These documents were "The Safety Charter for Children," developed by the first White House Conference on Child Safety, and the National Safety Council Supervisory Section Committee Report on "Administrative Responsibility for the Total School Safety Program."

We feel we have made some progress. However, we know that we have only scratched the surface.

We want to emphasize strongly that progress made during the past 20 years cannot be credited to any one office or institution. It represents a continuous cooperative effort of many interested and dedicated individuals and many governmental and nongovernmental agencies. Without this cooperative effort we would have gotten nowhere. Our state legislature and the other state governmental agencies have cooperated well. This is especially true since the Governor's Traffic Safety Coordinating Committee was established in the early 1960's.

Illinois was particularly blessed to have had a large, competent, and dedicated group of college and university personnel who have worked diligently and faithfully throughout the years. These men have done not only an outstanding job in developing teacher training departments but have taken a part of the responsibility for total leadership.

Many school administrators and instructors in both public and private schools have shared the responsibility for the leadership role. Since its inception in 1951, the Illinois High School and College Safety and Driver Education Association has been indispensable. We have always drawn on the resources of the National Safety Council and the Northwestern University Traffic Institute. We feel very fortunate in having these organizations readily available within our State.

The outstanding contribution of such nongovernmental agencies as the Chicago Motor Club, the Illinois Insurance Companies, and the Illinois Automobile Dealers Association have been essential to progress. Numerous other individuals and institutions have made outstanding contributions.

Much of our progress has been due to good early planning. A statewide planning

committee was organized in 1950. The detailed overall plan developed by this committee has provided many of the guidelines for our program during the last 20 years. Good acceptance of our plan and our subsequent program was largely due to the good work of a large statewide advisory committee. This committee, composed of almost 100 members, represented almost all of the governmental and nongovernmental agencies in Illinois having an interest in traffic safety.

Financing has been and still is a major problem in combating imbalance in our program. It has been easier to secure money for such areas as emergency disaster planning and for driver education than for elementary school traffic safety programs. We have not been able to overcome all of our difficulties with respect to unbalanced financing.

The Federal Traffic Safety Act of 1966 and subsequent availability of federal funds has helped greatly in giving balance to our program. Federally financed projects for our program have been approved on a basis of our greatest need and our greatest weaknesses. At the present time the Office of the Superintendent of Public Instruction, Safety Education Department has a total of seven projects without which we could not lay claim to scarcely any degree of balance in our program. These projects include:

1. Program Development and Evaluation.
2. Pedestrian and Bicycle Safety.
3. Motorcycle Safety Education.
4. Driver Education for Handicapped.
5. Development of a Comprehensive Driver Education Program for Adults.
6. Development of a School Bus Driver Program.
7. Inservice Training of Driver Education teachers.

We have three departmental subdivisions including general school safety, civil defense and disaster preparedness, driver education, and federal traffic safety projects.

I have observed that local school district safety programs tend to reflect and imitate the organizational set-up in the state department. If general safety, disaster preparedness, and traffic safety at the state level is fragmented, the program at the

local level is likely to be fragmented. For this reason, we have worked to bring together in one department those areas where the primary objective is safety.

The responsibility of the Safety Education Department goes beyond safety education. It includes the areas of safety supervision and safety services.

Other responsibilities by special assignment to the Director include:

1. Office of the Superintendent of Public Instruction liaison for civil defense with the Illinois Civil Defense Office and membership on the Governor's Civil Defense Advisory Committee.
2. Office of the Superintendent of Public Instruction liaison with state and Federal agencies through appointment to the Governor's Traffic Safety Coordinating Committee, which meets monthly. All recommendations on proposed legislation come through this committee. I am presently assigned to duty on four subcommittees.
3. Directing of all federal traffic safety projects awarded to the Office of the Superintendent of Public Instruction, including projects intradepartmental in nature.
4. We will have the responsibility for administration and supervision of commercial driver training adult programs when they are transferred to the Office of the Superintendent of Public Instruction.

Ours is a department in the Division of School Supervision and Recognition, and as a member of this division our staff members, when not engaged in their specialty, are scheduled to participate in the division's overall annual visitation program in the school districts, after which they help to develop the overall school district evaluation report upon which annual approval of the total school program is based.

In interpreting the driver education laws of Illinois, the Office of Public Instruction has adhered to the premise that driver education is an integral and proper part of the general education program and that worthwhile results will depend on effective teaching by well qualified instructors. Established national standards have been the guideposts in the development of the Illinois program.

DISASTER PREPAREDNESS AND GENERAL SAFETY

By NORMAN H. AUSTIN
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The State Education Department does now, and has always, considered "disaster preparedness" a part of the whole school safety program. Civil defense is an old story in the schools of Illinois. The first four years that I was with the state office, I worked only in the area of School Civil Defense. During this time, my job was a depressing one. However, now the school administrators are calling us for assistance.

The state legislature of Illinois appropriated monies to be used in the area of school civil defense about five years ago. This budget has been continued since that time. In addition to this program, we have a federal budget that has been in existence about nine years. This is the old Civil Defense Adult Education Program. We now have a staff of three people devoting their time and efforts to this program. Emphasis has gone from adults to the high school student. The Federal program and the state program cooperate completely, and one program complements the other.

Since we have these two programs, I now spend some of my efforts in the area of general safety. Our state legislature was the first to appropriate monies for state school civil defense and still is the only one doing this.

Our first project in the state school civil defense program was the development of a "Disaster Preparedness Guide" for school administrators. This was the first guide of its kind and we still think it is pretty good.

Last November, the Governor, the State Civil Defense Agency, and the State Superintendent of Schools' Office proclaimed that civil defense education be included as an integral part of the education of faculty, administration, and students in the State of Illinois, and that written disaster plans be formulated. In distributing this proclamation, a cover letter notified all Illinois schools that the Safety Department would be included on the state accreditation visitation teams. This is being done.

This part of the team evaluates three areas: (1) environment (hazard); (2) safety education in grades 1-8 particularly (requirements of the school code); (3) disaster plans.

The recommendations made from this evaluation are followed up with letters, and assistance is offered in the form of workshops for teachers and administrators. These workshops are now being carried on. These workshops, "Model Planning Directives" and "Model School Plans," are used to aid the local administrators develop or improve their plans.

I have not mentioned the revision of our "Challenge of Safety Education," distributing and implementing one million copies of "The Bicycle Rules of the Road," the statewide Safety Patrol Program, a complete School Crossing Program, the Illinois Statewide Accident Reporting System, as well as a few other items now in the fire.

DRIVER EDUCATION SUPERVISION

By HARVIN A. COOK

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The Office of the Superintendent of Public Instruction has the responsibility for the administration and supervision of Safety Education, Civil Defense Education, and Driver Education.

By law, the Department of Safety Education provides assistance to local school districts for the administration and supervision of safety education for grades one through twelve. The Safety Education Department consists of three areas: (1) Safety and Civil Defense Education; (2) Driver Education; (3) Federal Programs.

The Driver Education Department has expanded with the Illinois reimbursable Driver Education Program since its inception in 1957. It is through the supervisory program that high standards for the program are maintained and the program of instruction is improved. Geographically, the state is divided into three areas with supervisors assigned to specific school districts for visitation of driver education programs. Each school district is visited at least once a year and occasionally revisited upon the request of the administration or driver education teachers. There are approximately 716 public high schools offering driver education, 16 independent, parochial, and private schools, seven governmental agencies, and 32 commercial schools offering an approved course of instruction.

The law specifies that reimbursement can only be provided to public school districts. Other schools offering the approved program must provide driver education at their own expense; in the case of commercial schools a fee is charged.

It is important to emphasize at this point that all driver education programs are approved on the basis of the single standard concept. The success of our supervisory program lies in the work that our staff does at the individual schools and the close relation maintained throughout the state with driver education personnel. There is no easy way to achieve this success. It requires hard work and dedication on the part of our staff. Our staff is quite ver-

saline in that they can perform many functions and are frequently used as backup personnel when we move from one crisis to another, which often seems to be an everyday occurrence.

The area of reimbursement and certification provides our supervisors with much data to assist the supervisors in upgrading the driver education program. We have one full-time systems analyst and adequate staff to accomplish this task. We were very fortunate to be able to obtain a systems analyst with the necessary background in driver education and safety education programs to achieve the type of service required to function adequately within our organizational structure. Our staff has gained tremendous knowledge and experience through association with our systems man. He has provided us with the necessary tools to systematically organize our department. Some of the proposed projects utilizing data processing systems are teacher qualifications and driving record information, programming of federal projects, and a statewide school accident reporting system.

The driver education department also has a responsibility for supervising schools offering an approved driver education course to students under 18 years of age. Although we have designated one full-time supervisor in this area, he does not have total responsibility for commercial schools. We can profit by involving all of the supervisory staff in the supervision of commercial schools; therefore, we rotate our staff between commercial school and public school programs. We have been very successful in upgrading commercial schools in the state and will continue to assist them to improve their program of instruction.

It is the philosophy of this office to offer the best statewide total safety program possible. We are continually learning from our experiences and hope that through association with other state programs improvements can be made. We also hope that other states can profit from our experiences.

ADULT DRIVER EDUCATION

By MILTON C. CRAPNELL

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Illinois, like many other states has had Adult Driver Education for several years. There was absolutely no consistency in the type of program offered. Some programs required classroom instruction and laboratory instruction, but there was a tremendous difference in the number of hours in each part required. Many communities of our state offered their adult citizens absolutely nothing.

Because of this and the seriousness of the highway transportation problem, the Office of the Superintendent of Public Instruction with the assistance of Federal funds began to lay the groundwork for a statewide Adult Driver Education Program in 1969. The Department of Safety Education is basically responsible for the program, but we have worked very closely with our state Department of Adult Education because these people have a natural outlet for adult driver education.

A statewide committee was established to develop administrative guidelines and procedures and development of curriculum. This committee recommended that reimbursement be at the rate of \$5.25 per sixty minutes of instruction. This figure was arrived at because it was consistent with other adult education reimbursable programs within the state. In order to qualify for reimbursement, all students in a beginning driver's course must be 21 years of age or older. This age limit was suggested because by state regulations any legal resident of the State of Illinois who is between the ages of 15 and 21 years qualifies under the high school reimbursable program; the Highway Safety manual suggests 21 years of age and out of school youth. There is some feeling around the state that the adult program should begin with those people 18 years of age or older, because it is being found that dropouts and others usually do not return to the high school for numerous reasons.

The adult committee also recommended that the Adult Driver Education program consist of three parts: beginning drivers,

refresher courses, and court referral. We instituted the beginning driver course first. The minimum number of hours for the beginning driver course is 20 hours of classroom and six hours of laboratory instruction. These are only minimum hours and may be exceeded and reimbursement provided for those hours beyond, provided the school's records will substantiate such claims.

A curriculum was developed under the traditional concept of driver education. We have now prepared an adult curriculum under the new Illinois concept for driver education. Hopefully, this will be ready for distribution by the second semester of this school year.

The major areas we have planned are (1) the driving task; (2) vehicle capabilities and limitations; (3) improvement of driver abilities; (4) driving practices and procedures; (5) factors influencing abilities to perform; (6) responsibilities of a member of a nation on wheels. We have proposed or suggested teaching aids which we feel best accompany each unit.

The beginning driver course must be taught over a period of at least four weeks. We have found that most programs have extended over a ten week period. Teachers of the beginning driver course must meet the same qualifications that are required for the high school teacher.

Driver Education refresher course instruction programs are formal courses or programs created to improve the performance of licensed drivers through education.

The course should develop: (1) an appreciation of the need for improved driver skills and for proper anticipation and adaptation of the driving task; (2) a realization that most of the present drivers have not received proper driver education, training, nor an adequate knowledge of the traffic laws; (3) the importance of the use of perceptual skills in driving; and (4) the need for proper adjustment of change, such as in traffic control devices.

We have established that all students enrolled in the refresher course must be licensed drivers and at least two who are 21 years of age or older. The minimum requirement is eight clock hours of classroom instruction for the refresher course.

The teacher of the refresher course does not have to be a qualified high school teacher, but if the teacher is not fully qualified a letter must be filed with our office stating the teachers qualifications and why the school feels the teacher is qualified.

We are working with the University of Illinois in the development of refresher curriculum and conducting pilot projects testing the curriculum. Also, we are attempting to find out: (1) if eight hours is sufficient; (2) what is the best way to offer the course; (3) would the student prefer more or less class meetings.

MOTORCYCLE SAFETY EDUCATION

By JAMES E. PETERSON

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The State of Illinois has a three phase program for motorcycle safety education.

Phase I requires that two to three hours of motorcycle safety be incorporated into all classroom sections of the present driver education program. To help the instructors comply with this requirement, a study unit for motor-driven cycles and motorcycles has been distributed to all schools and instructors.

In addition to the study unit, a new integrated lesson plan supplement has been developed and is waiting for final approval from higher administrators before it can be distributed to instructors. We are also nearing the completion of a slide series taken from the viewpoint of the automobile and other larger vehicled drivers. When these projects are complete, schools and instructors will be notified of their availability.

Phase II permits schools to conduct twelve hours of the classroom portion of motorcycle safety education upon approval by the Driver Education Department.

Phase III permits the schools to conduct

Three pilot projects have been conducted thus far, and the response has been tremendous. The areas which we have included are the nature of the driving task, traffic laws and regulations as they apply to the driving task, vehicle performance and control variability, basic habits and skills, special situations of loss of control and malfunctioning of vehicle, human factors in perception, other factors affecting performance, and accident related responsibilities. Out of this project will come a teacher preparation package for the refresher course.

Our court referral program is still in the planning stages, but we are hopeful that legislation will be presented which will support the judicial system and our program.

Office of the Superintendent of Public Instruction, Springfield, Ill.

six hours of "on the bike" instruction on off-street areas upon approval from this office.

Though the Office of the Superintendent of Public Instruction has developed curriculum guides for Phase II and III, they are not reimbursable through the Illinois Driver Education Act. These courses are completely elective programs for residents between the ages of 16 to 21. As of yet, few school districts have offered Phases II and III.

To assist the instruction of Phases II and III, we are developing a slide series and narration booklet taken and written from the viewpoint of the motorcyclist. This slide series illustrates traffic situations which offer potential conflict patterns. We do have a few sets of slides on "Introducing the Cycle" which were developed by two graduate students at Northern Illinois University. These slides how close-up shots of most of the gauges and devices on a motor-driven cycle. This series is also accompanied by a narration booklet.

In order to test the efficiency and need

of Phases II and III, the Driver Education Department conducted six pilot programs last spring and summer. As a result, we have developed a curriculum for teaching motorcycle safety education. Hopefully we can conduct another fifteen to twenty follow-up programs this year to evaluate these guidelines. After evaluation is completed, we will make necessary changes in the proposed curriculum guidelines before it will be available for distribution.

The requirements for teaching Phases II and III are:

1. He must be a qualified Driver Education instructor.
2. He must have additional education or experiences on motorcycles and motor-driven cycles.
3. He must hold a valid drivers license.

FEDERAL GRANT PROGRAMS

By WARREN P. QUENSEL

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The Federal Highway Safety Act of 1966 provides unprecedented opportunities for the improvement and expansion of high school driver education. For the first time, the United States Congress has appropriated funds that are available to the states for the purpose of reducing traffic accidents and deaths, injuries, and property damage resulting therefrom. In order to receive such financial assistance, a state must have an approved highway safety program that includes a comprehensive driver education program.

When the Highway Safety Act of 1966 was enacted, the State of Illinois already had one of the better reimbursable driver education programs in the nation. About seventy per cent of all the eligible youth in Illinois were completing a standard course of instruction taught by qualified teachers. Therefore, to take advantage of the federal assistance available, we proceeded to identify those driver education program elements that our state did not have and those that should be improved.

Our greatest problem in conducting these programs was the acquisition of six cycles necessary for each program. Although dealers were very much in favor of teaching this course, they were not always willing to loan cycles to the schools.

Another problem was insurance cost. We tried to obtain a rider on the schools' insurance policies as we felt that this would be the easiest and cheapest way to insure the program. However, the insurance costs ranged from \$10.50 to almost \$300.

Once instructors are found, cycles obtained, and insurance costs kept to a reasonable minimum, motorcycle safety education is an enjoyable and welcome experience. Our programs were successful, and we hope that we can continue teaching motorcycle safety education, as it is definitely needed.

and efficient learning; (2) qualified and professional teachers; (3) organization and administration in accordance with principles of accountability and the psychology of learning; and (4) adequate facilities.

One of our first federal proposals was the Driver Education Evaluation and Program Development Project. This project was given first priority because we believed it to be basic to all other projects we might submit. In Illinois, no state monies had ever been appropriated for evaluative studies relative to the effectiveness of various teaching techniques or combinations of laboratory methods. We also believed it was time to appraise the curriculum content of high school driver education, which had not changed materially for a period of ten years. Changing dimensions of the driving task, new instructional innovations, and research results pointed up the need for a thorough study of the driver education curriculum, followed by appropriate restructuring.

The primary purpose of this project is the development of a more valid driver education curriculum that is both measurable and effective. The work of statewide committees and members of our staff has culminated in the rough draft of a proposed instructional program in driver education for Illinois high schools. This program includes behavioral objectives, content, and learning activities for twelve units. It is structured in accordance with current curriculum developments and teaching methods. The general approach is based on system and task analysis procedures rather than the traditional accident causation approach. The rough draft has been distributed to our college instructors and high school teachers in attendance at state conferences and regional workshops.

A consultant committee of four state university professors has met frequently for the purpose of providing long range planning, establishing priorities, and the selection of evaluation studies relating to specific units as identified in the new proposed program of instruction. With the guidance of this committee, our office has contracted with selected universities and school districts for the development of evaluation instruments and instructional materials for each unit of instruction. As of this date, six evaluation studies have been completed.

To assist in program evaluation, a data processing system has been established for gathering information, the certification of students, and the processing of reimbursement claims. This system has been in operation since January 1, 1969, and is being coordinated with annual visitation reports of the state driver education supervisors. The information being collected is stored on tape for future evaluation and cost effectiveness studies. Data is also being used for reviewing standards and administrative procedures.

The new proposed program of instruction has been promoted in regional workshops, teacher preparation courses, and the annual visitation program by state driver education supervisors. We are now conducting pilot studies in several selected high schools to field test and further develop certain units of instruction. It is hoped that each of these schools will become a demonstration center for neighboring school districts. The pilot studies are being conducted with the cooperation of college instructors who have developed special courses under our In-Service Retraining Project.

Eventually we hope to determine the effectiveness of our driver education program by evaluating the driving proficiency and accident records of the graduates of the various types of programs. Hopefully, we shall be able to identify which characteristics or components of the programs better prepare a student to drive effectively and responsibly in the real world. Such evaluation results can then be translated into guidelines for further improvement of secondary school driver education and teacher preparation.

A second federal highway safety project being conducted by our state office is the In-Service Retraining for Driver Education Instructors. The primary purpose of this project is to provide inservice teachers with the most effective and efficient methods for utilizing the latest curriculum innovations, teaching aids, and instructional equipment. It is designed to supplement or relate to our other state programs in curriculum development, program evaluation, and driver education for the handicapped. Much of the driver education teachers' professional need is pedagogical. His laboratory procedures call for different and unique instructional

strategy. These methods and techniques, as well as other portions of the required body of knowledge, must of necessity be treated in newly created courses. Also, a more relevant and measurable driver education curriculum based on the task analysis approach has been developed here in Illinois. Now we must implement it into the teacher training institutions and the high schools.

There are an increasing number of schools using simulators, driving ranges, and multimedia learning centers. Over half of all high school students in Illinois now receive a portion of their laboratory instruction in driver education on driving simulators or multiple-car ranges, or a combination of the two. However, many of our teachers lack the special training needed to use these laboratory methods. State supervisors are finding that many of our teachers are not using these laboratory methods effectively. To assure quality laboratory instruction to Illinois students, the Office of the Superintendent of Public Instruction has established a new standard which requires special training for those teachers using multiple-car ranges and simulation systems. A minimum of one semester hour of college credit or its equivalent is to be required.

As the impact of the 18-year-old law makes it necessary to expand driver education programs in the metropolitan areas of our state, there is a real danger that the emphasis may be on quantity rather than on quality. Mass teaching methods and new instructional technology must be accompanied with improved software and teaching procedures. It is necessary that the individual teacher be prepared in the specialized instructional technology of simulation. Authorities recommend that prospective teachers or inservice teachers with new installations receive at least a minimum of 32 hours of instruction in the methodology of simulation. Currently, the teachers in the field are being trained by factory representatives. Leadership of this training should be in the hands of teacher preparation institutions.

Under this project the Office of the Superintendent of Public Instruction has contracted with qualified Illinois state institutions to provide specialized courses in driver education for inservice teachers. The content of the courses is based on the new driver edu-

cation curriculum and includes instruction on the effective use of driving simulators and multiple-car driving ranges. Five downstate universities and the Chicago Board of Education have participated in this program to date. During the next twelve months this project should provide for additional training to about 500 teachers. Such a program will not only improve the competencies of these teachers, but provide for the implementation of our new curriculum into local driver education programs.

The second purpose of the In-Service Teacher Training Project is to provide funds for the improvement of teacher training facilities and curriculum at state universities. One of the weakest links in the driver education program since its inception has been the teacher preparation program. It has not been until the last five to eight years that a sound teacher training course of study has been developed in the area of driver and traffic safety education. The staff of the Office of the Superintendent of Public Instruction and a few state universities in Illinois have been leaders in this endeavor at both state and national levels.

The improvement of our driver education teacher training programs is basic to any of our traffic education activities and ranks as a top priority, along with our curriculum development project. Because of the budget cuts and various priorities on university campuses, the college instructors must look to outside funding for further development of their present programs. Until our major universities are provided with proper facilities and incentives, there is bound to be a minimum of properly prepared teachers and instructional materials.

This project will provide for the establishment of a minimum of four multiple-car facilities, four simulator installations, and two multi-media learning centers. A highway systems car, developed by Ford Motor Company, is to be purchased and utilized for evaluation purposes.

An annual college instructor's workshop will be conducted as a part of this project. Such a workshop will provide for some degree of uniformity and a realistic set of training program standards or criteria. It is also designed to assist in the implement-

tation of our new high school curriculum innovations into the teacher training course.

A third state project being funded by the National Highway Safety Bureau is Driver Education for the Handicapped. This project provides for consultant services to local school districts, the development of administrative guidelines, development of specialized curriculum materials and teacher training programs for those driver education teachers who will be working with mentally or physically handicapped students. A demonstration center will be established in one of the Chicago public high schools.

The School Bus Driver Project has as its

purpose the development of curriculum for three courses: (1) Beginning School Bus Driver Workshop; (2) School Bus Driver Inservice Workshop; and (3) School Transportation Supervisors Workshop.

If we are to accept the challenge of highway traffic safety, we must continue to search for the most effective and efficient programs of instruction for beginning drivers. With the guidance and financial assistance available from the National Highway Safety Bureau, state departments of education should now be able to establish and maintain a program of continuous research, program development, and evaluation.

THE SAFE USE OF COMPRESSED GASES IN LABORATORIES

By G. G. PINNEY

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What is a compressed gas? The Federal Department of Transportation has defined it as "... any material having, in the container, an absolute pressure exceeding 40 psi at 70°F or, regardless of the pressure at 130°F or any liquid flammable material having a vapor pressure exceeding 40 psi absolute at 100°F..." Certain other materials such as many class A poisons must also be shipped in cylinders even though they do not fit the definition of a compressed gas. Many low vapor pressure materials are packaged in cylinders which are pressurized with an inert gas. An example of this is the aerosol spray developer for thin-layer chromatography.

What does a cylinder look like? Compressed gas cylinders vary in shape from spheres through tin cans to long skinny cylinders and tubes. So far, no one has made a pressurized shipping container with flat side and angular corners, although I wouldn't be surprised if one appears on the market at any time.

These varied containers will have internal pressures varying from essentially atmospheric to 10,000 psi and above. They can release to the air from a few cubic inches to

over 3,500 cubic feet of every conceivable flammable, poisonous, toxic, radio-active, oxidizing or inert gas or gas mixture in a very short time.

Recent developments in analytical instrumentation such as gas chromatography, as well as expanded interest in such compressed gas using areas as space and underwater research, hyperbaric chambers, air pollution studies, and fuel cell research, have placed compressed gases into most academic, governmental, and industrial laboratories. In these laboratories, the gases will be used by technically oriented persons whose primary interest is the particular project on which they are working. These persons are notoriously intolerant of anything, such as an unexpected form of valve outlet, which will interfere with the project. As a result, home made adaptors, modified regulators, and jury rigged fittings abound in hidden corners of even well regulated laboratories. This, then, is the problem. There is of course, no easy solution or way out. I have prepared a set of safety rules which, when followed, lead to the accident free use of compressed gases under almost all conditions of exposure. Since the Israelis were able to mold an entire society around ten com-

mandments, I have restricted these rules to ten.

1. Know the Contents of the Cylinder

Don't guess. This is a major problem area between suppliers and customers. Federal regulations relative to cylinder labeling, except for the medical gases, are vague unless the cylinder has been shipped by common carrier. However, ANSI Z48.1 "American Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained" and Compressed Gas Association pamphlet C7 "Guide for the Preparation of Labels for Compressed Gas Containers" contain adequate guidelines for cylinder labeling.

This label should be the entire method of identifying the contents of a cylinder. Color has been proposed a number of times as a means of classifying cylinders by hazard. However, except for the medical gases, each gas supplier uses a different code. Even more important, colors change under different types of illumination, such as incandescent, fluorescent, mercury or sodium vapor, etc. The amount of type of change will depend upon the type of paint, the pigments used, the vehicle, etc. Many persons are color blind. Cylinders are not always so well painted that their original color can be determined. Finally, I would personally be at a loss to select the color or color combination which should be used on some of the exotic gas mixtures which have been ordered from us.

As far as I am concerned cylinders with missing labels or with the labels so torn, faded, or stained that they cannot be easily read, should not be given room on the receiving dock and, if found in a laboratory, should be immediately returned to the supplier.

2. Know Properties of Contents

This is the responsibility of the user. Knowing what is in a cylinder only gets you into the ball park. How you play the game will depend on what you know about the safety related properties of the contents. Are they poisonous? Flammable? Anesthetic? Corrosive? Strong oxidizer? Inert? Are they liquid in the cylinder and, if they are, what does the vapor pressure curve look like? If they are permanent gases, what is the pressure in the cylinder?

Many gases have combination properties. Carbon monoxide and hydrogen sulfide are poisonous and flammable. Acetylene is flammable, unstable, and forms explosive compounds with copper and mercury. High concentrations of nitrogen can kill without warning by oxygen deprivation. The list goes on and on.

3. Use Suitable Equipment

Presently, almost all cylinder valves have outlets in accordance with ANSI B57.1 with the exception of some non-refillable throw away cylinders and lecture bottles. These outlets are intended to separate the gases by hazard. This is accomplished by varying thread size, right or left handedness, and by male or female. Additional separations are accomplished by the internal design of the mating parts. For small medical cylinders used with a yoke type connector, coding is achieved by a series of holes in the valve outlet face and mating pins in the yoke.

I said, "Almost all." The reason that I cannot say all is that, since this is a voluntary standard, many users refuse to accept cylinders with outlets which do not conform to their equipment, providing little incentive to the supplier to assume the cost of conversion.

It is reasonably simple to make up an adaptor which will allow the use of a single regulator for all cylinders. It is also extremely hazardous. A regulator not cleaned for oxygen service and thereby completely free from combustible materials can explode when high pressure oxygen is admitted to it. Even a brief use of an oxygen regulator in other service can so contaminate it that the pressure gauge can explode, endangering the eyes, when it is again used for oxygen. Regulators or other apparatus may contain stressed high tensile steel parts which will fail rapidly in hydrogen service. Corrosive gases will rapidly destroy incompatible regulators. The only safe practice is to have enough regulators so that an adaptor is never needed. Don't economize on this point.

4. Handle Cylinder With Care

Gas cylinders are primarily shipping containers and as such are designed to a minimum weight and wall thickness consistent with safety and durability. The non-refillable, throw-away cylinders are even lighter since they need last for only one filling. Rough handling or abuse such as using a

cylinder for a hammer or anvil, as a roller to move heavy equipment, as a convenient ground in an electric circuit, or spilling acid or caustic, could weaken a cylinder seriously.

5. *Don't Repair Regulator or Cylinder Valve*

A large cylinder valve has two protrusions. One is the outlet; the other contains some form of safety device such as a fusible metal plug or a rupture disc. If the safety nut is removed, the entire contents of the cylinder will discharge through the safety device. It can be removed either by deliberately loosening it in error, thinking it is an outlet cap, or by tightening to stop a leak, thereby overstressing the threads and causing them to fail. The packing nut threads can also fail if the nut is over tightened to stop a leak. In this case, the top works of the valve will be ejected forcefully. Don't attempt to repair leaking cylinders or cylinder valves. Remove the cylinder to an out of doors location and notify your supplier.

A regulator is a precision piece of equipment and is designed, through spring selection, diaphragm and seat area, flow passage diameters, seat material, etc., to safely and accurately reduce cylinder pressures as high as 10,000 psi to use pressures as low as a few inches of water. Incidentally, regulators should be used only over the inlet and outlet pressure ranges for which they are designed. Only special regulators will withstand pressures in excess of 3,000 psi. Any uneducated tampering with the regulator could cause an unexpected and uncontrolled release of the contents at inlet pressures.

6. *Use a Regulator*

Almost all cylinders contain pressures considerably in excess of that which most apparatus can withstand. There are extremely accurate needle valves on the market which can be set reproducibly to a very low flow. However, they will continue to discharge gas until the down stream and up stream pressures equalize, as can happen should a vent plug, a vent valve be closed off, etc.

7. *Close Valve on Empty and Out of Use Cylinders*

Regulators are not shut-off valves and should not be used as such. A seat leak can allow the down stream pressure to equalize with the upstream pressure. Use the cylinder valve for this purpose. If you always do so, you will always know whether a valve is

opened or closed, a valuable piece of information in an emergency. Also, it will keep foreign material from being forced into the cylinder as it empties and the downstream pressure equals or becomes greater than the cylinder pressure.

Closing the valve on empty cylinders, marking the cylinder "empty", and either returning it to the empty stock pile or disposing of it (for non-refillable cylinders) in accordance with the manufacturer's instructions will accomplish two things. First, it will reduce the possibility of using an empty cylinder under emergency conditions such as for resuscitation; second, it will keep wet air out of empty cylinders. This wet air, which can enter because of changes in atmospheric temperature and pressure, makes it very difficult to get high purity gas out of the cylinder after the next filling and, for acid gas service such as chlorine or hydrogen chloride can rapidly corrode the cylinder.

8. *Use and Store Cylinders in Well Ventilated Areas*

Use and store cylinders in well ventilated areas away from heavy traffic and sources of ignition. Store cylinders of flammable gases together away from other cylinders. Always chain or otherwise restrain in use or storage. A falling cylinder can break legs and crush toes. Even worse, the valve could break off and the entire 130 lb. cylinder could become a rocket. If a regulator attached to the valve should break off the cylinder would become an oversized erratic pinwheel. Small cylinders should be restrained from rolling or falling off of a bench for the same reasons as large cylinders.

Never heat cylinders uncontrollably. If they must be heated (e.g., to raise the vapor pressure of a liquidified gas), do it in a water bath and limit the temperature to 100°F and an absolute maximum of 130°F. Some cylinder safety devices are, as was mentioned before, made of a fusible metal with a melting point as low as 165°F, and even on those with rupture discs the rupture pressure can be approached at this temperature. The result of the functioning of the safety device would be the release of up to 3,500 cubic feet of toxic, flammable, corrosive, or non-life supporting gas. The volume alone could cause serious over pressure in a tight room.

9. *Always Move Large Cylinders on a Wheeled Cart*

Few persons have sufficient skill to handle large cylinders. I have already mentioned the injuries a falling cylinder can cause. Always leave the valve protection cap on a cylinder in transit or storage until the time of actual use. This will prevent the valve breaking off a falling cylinder. Don't drag a cylinder by the cap. Aside from the danger of falling, the cap might pull off, striking you in the face. In general, muscle pulls and back injuries caused by the improper handling of cylinders are a major problem in our industry.

10. *Don't Refill Cylinders*

This final rule is the single most important one. The consequences of violating it have been death or permanently disabling injuries in far too many instances. Unless you are a packager of compressed gases, it is unlikely that you possess the specialized knowledge necessary to do it safely. An increasing number of laboratory cylinders are legally non-refillable and cannot withstand repeated filling. Other hazards are: the refilled cylinder may have a lower service pressure than the one from which it is filled; too rapid filling raises the temperature by adiabatic compression; there may be an unknown residue in the cylinder being filled; the cylinder may have unrecognized physical defects; or the cylinder may be past the date by which it must be hydrostatically tested.

A cylinder filled with a gas which is liquid in the cylinder must be filled by weight to make sure that there is sufficient vapor space in the cylinder to accommodate liquid expansion as the contents warm. If this is not done, the cylinder can fail by hydrostatic pressure. The permitted weight will vary with the size of the cylinder and the identity of the gas.

Finally, and this statement is going to be

very unpopular with those servicing emergency breathing equipment, resuscitators, or any apparatus delivering gas for human consumption with a layman's viewpoint, it is probably illegal to refill such cylinders under Part 132, Title 21 of the Code of Federal Regulations without registration with the Federal Food and Drug Administration and its state and municipal counterparts. Any one so registered would be expected to adhere to the various Food and Drug Administration regulations pertaining to drug packaging.

Beyond these general rules, there are, of course, the usual safety rules concerning horse play, uneducated experimentation, etc. High pressure, low density gases such as hydrogen and helium escaping through a small orifice held against the skin can penetrate it, causing large painful bubbles. Cryogenic gases can cause severe slow healing burns. However, all of these are outside of the scope of this paper.

There is a very good safety suggestion which can minimize attention to the ten rules. It is: keep cylinders out of the laboratory by chaining them to a wall in an untriquented area and piping the individual gases to the laboratory.

These then, are the ten general rules of cylinder handling safety. If followed, they allow the safe use of compressed gases. Much additional valuable information is contained in the publications of the Compressed Gas Association, the Chlorine Institute, the Manufacturing Chemists Association and, of course, the National Safety Council.

Don't let this discussion scare you away from the use of compressed gases. I would estimate that close to one million cylinders of compressed gases are filled, shipped, stored, and used each day with a remarkably low accident frequency for a multitude of uses varying from heavy industrial processes to waxy-out research projects.

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1973	Oct. 29 - Nov. 1	
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